TI✳MES

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MAGAZINE CONTENTS

Hello readers everywhere. This issue of your magazine contains some more UK contributions, which will I am sure soon become a flood.See Stephen's very kind offer. Now that really does make it all very much easier. You don't have to worry about format or even your hand- or type-writing. Just put down your experiences, feelings, hopes and fears about our computer, and send them to Stephen! For me it means that I not only get more home-grown contributions, but they come laid out with sufficient space around so that when reduced by the copier's standard for A3 to A4

the double A5 has a margin for stapling. If the A4 is filled edge to edge I have to do a double reduction, and everything gets a bit microscopic.

Chairman Clive tells me that he understands that contributions might be available from other UK groups, for example Joanne and Scott Copeland for EAR, Peter Brooks for the Oxford group, and Gordon Pitts for West

Midlands.Our next 'receive by' date for contributions is 1st.March! Could we perhaps share the view from where you're standing?

As you will see, we still lack a Publications Librarian. You can of course still borrow from Edward and Stephen, but if you volunteer as Librarian, you could read all the other books at leisure, and quite free! So how about it? Will somebody please take on this service?If so please write to Clive.

All the best for the New Year, Alan.

DISCLAIMER

The views expressed in this magazine are those of the contributor and do not necessarily represent those of the Group or Committee.

FOR SALE

Stan. Thorpe of 32,Glenshesk Park, Dunmurry, Belfast, BT17 9BA has for sale Ed.Ass.+man. if req.,Logo II, Teach Yourself XB(8off), Voodoo Castle, Number Magic(2off), Early Reading,9900 Family Systems Design,tech.data.

CALLING ALL HAMS!

Leo Hughes of 20,Pinehurst Park, Aldwick, West Sussex.PO21 3DL writes that he hopes to get useful TI99 programmes from the American Radio Relay League as shown in the appended list. Please write to him if interested.

31	Morse Code Generator	59	Coaxial Cable Attenuation	83	Antenna bearing	89	Waveguide Calculator
32	TV Dot Generator	60	Coaxial Line loss calculator	84	MINIMUF	90	Electronic Formulae
33	VHF/UHF Propagation Model	61	VHF/UHF Tank Circuit Designer	85	Logging	91	CW send
34	Duping	62	Solid State RF Amp T-Network	86	Duping	131	Audio Signal Generator
35	Pi-network Designer	63	Schematic Designer	87	Antenna Designer	125	Morse Code Teacher
56	Morse Code Trainer	82	Packet Radio BBS	88	SWR Calculator	156	RF Circuits Nodal Analyser

AVAILABLE FROM AMERICAN RADIO RELAY LEAGUE 225, MAIN ST. NEWINGTON, CT 06111 USA

Cassette Library

Yes the cassette Library does still exist, not many of you seem to be aware of that! The list has been revised, revamped and recatalogued.There are some fantastic new games (Diablo for example) added and some of the older ones removed. Stephen Shaw has provided me with some machine code games for those of you with XB and +32k, and if you saw him at TheAlternative Micro Show he will no doubt have shown/told you about the tapes I have compiled with up to 10 games on each. Come on all owners of unexpanded TIs,there are dozens of you out there, send me an SAE for the latest catalogue.
Tim Anderson, G/L 47Apsley Street,GLASGOW G11 7SN

Adventure

Ghost Town A1
For the use with the Adventure Module

Pirate Adventure A2
For the use with the Adventure Module

Pyramid of Doom A3
For the use with the Adventure Module

Savage Island Series A4
For the use with the Adventure Module

Strange Odyssey A5
For the use with the Adventure Module

The Count A6
For the use with the Adventure Module

Voodoo Castle A7
For the use with the Adventure Module

Demonstration

Advert Aid D1
D4 TIB
Use for clubs etc. to display announcements or adverts.

British Telecom© Tones D2
D10 XB
Donated by Peter Walker, this well written program gives all the tones heard over the 'phone.

Colour Music Box D3
D6 TIB/XB
A simple example of sprites and music.

Pattern Box D6
D2 TIB
Generates random patterns and gives HEX code

Doctor Doctor D4
D5 TIB/XB P S
Now you can talk to your computer Doctor about personal problems, a good demo which will run in Basic.

Music Squares D5
D8 XB
A simple example of sprites and music.

Sprite Demo D7
D1 XB
Includes sprites in 3D

TE2 Demo D8
D3 TIB S
Random demo for speech. Must have TE2 and RS232.

Education

Alphabet E1
E1 XB J S
Test your speed and knowledge of the A-Z.

Boggle Challenge E2
E17 TIB
Type of scrabble where you make up words from a large grid. Up to 4 players.

Comet Sums E3
E10 XB
An educational way of shooting space invaders, but you must know your /x +- !

Counting E4
E9 TIB
Early learning counting fun.

Extended Basic Tutor E5
E11 XB
This program gives on screen examples of some Extended Basic commands.

Faces E6
E4 TIB
Finding A to Z on the keyboard of your TI99, your child will be rewarded with happy faces.

Guitar Tutor E7
E32 XB
Who said you can't pull a few strings with this one, good use of the sound capabilities.

Hang The Man E8
E2 XB
Play against the computer or a friend. Customise for your own words.

Heart E9
E31 XB
Learn, with graphics, about your heart and vital organs.

Jaws E10
E16 XB
Colourful graphic hangman type game. One to get your teeth into.

Maths Calculator E11
E13 TIB
Calculates averages and triangles in trig. Useful and simple to use.

Morse Code Tutor E12
E14 TIB/XB S
If you want to learn morse this is for you.

Morse Code Tutor2 E13
E21 XB
Another morse code teacher.

Mystery Spelling E14
E15 XB
Tuneful, colourful word mystery game suitable for ages 5 to 12.

Play Design E15
E29A TIB/XB
With Quiz Design, these make extensive use of your computer to create your own trivia and save to CS1 (or Disk). Excellent example of how data works to educate.

Quiz Design E16
E29Q TIB/XB
With Play Design, these make extensive use of your computer to create your own trivia and save to CS1 (or Disk). Excellent example of how data works to educate.

Shape Draw E17
E8 TIB
Full colour graphics using pre-defined shapes to make pictures on a grid.

Stella E18
E6 TIB/XB
The main constellations explained.

Test Your IQ E19
E12 XB
If you like general knowledge questions then test your IQ with this program.

TI99ER Crayon E20
E19 XB
Your works of art can be saved onto CS1. Excellent.

Touch Typing E21
E5 TIB
You can now improve your typing skills. Uses graphics of the qwerty keyboard.

Union Flag History E22
E30 XB
Learn about the Union Jack and its history.

USA Western States E23
E7 TIB/XB
A graphic quiz to test your knowledge of USA States.

Word Spell E24
E26 XB S
A super little program if you like to learn how to spell words. Ideal for kids and fun with speech.

World of Words E25
E3 XB
Makes full use of sprites, sounds and colours. Your child will enjoy learning to read the words with pictures.

Fun

Footsies F1
XB
Adults Only

Joy Sketch F2
G35 J M
A super sketch program published in TI✳MES No.9.

Toad Graphics F3
TIB
Logo-type idea.

Games

3D Maze Tx G1
TIB

3D Race G2
TIB
From Stainless Software, must be good!

711 G3
XB

Adventuremania G4
TIB K
A graphic adventure for the TI, start in Trafalgar Square.

Afghanistan G5
XB K
German interpretation of local resistance to the invasion. Simple idea, shoot planes flying overhead as they try to bomb you.

Aircraft 99 G6
TIB

Aircraft Controller G7
G33 XB
Control the aircraft taking-off and landing at a busy airport.

Airstrike Challenge G8
G14 XB J
As a fighter pilot you shoot down the enemy.

Allen G9
XB K
Attempt to emulate the scrolling landscape of Parsec. Done very well considering the limitations of XB.

Allen Attack G10
G5 TIB K
Use the keyboard to stop the Alien's attack from the grid.

Allen Buster G11
XB K
A cross between Breakout and Space Invaders!

Apfelkobold G12
XB J
Another German offering. Grab the apples while avoiding the farmer (I think!).

Apple Scrumping G13
XB J
Eat all the apples in the orchard avoiding the electric fence and baskets, but don't forget to pick up the key to get out.

Archeodroid G14
XB E
Send your robot down to bring up relics of old Earth. Use the bombs to blast paths in rock but leave enough to clear a route if the rocks fall.

Old Reference, Language, Joysticks/Keyboard/Either, 32k Expansion, Other requirements (Lower case = optional) i.e. Printer, Speech Synth.

Aries G15
XB J
Drop from the mother ship to blast the intruders in your sector.

Artillerie G16
TIB

Astro G17
XB K
Excellent 2 player game from Germany. Enter muzzle velocity and launch angle to try and blow up your opponents gun.

Astro Attack G18
XB K
Shoot down the alien ships as they come at you, but watch your fuel consumption.

Astro Wars G19
TIB

Astromania G20
TIB
Looks to be a version of Pac Man

Attack Man G21
XB E

Backgammon G22
XB K
The classic game

Backgammon2 G23
XB K
Use as a board for 2 players or play against computer. You can double each other but it doesn't seem to know when someone has won!

Backgammon3 G24
XB K

Battle at Sea G25
XB K
Just a 1 player game. More difficult to see the pieces than Backgammon2 but it does recognise the winner.

Battle Star G26
G62 XB
Two players sink a ship or shoot down aircraft.

Battlefront G27
XB E
You are under attack from enemy ships on all sides. Can you fight them off as they come faster and faster.

Battleships G28
TIB
1 or 2 player game

Beetle G29
TIB

Berzerk G30
XB J
Can you avoid the robots trapped in the crate with you while trying to destroy with time delay bombs.

Billy Ball Plays Catch G31
XB J
Catch the hearts, notes etc. as they fall from the sky. Climb the different levels and clobber the little greeny!

Billy Ball To The Rescue G32
XB K
Jump over the various obstacles, presumably to eventually rescue someone/thing. I haven't got far enough for that.

Bingo Night G33
G31 XB s
Excellent program donated by Texas Instruments Inc. Print your bingo cards via printer if wished, call out the numbers if you have speech synth.

Bird Knights G34
XB K
Jousting on the back of birds? Unlikely but that's what you do!

Bite The Blacklish G35
XB K
Chase a tiny fish around the sea, but make sure you avoid the swordfish.

Blackbeard's Treasure G36
XB E
Dive down to the ocean floor to collect treasure avoiding the sharks and octopi. The best of many similar games.

Blackbox G37
TIB

Blast It! G38
TIB E

Boling G39
XB

Bonker G40
XB

Bounce Bugs G41
TIB

Bowls G42
TIB K
Not the 10 pin variety. Very playable. 1 or 2 players.

Break Out G43
XB K
Should really be called Break Down. You are trying to stop the wall reaching the top of the screen by dropping bombs on it. The longer it goes on the faster the wall is built. I like it!

Breakpoint G44
XB

Buddy Balon G45
TIB

Buldozer G46
XB

Burglar G47
G17 TIB
This one from France. I haven't worked it out myself, looks like some sort of maze but also avoiding some other things. Anyone who knows more please tell me!

C-Climber G48
XB

Cake/Adv G49
XB

Camel G50
TIB

Car Race G51
XB
A crazy and fun adventure game.

Cave Maze G52
XB

Caver G53
G2 TIB
If you could not type in this adventure game feature in TI✱MES, here we have done it for you.

Cavern G54
TIB

CC2 G55
XB

Charge G56
TIB

Checkers G57
XB

Chenille G58
TIB
Similar to solitaire

Circles G59
XB

Circus Balloons G60
XB
Help the down bounce on a trampoline to burst the balloons.

City Attack G61
TIB K
From the Games Writers pack. Very enjoyable 1 player game.

Combat G62
XB

Commando G63
G6 TIB
A game of skill for 2 players, you fight it out on the battlefield with tanks.

Computer Cards G64
XB

Connect Four G65
G60 XB
An excellent game of memory playing cards in your TI.

Copter G66
G34 XB
For two players, this is a classic.

Core G67
XB

Crash G68
XB

Crazy Cliff G69
G19 XB
A simple game of hit and crash!

Crossword G70
XB

Crystal G71
XB

Cut Off G72
XB

Cyber/Dice G73
TIB

Darts G74
XB
Choice of 3 original Darts games, 301, around the board and cricket.

Deactivation G75
G49 XB

Desert Car G76
G54 TIB
Keep the kids amused moving a tank to clear the screen of mines.

Devil Craze G77
G21 M
Published in TI✱MES No.6, Syd Michelhas done the hard work for you. See what machine code can do for graphics.

Diablo G78
XB J
Totally different from any other game I have seen. One game I had been trying to find since Howard showed it to me 3 years ago. Get it!

Dice Game G79
G38 XB S
American game of craps, super graphics and extensive speech.

Dodger G80
XB

Dragon Combat G81
TIB K

Draughts G82
G57 TIB
A game for up to 2 players. As published in TI✳MES to save your fingers.

Duck G83
G28 XB
Stephen Shaw cannot score over 1000!
Make it to the top avoiding ducks and frisbees.

Earth Def G84
TIB

Eat Mince G85
XB

Egghunt G86
G58 XB J
A really super game which gives hours of fun looking for magic Chocolate eggs.

Encounters G87
XB

Envahiss G88
XB

Er'Bert G89
XB

Evacupod G90
XB

F/Asterold G91
XB

Femongrld G92
XB

Fernando G93
XB

Fire Lady G94
TIB

Firefly Submarine G95
G13 XB J
Can you hit the target?

First/Last G96
XB

Flight Deck G97
G37 XB
Really tests your skill in aviation.

Flip Flap G98
XB

Forest Fire G99
XB K
Nice little strategy game. Simple idea well implemented.

Forest Rly G100
XB

Forest/3 G101
XB

Formula 1 G102
XB J
Simple but fun Grand Prix racing game, seem to get unlimited no. of cars to crash!

Formula One G103
G44 XB J s
You will enjoy the fast pace of the Grand Prix racing. Lovely graphics and colour.

Fraggles G104
XB

Freeway G105
XB

Frog G106
G3 XB J
You may like this splendid version of the old favourite. The TI✳MES version.

Frogger/kz G107
XB

Frogger1 G108
XB
Written by Khoa and Quyen Ton, enhanced by Ray Kazmer.

Froggle G109
XB K
2 player version from Germany.

Froglet G110
XB E
Uses speech, written by David White.

Frogs/RJ G111
XB E
Timeless Software version.
XB K s
One of the better versions, written by R. W. Johnson.

Fun-Pac 2 G112
TIB K
Escape the Mugger, Starship Supernova and Gunfight. Escape is impossible, SS is a text adventure and Gunfight, a text game for up to 6 players, the best of the 3

Galaxle G113
XB

Game Pack III G114
XB J
Kong, Bouncer and Romeo

Gangster G115
XB

Garbage G116
XB

Garden Maze G117
G32 TIB
Move round the garden killing off the pests.

Gem Grabber G118
TIB

Goblin Caves/Anagram G119
TIB K
Fairly simple adventure with attempt at 3D graphics. Anagram, as it sounds

Golf/Geer G121
XB
By Mark Geer, I can't get near par.

Golf G122
G50 TIB
Just because this is in basic don't be put off. Makes full use of graphics, play according to the rules. A must for golf addicts.

Gopher G123
XB

Halloween G124
XB

Hamurabl G125
XB

HangGlldex G126
G18 TIB/XB K
Enjoyable strategy game. Can you lead your country to prosperity, despite wars and plagues.

Haunted House/Wumpus G127
XB
Simple Adventures

Hell-Sub G128
G42 TIB J
Shoot down the helicopter before it shoots the sub.

Hl-Lo G129
G23 TIB
A graphic card game in which you try your luck of the draw.

Homebound G130
XB

Horse Race G131
G59 XB
Place your bets, you will have an enjoyable day at the Texas horse races. Colour and sprites.

Hunted G132
TIB

In A Maze G133
G29 XB
Find your way out of a 3D maze, complete with map.

Invasion G134
TIB

Isola G135
G8 TIB/XB s
A board game. An excellent TI Users group program.

Jester G136
XB

Kamlkaze G137
G52 XB
Shoot 'em up alien attack game, good use of sprites.

Kat Traxx G138
TIB
Simple but playable

Killcrabkz G139
XB

Kingdom G140
XB

Knlghts G141
XB

Knlghts and Dragons G142
G11 TIB
Can you become a knight and fight the Dragons? Super use of graphics. When you hear the clash of swords they sound very real.

Koala Hop G143
XB

Kong G144
TIB E
The plot you all kno. From SP Software.

Kong2 G145
XB J
Written by Greg Kean

Kroakers G146 XB
Krung G147 XB
Largage G148 XB
Lasertank G149 XB E
Reasonably playable attempt at the arcade game "Tank Command".
Leap Frog G150 XB
Leaper G151 XB
This is a Hunchback type of game which has been adapted for the TI99/4a with 6 levels of play. This is probably better than most other XB games around.
G12 XB J
Left or Right G152 G45 XB s
From Sweden, after this game you will find it hard to know left from right.
Left/Right G153 XB
LGame/517 G154 XB
Lift Attend G155 XB
Looney Quest G156 XB
Lost/Ruins G157 G1 TIB
Silly adventure if you are game for a laugh.
Maeuselaby G158 XB
Man Taco G159 XB
Mania G160 G24 XB
Eat your way around like Munchman, but watch out for the suprises. Good use of graphics and sprites.
Mars Mine G161 TIB K
Graphic and text adventure
Meltdown G162 TIB
Mine Maze G163 XB

MM Racer G164 G20 M
No, we haven't forgotten the Minimem! You will have to be last to track this.
Moos G165 XB
Mothmania G166 XB
MRD G167 TIB
Muncher G168 XB
Nautilus G169 XB
Navigator G170 XB
Ninepin Bowling G171 XB
Norbert G172 XB
Not One G173 XB
Noteworthy G174 XB
Octal G175 XB
Odds On G176 XB
Oldies but Goodies I G177 G22 XB p S
Place your bets, the race is on today and every day. Printer optional to record bets and tote.
Oldies but Goodies II G178 XB
Othello G179 TIB K
3D Tic Tac Toe, Pegjump, Hammurabi, Word Safari, Hidden Pairs. Great simple games
Othello2 G180 XB
Biorhythm, Number Scramble, Factor, Tic Tac Toe, Word Scramble. Great Games
Othello521 G181 G9 TIB s
Another board game for 2 players. Optional speech.
Overreact G182 XB

Painter G183 XB
Pen The Pig G184 XB
Pengi G185 TIB
Pentathlon G186 TIB XB K
100 metres, 1500 metres, Discus, Long Jump, High Jump (best of these).
Pesteroids G187 XB
Photon Attack G188 G4 TIB
Space invader type game.
Planet/Lnd G189 XB
Pogojump G190 TIB
Poker G191 XB
Pongo G192 XB
Pontoon G193 XB G30 TIB
Stick or twist?
Probe G194 XB
QBono G195 G51 XB
A jumpy game with smooth graphics.
QuadBlitz G196 XB
Rag/River G197 XB
Railway Network G198 G39 XB
You are in charge of the railways by operating switches, hours of fun.
Rally Cross G199 TIB
Reindeer G200 XB
Robin Hood G201 XB
Rock G202 XB

Roll5 G203 XB
Roo G204 XB
Rubicscube G205 XB
Runner on Trelton/Othello G206 XB
Runway G207 TIB G15 XB J
You are the captain of a modern aircraft, can you land safely? Watch out for the wind shifts, a steady hand is required.
Santa & The Goblins G208 TIB K
Graphic and text adventure
Sewers G209 TIB
Shboom G210 XB
Sheep Dog Trials G211 XB
Skybuster G212 XB G41 TIB
Bomber game where you have to demolish a deserted city with a limited number of bombs. 3 levels of play.
Slaves G213 TIB
As published in the TI Users Perth Aussie group newsletter. A superb game, with excellent graphics and game options. Up to 4 players. A classic not to be missed.
Slither G214 XB
Snakes & Ladders G215 XB
Snow Trek G216 TIB
Spr/Jack G217 XB
Spys Demise G218 XB

Old Reference, Language, Joysticks/Keyboard/Either, 32k Expansion, Other requirements (Lower case = optional) i.e. Printer, Speech Synth.

Music

Mandy M24
M16 XB
For Barry Manilow fans.

Midnight Cowboy M25
M25 XB
Lovely use of the TI99/4a sound.

Music Creator M26
M5 TIB/XB
Use this to make up your own tunes. Assumes some knowledge of Call Sound.

Music Keyboard M27
M32 XB
If you have designs on music then this is a must for your library. The program allows you to play and replay sounds you've created. Lots of scope.

Music Music M28
M10 TIB/XB
Delightful selection of six well known tunes.

Pennpolka M29

Puppytown M30
M8 XB
A trio of puppies run, in tune, past the saloon.

Sound Constructor M31
M9 XB
Helps you create special sounds or music. A well written program.

Sunglasses M32
M19 XB
Shady tune

Take/Five M33

TI-Organ M34
M6 XB
Enables you to create your own tunes.

Venetian Boat Song M35
M7 XB
Sprites, graphics and lovely music.

Wings of a Dove M36
M14 XB

Yesterday M37
M20 XB
The Beatles classic

PRK

Boat Design P1
P2 PRK
Not a game but a utility for boat design. We think it's clever.

Business Game P2
P1 PRK
Now see a good example of DISPLAY AT with this game of skill. Adults only!

Big/Cat M5

Blowing Bubbles M6
M1 XB
Watch the bubbles and sing the song...forever?

Camptown Races M10
C227 M7
C234 M8
C235 M9
M4 TIB/XB
You all know this one. The music only.

Can't Help M11
M12 XB
Elvis?

Carmoon M12
M3 XB
Watch the moon at night and the sun rise as the song plays.

Christmas Tune M13
M33 TIB
One for those with console only.

Computer Music Box M14
TIB
Random Music, Composer, Advanced Composer

Dixieland M15
M2 TIB/XB
A well known number from the USA, useful as a subprogram.

Fame M16
M29 XB
The famous TV theme.

Für Elise M17
M34 XB
A beautiful classic reproduced on your TI.

Ghostbusters M18
M21 XB
Excellent rendering of the No.1 hit with motif on screen.

Graymouse M19

Green Green M20
M15 XB
Golden Oldie from the far side of the hill.

Haydn's Sonata 2 M21
M27 XB
A classic for your collection. No graphics.

Houston Texas M22
M18 XB
Includes moving graphics.

Lord's Prayer M23
M13 XB
Impress the vicar...

Star Probe G219
XB

Submarine Attack G220
G25 XB J
Captain your own Sub' and sink many ships. Watch out for depth charges.

Super Frogger G221
XB E
Another Frogger

Sweatcloth G222
XB

Switch G223
XB

Tenpin G224
G36 XB
A game for up to 4 players.

The Hunch G225
G53 TIB
Clever basic adaption of Leaper. Good to look at and play.

The Wall G226
XB

Tiles G227
G16 XB K
This gives you an idea how smooth the sprites can be when moving them around the board.

Tircroisse G228
XB

TNT G229
XB

Traffic Cop G230
XB

Treasure Quest/Four in a Row G231
TIB K

Tunivision G232
XB

Turtle Hop G233
XB

TV Jackpot G234
XB
G26 XB
Excellent graphics, probably the best TI fruit machine game produced.

Txpairs G235
XB

Wagon Wheels G236
G40 TIB
Rescue the damsel and avoid the snakes and wheels. (For TI*NIES).

Wallaby G237
XB

Webster G238
XB

Winging It G239
TIB K
Flight simulator for unexpanded machine, no peripherals

Wonky G240
XB

Wordsearch G241
G7 TIB P
Will create and printout your own wordsearch games.

Wormberner G242
XB

Wyvern G243
XB

Yahtzee G244
G10 TIB
This must be the best game first produced for the TI99. Makes good use of sound and graphics. A dice game for up to 4 players.

Yahtzee G245
G55 XB S
This is a lovely edition of the well known basic game.

Music

Bach M1
M28 XB
Let's you invent with this invention in F. No graphics.

Bananas M2
M11 XB
Oh yes, we DO have bananas! Lots of fun.

Beer Barrel M3

Beethoven Classic M4
M26 XB
Music and excellent graphics make this Variations on a theme a proud presentation for anyone to show off the TI99/4a.

Utilities

Beginner's Basic Tutor U1
TIB

Biorhythm U2
U35 TIB
Clever little program to check your lifestyle.

Biorhythm2 U3
U35x XB P
As Biorhythm but runs in and can be printed out.

Calendar U4
U7 XB
Will tell you the exact day of dates from 1750 to 2000

Calendar2 U5
U7b TIB P
As Calendar but runs in basic. You can also dump to TI printer if required.

Car Insurance U7
U12 XB
Will help you on insurance.

Cassfile U8

Central Heating Calc U9
U31 XB
Room by room heating needs are calculated for you. Now you know how much the bill should work out.

Character Constructor U10
U16 TIB/XB
Gives you the Hex of characters you construct.

CHARACTER GENERATOR U11
TIB K

CS1 and CS2 File U12
U14 TIB
Create a large data file using 2 cassette recorders.

CS1 Reader U13
U48 XB P
Reads files created by CS1 Writer. Requires disk drive, only included as 1 am not sure if available on disk.

CS1 Writer U14

Disassembler U15
U26 TIB M p
Translates binary machine code in the computer's memory back into assembly code. Also available for XB and E/A - Contact Stephen Shaw (on Disk). Donated by Funnelweb Farm, Australia.

Ext Clock U16
U36 XB
Displays a time clock on the screen even when loading other programs.

Filer 99er U17
U6 XB
Probably the best filing utility around.

Game Writers' Pack 2 U18
TIB
Unbeatable for learning how to start programming, not only for games! Highly recommended by Stephen Shaw

Graph1 U19
U2 TIB
Basic graph plotter

Graph2 U20
U3 XB
For more complex graphs than graph1

Graphics Creator/Screen Editor U21
TIB
With Instructions

House Budget U22
U13 XB
Got a budget problem? This will help you forecast and show your expenses.

Household Finance U23
U24 XB P
Analysis of your house expense is printed out.

Large Sign Printout U24
U46 XB P
Will print large letters for banners etc.

Life Insurance U25
U11 XB
Will calculate insurance.

Lifespan U26
U4 TIB
Calculate your future years

Personal Financial Aids U27
TIB
Amortization Schedule, Depreciation, Mortgage Analysis

Pixeldraw U28
U15 TIB K
Use the keyboard to draw on screen a pixel at a time.

Price Generator U29
U21 XB
Converts VAT and calculates discounts. Clever and useful.

Print A Maze U30
U37 XB P
Will create and print out a maze with choice of size.

Printer Set U31
U10 P
A program to set up a printer buffer (Star 10X) and slash the zeros.

Printout Tutorial U32
U20 XB P
This one will teach you a trick or 2 about the printer.

Programming Aids 1 U33
TIB
2nd character set, Character definition, I/o routines and lowercase letters

Screen Map U34
U5 XB S
Find the exact location of a pixel on the screen

Teach Yourself Basic U35
TIB

Teach Yourself Extended Basic U36
XB

Telephone Cost U37
U40 XB
Will give telephone costs per unit.

Video Credits U38
U9 XB
Now give your video recordings titles with choice of scripts. Obviously only useful if you have a video!

Wordpro U39
U8 TIB P
Type in and print out letters etc. Uses EDIT, BACKSPACE and SEARCH facilities. This will allow you to load and save to CS1 for a friend to print out.

Music Maker/Ti-Ludo/Charset 1:Bold
V1

Extended Basic, 32k RAM, no Disk Drive?

Are you one of those with the above configuration? Thanks to your fellow club members we can now offer many machine code games to load from tape! Send me an S.A.E. for details

Compilation Tapes

Basic only
Tape B2 (Games)

Dragon Combat	G81
Battleships	G28
Bowls	G42
Pen The Pig	G184
Isola	G135
Golf	G122
Looney Quest.	G156
Yahtzee	G244
Knights And Dragons	G142
Skybuster	G212

Extended Basic
Tape XB2

Artillerie	G16
Forest Fire	G99
Othello	G179
Connect Four	G65
Tenpin	G224
Yahtzee	G245
Billy Ball Plays Catch	G31
Billy Ball To The Rescue	G32

Tape XB3

Bird Knights	G34
Diablo	G78
Leaper	G151
QBono	G195
Battlefront	G27
Break Out	G43
Traffic Cop	G230

All tapes are tested before sending out, and programs are named on tape before the data starts.

Compilation tapes cost £4 each or £3 if you include a C60 tape with your order. Others £1.50 or £1 if you send a tape.

Old Reference, Language, Joysticks/Keyboard/Either, 32k Expansion, Other requirements (Lower case = optional) i.e. Printer, Speech Synth.

CONSOLE ONLY CORNER

by Peter Walker

One of the many problems in finding the right things to write about in TI*MES is that much has already been written over the years and sometimes one feels there is little original still to tell. However, many of you have only joined the group recently, so I hope the old hands will forgive me for repeating a few things you may have seen before.

Try the following: Select Basic and create a program line as follows:

100 REM <ctrl>+ QWERTYUIOP <enter>

ie after the REM hold down the control key as press the keys Q to P, then enter. Now edit the line, ie 100 FCTN X. Surprised? What you will see is the following:

100 REM UNTRACE READ GO INPUT RESTORE DELETE RANDOMIZE DEF UNBREAK TRACE

The explanation is that all the Basic "key words" such as INPUT, GO etc are not stored in the machine as the characters I, N, P, U, T etc but as a single byte "token". In the example above the tokens are the byte values 145, 151, 133, 146, 148, 153, 149, 137, 143, 144, which happen to be the ASCII codes generated by the keyboard when you press CTRL Q-P. You can have great fun exploring the ASCII codes above 128 to see what keywords are produced. Extended Basic gives you even more! For a complete list of tokens, see Stephen Shaw's "Getting Started with the Texas TI99/4A". If you don't have a copy, it's in our library. What practical use is this? Not a lot, but it helps you to understand better how your machine operates. It explains for example why you can often squeeze more onto a Basic line by re-editing and adding more. This is because on first entering the line, the keywords are reduced to one byte, thus allowing more text to be added within the system limit.

Now for some fun. Using Console Basic, input the line we discussed above, but keep pressing the sequence CTRL Q-P until the TI99 honks at you. Press enter. Now re-edit the line with 100 FCTN X. Now thats a long line! At this stage, the surround on my machine turns RED. Now press FCTN D several times. The surround changes colour again, until the machine appears to have crashed. Sometimes you can recover by presing <enter> CALL CLEAR <enter>. Sometimes not!! I leave it to the boffins to explain what is happening. For you it provides a pretty random pattern generator!

Some of you unexpanded owners do have the Speech Synthesizer. Here is a program for use with the TE2 module, which demonstrates how the computer can sing:

```
100 OPEN #1:"SPEECH",OUTPUT      190 PRINT A$
110 K=3                          200 PRINT #1:A$
120 P=63                         210 NEXT I
130 FOR I=1 TO 7                 220 RESTORE 240
140 READ A$                      230 GOTO 130
150 P=P-K                        240 DATA DOE,RAY,ME,FAR,SO,LAR,TEE
160 IF P 1 THEN 250              250 STOP
170 S=INT(3.2*P)
180 PRINT #1:"//"&STR$(P)&""&STR$(S)
```

DISK LIBRARY NEWS.

All disks are SSSD. We have a huge collection of superb software of ALL types (except USCD Pascal) at very low prices. At a copying cost of just one pound per disk you can afford to amass a huge collection!
   There is a flat one pound per order charge for carriage, packaging etc. If you do not wish to send blank disks, disks can be supplied for an extra one pound each. (Overseas extra by quotation!).

   Our disk catalogue at the time of writing is still on two disks- there has been only a short period since last copydate, and this has occurred at a quiet period for new disks. It is likely however that the next major parcel of inward disks will push the catalogue onto 3 disks. All we ask is that you send 3 blank disks and return postage and the catalogue is yours to look at in the privacy of your own home.... hang on??? ... so why not write in and see what goodies we have!
   Disk library address is:
   Stephen Shaw
   10 Alstone Road, STOCKPORT, Cheshire, SK4 5AH.

   New disks received since last issue are:

J SEBASTIAN BACHS 2-PART INVENTIONS from Harrison Software (with permission). Some beautiful music encoded in machine code pretending to be extended basic. See how many you recognise!

J SEBASTIAN BACHS ANNA MAGDALENAS NOTEBOOK (20 pieces), more beautiful music from the same talented programmer.

   This software company hope to bring out a disk a month, so be sure to let me know SOON if you like the idea of adding these disks to the library!

ADDED TO UTIL-20 is Instance Printer Vn 2.0, which allows you to print a TI ARTIST INSTANCE to an Epson or Prowriter printer or compatibles, in perfect proportion- circles looking like circles- and very very dense. A full screen instance prints as full width on 80 column paper.

Added to UTIL-21 is BOARDMAKER Vn 6.0, dated 1.1.88, by Bill and Jim Reiss, which enables you to EDIT the screens on your (backup copy of) TI RUNNER. Reminder: TI Runner is available from THIS library, under paid licence from the copyright holder.

DUTCH GRAPHICS is deleted, having been replaced by a much superior program doing the same thing:
>SPECTRUM 1 contains a utility to pick up the Graphics from the START of a Spectrum tape, plus a utility to change the picture format, from the compact version used on these disks, to and from TI Artist. These pics have Spectrum-standard color graphics. This disk has title screens from: Cookie, Mugsy, Ad Astra, Jack and the Beanstalk, Combat Zone, Chequered Flag, Mr Wimpy, The Hobbit, Harrier Attack, Auto Mania, Pyjamerama.

>SPECTRUM 2: Screens from Horace and the Spiders, Nightshade, Spy Hunter, Bruce Lee, Saboteur, Daley Thompson's Super Test, Odin, Sam Fox Strip Poker, Molecule Man, Merlin Rack, Gladiator, Rambo 2.

>SPECTRUM 3: Screens from: Bomb Jack, Cobra, ?, Spitfire 40, Asterix, Slap Fight, FTL Gargoyle, Wonder Boy, Hulk, Magic Land, Jet Pac, Scuba Dive.

RAMBLES. by Stephen Shaw.
November 1988 for TI✻MES issue 23.

Greetings fellow TI99/4A users. Thi s issue of Rambles is going to be a short
one, as there is less than a month between the text for this issue being
required, and the text for the last one having been submitted. Plus the early
weeks were spent in preparing for the Alternative Micro Show.

I have had very little mail in the last month (well, alright, my reader has
totally failed to write this time!) leaving little scope for inspiration, so I
shall be submitting some program listings to keep your fingers active.

Your questions are always welcome, especially from unexpanded owners! and the
address is:
10 Alstone Road, STOCKPORT, Cheshire, ENGLAND, SK4 5AH.
If a direct reply is required, please send an SAE (2 IRC if you are abroad!).

I am sending a separate report on the Aston Show. Good to see so many of you
(sorry the rest of you could not make it!). I prepared a host of goodies for
the show - disks and tapes - and brought most of them home with me. Ah well. As
a reult, if anyone would like a look at a SAMPLE copy of MICROPENDIUM, they can
have a copy of the SEPTEMBER 1988 issue from me for just £2.00 including
postage- this is the issue with an article by some English TI owner whose name
rings a bell or two...

And if you would then like to subscribe to MICROpendium - as all good TI99/4A
owners should! - you may either send your $$$ to them direct or if you prefer,
you can send £££ to me- drop me a line for the current amount of ££- the
exchange rate is doing silly things again right now!

TURBO PASC 99 mentioned in the last issue is available from:
 L.L. CONNER ENTERPRISE:
 1521 Ferry Street, LAFAYETTE, IN, USA, 47904.
 Telephone: (317) 742 8146
 Visa (Barclaycard) and MasterCard (Access) welcome.
 The cost for a single copy to the UK by insured airmail is US$70.55
A direct mail offer to all our disk drive owning members resulted in just one
enquiry, so we cannot pass on the user group discount offered to us.

Indeed, the last issue of TI✻MES had several user offers, all of which have
been very badly taken up, and will not therefore be repeated- our members
(you!) are not showing the collective interest to justify asking for discounts
- its a bit bad when we can't even raise five orders!
 There was one exception, and that was TI Base, which is surely going to be the
(THE) TI database, as TI Artist is THE graphic program- and we were able to
send two orders to Texaments for this.

If any member wants ANY TI product and can't locate it , I can probably obtain
a location for you, or if you prefer not to order direct from the USA, I am
happy to order any SOFTWARE on your behalf, including ANY modules. Such orders
are prepaid and taken at YOUR risk! The minimum for a single module by import
is likely to be ten pounds. If you desperately seek anything, do let me know,
and do remember that SAE please!

I mentioned earlier this year a disk containing a VAT ACCOUNTING MODULE, an
unreleased TI module, and indicated it had not been heard of. Correction. This
module was listed as "forthcoming" in the FIRST issue of TIHOME (circulation
14) and was THEN not heard of again!

At the Aston show, one member fought shy of obtaining a copy of Ray Kazmers
Christmas Demo (free remember!) 'cos he had it. Oh no he did not - he had only
the initial 1987 issue, which left little Woodstock crying for his present - the
1988 release has Woodstock retreive the parcel and open it! If you do not yet
have this first class example of pure XB programming- superb use of graphics-
you can still send for it. Just a disk and return postage is all that is
required - sorry the 1988 version is FAR too long for cassette.

Query- can I load a CHARA1 disk file into an XB program? Answer: of course, dig
out issue 18 of TI✳MES!

TI✳MES CONTRIBUTIONS: If you cannot meet the requirements set out inside the
front cover of the last issue- and I suspect many of our members cannot- this
is NOT an excuse not to write anything! Write to me - Stephen Shaw - and I will
transcribe as required (this may take a little longer than submitting camera
ready text of course!). Handwritten A5 sheets of paper are fine, plain or
ruled, ANYTHING legible!
  ATTENTION all you unexpanded owners- how about module reviews? Games tips?
Basic and ExBas tips and queries? All owners- what programs do YOU use? Write
in NOW! and keep writing in!

MEMBERS WANTS: There were some very finely priced sales offers in the last
issue- did you see them? - however as we only publish once every three months,
that can mean a seller waiting a long time to find a buyer! If you are
interested in second hand equipment - ESPECIALLY Expansion Boxes and disk
drives, which we cannot afford to stockpile! - please would you drop me a line
and indicate: WHAT you would like, HOW MUCH you wish to pay as a maximum
-please be reasonable- and if possible a telephone number. Then we can try to
put you together with any sellers we hear of. I will pass details of your wants
onto other relevant committee members, so you can report ALL your wants
together to me. The equipment you want does become available (or we may be able
to obtain new at a reasonable price) but we do need to know what it is you are
looking for. This service will also assist sellers to find a buyer more
quickly!

Did you type in the Paint program on page 15 of the last issue? If you don t
have speech, just substitute DISPLAY AT(2,1):nnn" instead of CALL SAY("nnnn").
I would personally delete the "use-less" bit anyway- I keep my computer
suitably subservient! The original program was a masterpiece of compact
programming, and Jim's amendments make it even nicer. Not typed it in? Get that
issue out and try it now! It really is a good program!

No guidance on where to take the Enhanced (PRK) Basic, so until I have at least
a couple of letters to support the time it takes to put that lot together, no
more. If you want an article I DESPERATELY need to know about it! Research time
can be quite long, and a total silence afterwards is not encouraging...

Nobody has come forward to ask for the LISP disk from the library so I guess I
will forever remain ignorant of it. And despite lengthy write ups in TI✳MES -
and a lot of people taking c99 from the disk library- only one disk owner has
asked for TURBO PASC 99, a remarkably easy and friendly language. Is there
anyone out there still programming? Why not submit your work during the last
couple of years so we can see what you are doing! Don't be shy- you can teach
US and maybe we can help you!

We presently have around 200 members, who as far as we can tell do not all have every TI product ever produced! so if you have any software or equipment not in use, why not offer it to your fellow members- or even to the Group! Drop the relevant librarian or myself a line indicating what you have and what you want. None of us have a lot of money these days, so please be reasonable on pricing! The group is not well funded and cannot afford to buy your equipment, but I am happy to stockpile it and I can at least repay you the postage cost!

===

MACHINE CODE RAMBLES:

In an EXTENDED BASIC program is it possible for the program to sense that the alpha-lock key is depressed or not WITHOUT the user having to press a key?
 Yes- if you also have 32k ram.
 Here is the source code for a VERY short machine code routine:

```
          DEF    ALPHA
ALPHA     MOV    R12,@>FFFC        save old R  12
          CLR    R12               9901 CRU Base = 0
          SBZ    21                Signal alphalock key line
          TB     7                 Check alphalock other side
          JNE    STATE             jump if state = on
          SETO   @>FFFE               state=off
          JMP    JUMPA             As off skip next line
STATE     CLR    @>FFFE               state=on
JUMPA     SBO    21                stop sending to alphalock key!
          MOV    @>FFFC,R12        restore old R12
* standard xb return now
          SB     @>837C,@>837C     clear error for' basic
          B      @>0070            return to calling program
          END    ALPHA
```

To use this code, assemble it to a non-compacted object code, say DSK1.K/OB

In Extended Basic, start your program with:
  10 ! K by M Gikow, Andover, MA
  11 ! August 1988. Use with K/OB
  12 CALL INIT :: CALL CLEAR :: CALL LOAD("DSK1.K/OB")
  ......
  YOUR PROGRAM HERE
  ......
  now, an example of sensing the state of the alphalock:
  ....
  100 GOSUB 4000
  110 PRINT A
  120 GOTO 100
  ....
  4000 CALL LINK("ALPHA")
  4001 CALL PEEK(-1,A)
  4002 RETURN
  5000 END
  ...

A word of further explanation may help... thanks to Mike Gikow for this:
    The keyboard is connected to the computer by a device (TMS 9901) that uses the Communications Register Unit (CRU) which is accessed by CRU instructions such as SBZ, SBO and TB (Set Bit Zero, Set Bit One, and Test Bit).
    The Technical Data Manual shows connections to the keyboard such that the alpha lock key is connected between the output for CRU bit 21 and the input for CRU bit 7. (continued...)>

When the switch is closed, the output can be read by the input.

This program tests the condition of the switch and writes a value of -1 or 0 to memory locations -1 AND -2. The CLR instruction produces the 0, and SETO produces -1.

The call link statement in XB then tests memory location -1 (=)FFFE) for a value of 0 or -1. NOTE that the PEEK statement will set A=255 rather than -1! so you will see either a 0 or 255.

[At the time of submitting this article, I am not aware of prior publication of the above program, taken from a letter by Mike]
===

One heart felt cry, from more than one member, involves the printing of text files using TI Writer -

TI Writer NORMALLY send a carriage return and line feed at the end of each line, and life is much easier if you switch the internal dip switches in your printer so that your printer does not itself add an automatic carriage return and line feed at the end of each line! If both the printer and TI Writer add a line feed, you end up with double spacing, whether you want it or no.

The TI RS232 card contains a number of software switches, and if you use RS232 as your printer name you will certainly know all about those! However PIO users generally have little call to use them and so remain unaware!

You can instead of using just PIO, name your printer as PIO.CR or PIO.LF - if you use the Formatter, you may NEED to use PIO.LF even if PIO on its own is OK when printing from the Editor.

If you ever use a Graphics program, you will need to use PIO.CR to prevent an automatic carriage return every 80 characters- something that can make your graphics look a little untidy.

In case of difficulty with line feeds, go through all the possible printer names and use the one that is best, be it PIO.CR or PIO.LF or possibly even PIO.CR.LF

It makes life easier if you can switch the auto line feed off at the printer- consult your printer manual.

Another problem is that several members use printers which are not 100% compatible with the Epson control codes, and when printing text which has these embedded, you may meet problems, such as a printer freeze. Again, TI Writer has been written to take care of this problem. You can instruct TI Writer to print the text file but to strip out the control codes- that is to print only the "printable" characters ASCII 32 to 126- to do this, instead of using the output device name of PIO you use C PIO - that is, a capital C followed by a space followed by the normal printer name.

And as a reminder, if you want TI Writer to save in DF80 format instead of DV80, select PF then type F DSK1.FILENAME - use the print file command instead of the usual save file, and add an F and a space in front of the output device name. You remember of course that TI Writer can load both DF80 and DV80 files! In fact it will even handle DF and DV files longer than 80, but only load the first 80 characters of each record. TI Writer is an unusually well written program!

And remarks regarding TI Writer also hold true for Funlweb!

Reminder to PR Base users about the bugs in that database:
1. Output Device Name:
     When you initiallise a disk (any disk) the sectors are filled with >E5's.
     When you select CREATE using PRBASE, the default output device name
appears, IF you have nominated one previously. Otherwise you will see an
apparently blank input field. Not so- what you cannot see is an input field
full of >E5's, so if you type "PIO", the program will then try to use a device
called PIO followed by several CHR$(229)'s and tell you you don't have any such
device!
     This is mainly a problem when using PIO, as RS232 users usually make use
of the cards software switches and put a full stop in there someplace- the card
is so programmed that the excess >E5s are then ignored.
     PIO users should type PIO and then fill the input field with blank spaces
by holding space bar down! OR first use ERASE (FCTN 3) before entering the
printer name.

2. Bill Warren is aware that some users with TI disk controllers have been
unable to format a double sided disk using the PR Base utility. Their solution
is simple- use another disk manager to format your disks! [I suspect that
Bill's problem may have been with the standalone disk controllers which are for
single sided use only?SS]

3. Mis-Alignment of columns in TAB reports:
     This time due to >00's.! When you type the header, do not use FCTN D to
move to the right- it will leave >00's behind. You MUST type spaces with the
space bar. Bill does not fill the screen with spaces, he used nuls!

Note: Bill is NOT working on updates to PR Base. Version 2.0 is his last.
However Mike Dodd has written a version 2.1 which makes normal use of sectors 0
and 1, but is incompatible with Vn 2.0 data files. Both versions are available
from the disk library.

These last few words are written November 26th, just before the December 1st
text deadline for this issue- and lots to print out still!

Just as I thought the supply of new software was declining, along comes the
postman with a small package with three innocent looking disks inside-
containing -in archived format- a bit more than 3000 sectors of software
catalogue- lots that we have, some duplications, some we have no interest in,
and one or two (ha!) items that we have been looking for for years and years,
so watch out for some nice new goodies in the coming quarter!

One disk library user had a problem using HBMPRINT, a utility to print the data
from Home Budget Manager in various formats- it would only load with Editor
Assembler. Now- this program was in Forth, which if you recall Versions 3.x of
Funlweb, had to be flagged K=60 in the Funlweb load menu. That menu is no
longer available, and it would appear that Funlweb is no longer able to produce
that particular load environment.
No problem. Some time ago, the peculiar original TI Forth Load requirement was
removed, and an amended format produced which would load as a standard Load and
Run file- you can find it on the MiniMemory version of Forth in the disk
library. All I had to do was swop the load routine and now HBMPRINT loads fine
with Funlweb.
Hands up anyone who remembers the ADAM computer! It was on sale in this country
for about a week I think! It was a Z80 based micro - like the ZX80 and ZX81.
It appears that some surplus Adam PCB's duly found their way into some TI PEBs
over in the states, providing a 2nd (Z80) processor! I shall try to find out a
little more, it seems to have been a well kept secret... maybe we can do
something with ZX80's!
     PAGE FULL. HAPPY NEW YEAR from Stephen Shaw

REPORT ON ALTERNATIVE MICRO SHOW - ASTON (Near Birmingham) 12th Novmember 1988

This show, held at the Aston Sports Centre, not far from Birmingham and easily reached by rail and motorway, was organised by EMSOFT, software publishers for the Tatung Einstein computer.

They had organised the Show for users of the Einstein, and in a gesture of solidarity, invited User Groups and Dealers connected with other orphan computers to participate - orphan computers do not have any coverage in magazines or other shows! Naturally, many of the 47 stands were connected with the Einstein computer, also many were generic, dealing with general computer supplies suitable for any computer - disks and paper and so on.

It was entirely appropriate for the TI99/4A to be represented, as the monitor supplied for the Tatung Einstein is the ONLY monitor that can be connected directly to the PAL TI99/4A, which has an unusual colour-difference video output.

The TI99/4A was represented by stands from TI99/4A Users Group (U.K.), by the East Anglia Region User Group, and by lone UK dealer Parco Electric. Parco had a good selection of modules available. The TI99/4A Users Group had a nice little robot, controlled by joystick, who was most polite and apologised nicely if he bumped into anything. His core program came from Ross Mudie and appeared in the September 1987 newsletter of the Sydney User Group (Australia).

Other micros represented were the MSX series, the Sinclair QL, the Lynx, the Enterprise (brain child of David Levy who had a hand in the TI99/4A Video Chess module), and the little Jupiter Ace, the only home computer to be sold with a language other than Basic on board- Forth 79. There was no User Group representation for the New Brain or the Memotech or the Dragon- many users and some dealers changed to the U.K. produced Dragon after dropping the TI99/4A.

One stand was taken by a general supplier who purchased odd orphan products, and TIUG was able to purchase a box of assorted modules at not a lot more than a couple of pounds each, including a five pack of the Adventure module.

The show was well attended and had good refreshment facilities, but never became too crowded. The TI99/4A owning visitors seemed to have mostly heard of the show from their own groups. The hoped for swelling of membership as a result of the national publicity said to be provided by the organisers was not seen. Nevertheless, it was a rare meeting together of TI99/4A users, some of whom travelled very long distances indeed.

The organisers have booked the Bingley Hall, three miles from Stafford, for a two day show in 1989. Your reporter is not at all certain that the orphan groups and dealers can maintain a two day show, and the location is not known for its national shows- three miles from the nearest railway station and with bus services liable to cancellation instantly is not so good, and moving the show nearer the North - away from the more populous South East - is not usually a good thing for exhibitions. We shall see what happens next year!

EXCERPT FROM "GETTING STARTED WITH THE TI99/4A" BY STEPHEN SHAW.
ESPECIALLY FOR NEWER / YOUNGER CONSOLE OWNERS!!!! TI BASIC

We will look at the language in your console. There are a number of general
books now available on the BASIC language, and one or two of these may help you
if you experience difficulty in handling the language. Many evening classes are
also available.

For greater assistance this section will follow as closely as possible the
order of the TI Manual.

Do not try to take in all the information in one reading, but go back and read
it again a few times.

A computer works as a large number of switches, which are either on or off.
Each 'switch' is described as a BIT. In order to pass information more quickly,
the computer looks at more than one BIT at a time. The TI99/4A uses a 16 bit
processor: it is able to look at 16 bits at a time. For most purposes however,
the computer looks at 8 bits at a time. These are called BYTES.
A BYTE is a binary number composed of eight numbers, which may be 0 or 1. In
digital representation the BYTE has a maximum value of 255 (Binary 11111111).

The computer stores its commands (reserved words) as one byte, rather than a
collection of letters. It can only identify the command words if you follow the
rules regarding the characters permitted in front of and following command
words. In general, you may only use a space, arithmetic operator, or ENTER, but
there are exceptions which you will see in the program listings in the manual
and in the books of TI programs now available.

LIST
   The command LIST is used to list the contents of a program. Used on its
own,it will list the program on the screen. You may use CLEAR (FCTN & 4) to
halt the LIST. To start again at say line 400, you type in LIST 400- the hyphen
indicating 'to the end', or LIST 400-600
   LIST can also be used in many other ways. Later!

LET
   is optional, but uses up one byte of memory every time you use it. It is
better not to.
   LET A=2 is the same as A=2

END
   is also optional, but in this case it is good practice to use it. By adding
END to your program, you may be certain when you list it in the future, that
you have the complete program, and not a 'working copy'. (an unfinished
program saved from time to time to ensure all is not lost should the
electricity fail or baby brother pulls the plug out etc).

IF...THEN...ELSE
   TI BASIC may appear to be slightly limited in its use of IF...THEN compared
to some other computers. TI do however allow the ELSE alternative.
   The problem arises because TI insist that you use the construction only to
transfer to another line. You cannot add commands such as: IF X=B THEN B=C to
do this you need Extended Basic.
   However, TI BASIC does have 'relational operators' which will often help you
out of this problem. Later!
        [want more? write and ask me! stephen]

Back in Easter 1982 I borrowed an NTSC TI99/4 from TI for a couple of days to try out, and keyed in a Black Box program. Once I had my own console I rewrote it -once- and here it is. This program is authorised by Waddingtons and the inventor of the game, Dr Eric Solomon, subject to the early copyright notice remaining at all times- <u>do not</u> remove it! I have seen other versions of Black Box and they are all very much slower. Look at the display and accept routines! Examine the listing and see what you can do with TI Basic. Yes folks, TI BASIC! Stephen Shaw

```
110 DEF RAN(X)=INT(X*RND+1)
120 AC$="1041051061071081091
1011111211311611706606706806
907007107207307407507607 7"
130 GOSUB 3840
140 CALL CLEAR
150 DIM R1(32),R2(32),V1(32)
,V2(32)
160 RANDOMIZE

170 REM FOLLOWING TWO LINES
MUST* BE RETAINED
180 PRINT "BLACK BOX": : "TH
IS PROGRAMME IS BASED UPON T
HE GAME 'BLACK BOX'": "PUBLI
SHED BY WADDINGTONS"
190 PRINT "HOUSE OF GAMES
LEEDS": "& INVENTED BY": "DR
.ERIC SOLOMON": : "ALL RIGHT
S RESERVED": "USED BY PERMIS
SION"
200 RESTORE 270
210 FOR I=96 TO 121
220 READ A$
230 CALL CHAR(I,A$)
240 NEXT I
250 CALL HCHAR(4,28,120)
260 CALL HCHAR(5,28,121)
270 DATA 000000FF,101010FF10
101010,1010101010101010,1824
24247E428181,784444447848444
2,0,0,0
280 DATA FF818199998181FF,FF
999999999999FF,EE888888EE222
2EE
290 DATA 187E5A7E3C2424E7,FF
C3A59999A5C3FF,1824429999422
418
300 DATA FF81FF81FF8181FF,FF
9999FFFF9999FF,FF99FF8181424
224,E7848484848484E7,000000F
F,1010101010101010
310 DATA 00402010080402,0002
0408102040,0,0,FF80BE8888B88
0FF,017D417D057D01FF
```

```
320 REM LAST TWO=LOGO SJS
330 PRINT "DO YOU WANT INSTR
UCTIONS?": "PRESS Y OR N": :

340 CALL KEY(0,A,VR)
350 IF VR<1 THEN 340
360 IF A<>89 THEN 390
370 PRINT " ": : : "PLEASE W
AIT": : : :
380 GOTO 2990
390 IF A<>78 THEN 340
400 CALL CLEAR
410 GOSUB 3570
420 M$="HOW MANY ATOMS?(<10)
"
430 R=23
440 VR=3
450 GOSUB 2920
460 VR=24
470 GOSUB 2640
480 N=VAL(IN$)
490 IF (N<1)+(N>9) THEN 420
500 M$="ATOMS:"&STR$(N)
510 R=1
520 VR=3
530 GOSUB 2920
540 CALL HCHAR(23,1,32,32)

550 REM *** GAME CALCULATION

560 FOR J=0 TO 9
570 FOR I=0 TO 9
580 B(I,J)=0
590 NEXT I
600 NEXT J
610 FOR I=1 TO N
620 X=RAN(8)
630 Y=RAN(8)
640 IF B(X,Y)<>0 THEN 620
650 B(X,Y)=1
660 NEXT I
670 S=0
680 C=0
690 M$="RAY?      "
700 R=1
```

```
710 VR=24
720 GOSUB 2920
730 VR=28
740 GOSUB 2640
750 RY=VAL(IN$)
760 IF RY=0 THEN 1720
770 IF (RY<1)+(RY>32) THEN 6
90
780 ON INT((RY-1)/8)+1 GOTO
790,840,890,940
790 X=0
800 Y=RY
810 U=1
820 V=0
830 GOTO 980
840 X=RY-8
850 Y=9
860 U=0
870 V=-1
880 GOTO 980
890 X=9
900 Y=25-RY
910 U=-1
920 V=0
930 GOTO 980
940 X=33-RY
950 Y=0
960 U=0
970 V=1
980 X1=X+U
990 Y1=Y+V
1000 IF U<>0 THEN 1060
1010 X2=X1-1
1020 X3=X1+1
1030 Y2=Y1
1040 Y3=Y1
1050 GOTO 1100
1060 Y2=Y1-1
1070 Y3=Y1+1
1080 X2=X1
1090 X3=X1
```

CONTINUED
→

```
1100 ON 8*B(X1,Y1)+B(X2,Y2)+
2*B(X3,Y3)+1 GOTO 1220,1250,
1270,1250,1110,1110,1110,111
0,1110,1110,1110,1110,1110,1
110,1110,1110
1110 M$="ABSORBED"
1120 R=2
1130 VR=24
1140 CALL HCHAR(R1(RY),V1(RY
),32)
1150 CALL HCHAR(R2(RY),V2(RY
),99)
1160 GOSUB 2920
1170 S=S+1
1180 FOR XX=1 TO 600
1190 NEXT XX
1200 CALL HCHAR(2,24,32,8)
1210 GOTO 690
1220 X=X1
1230 Y=Y1
1240 GOTO 1340
1250 Z=1
1260 GOTO 1280
1270 Z=-1
1280 IF U<>0 THEN 1320
1290 U=Z
1300 V=0
1310 GOTO 1340
1320 U=0
1330 V=Z
1340 ON INT((X+15)/8) GOTO 1
380,1360,1400
1350 STOP
1360 ON INT((Y+15)/8) GOTO 1
420,980,1440
1370 STOP
1380 Z=Y
1390 GOTO 1450
1400 Z=25-Y
1410 GOTO 1450
1420 Z=33-X
1430 GOTO 1450
1440 Z=8+X
1450 IF Z<>RY THEN 1570
1460 M$="REFLECTED"
1470 CALL HCHAR(R1(RY),V1(RY
),32)
1480 CALL HCHAR(R2(RY),V2(RY
),100)
1490 R=2
1500 VR=24
1510 GOSUB 2920
1520 FOR XX=1 TO 800
1530 NEXT XX
1540 S=S+1
1550 CALL HCHAR(2,24,32,9)
1560 GOTO 690
1570 M$="TO "&STR$(Z)
1580 R=2
1590 VR=24
1600 GOSUB 2920
1610 FOR XX=1 TO 700
1620 NEXT XX
1630 S=S+2
1640 R=VAL(SEG$(AC$,1,3))
1650 CALL HCHAR(R1(RY),V1(RY
),32)
1660 CALL HCHAR(R2(RY),V2(RY
),R)
1670 CALL HCHAR(R1(Z),V1(Z),
32)
1680 CALL HCHAR(R2(Z),V2(Z),
R)
1690 AC$=SEG$(AC$,4,LEN(AC$)
-3)
1700 CALL HCHAR(2,24,32,8)
1710 GOTO 690
1720 FOR R=1 TO 32
1730 CALL GCHAR(R2(R),V2(R),
VR)
1740 CALL HCHAR(R1(R),V1(R),
32)
1750 IF R<9 THEN 1830
1760 IF (R<25)*(VR<60) THEN
1820
1770 IF R<25 THEN 1830
1780 IF VR>60 THEN 1830
1790 CALL HCHAR(R2(R),V2(R),
81-R)
1800 GOTO 1830
1810 IF R<9 THEN 1830
1820 CALL HCHAR(R2(R),V2(R),
32)
1830 NEXT R
1840 M$=" WHERE"
1850 R=1
1860 VR=24
1870 GOSUB 2920
1880 M$="ARE THE"
1890 R=2
1900 VR=24
1910 GOSUB 2920
1920 M$="ATOMS?"
1930 R=3
1940 VR=25
1950 GOSUB 2920
1960 M$="ATOM  "
1970 R=5
1980 VR=25
1990 GOSUB 2920
2000 M$="ROW: COL:"
2010 R=6
2020 VR=24
2030 GOSUB 2920
2040 FOR Q=1 TO N
2050 M$=STR$(Q)
2060 R=5
2070 VR=30
2080 GOSUB 2920
2090 R=Q+8
2100 VR=25
2110 GOSUB 2640
2120 CALL HCHAR(19,26,32,6)
2130 I=VAL(IN$)
2140 IF (I<1)+(I>8) THEN 209
0
2150 VR=30
2160 GOSUB 2640
2170 J=VAL(IN$)
2180 IF (J<1)+(J>8) THEN 215
0
2190 IF B(J,I)<>1 THEN 2200
ELSE 2220
2200 S=S+5
2210 GOTO 2240
2220 B(J,I)=2
2230 C=C+1
2240 NEXT Q
2250 FOR J=1 TO 8
2260 FOR I=1 TO 8
2270 IF B(I,J)<1 THEN 2310
2280 R=2*J+3
2290 VR=2*I+4
2300 CALL HCHAR(R,VR,42)
2310 NEXT I
2320 NEXT J
2330 M$=STR$(C)&" OUT OF "&S
TR$(N)&" CORRECT"
2340 R=23
2350 VR=3
2360 GOSUB 2920
2370 M$="SCORE "&STR$(S)&" P
OINTS   "
2380 R=1
2390 VR=3
2400 GOSUB 2920
2410 M$="ANOTHER"
2420 R=17
2430 VR=24
2440 GOSUB 2920
2450 M$="GAME?"
2460 R=18
```

```
2470 VR=24
2480 GOSUB 2920
2490 R=21
2500 VR=24
2510 M$="PRESS "
2520 GOSUB 2920
2530 M$="Y OR N "
2540 R=22
2550 VR=24
2560 GOSUB 2920
2570 CALL KEY(0,R,VR)
2580 IF VR<1 THEN 2570
2590 IF R=89 THEN 2620
2600 IF R<>78 THEN 2570
2610 STOP
2620 AC$="104105106107108109
110111112113116117066067068068
069070071072073074075076077"
2630 GOTO 400
2640 IN$=""

2650 REM ** INPUT **
2660 CALL HCHAR(22,27,32,4)
2670 CALL KEY(0,M,ZN)
2680 CALL HCHAR(R,VR,30)
2690 CALL HCHAR(R,VR,32)
2700 IF ZN<1 THEN 2670
2710 IF M=13 THEN 2820
2720 IF (M<47)+(M>57) THEN 2
670
2730 CALL HCHAR(R,VR,M)
2740 VR=VR+1
2750 IF VR<33 THEN 2790
2760 VR=32
2770 M=13
2780 GOTO 2820
2790 IF CHR$(M)="" THEN 2650
2800 IN$=IN$&CHR$(M)
2810 GOTO 2650
2820 IF IN$="" THEN 2650
2830 COL=VR
2840 ROW=R
2850 M$="WAIT"
2860 R=19
2870 VR=26
2880 GOSUB 2920
2890 R=ROW
2900 VR=COL
2910 RETURN
2920 CALL HCHAR(19,26,32,6)
2930 FOR CT=1 TO LEN(M$)
2940 CALL HCHAR(R,VR,ASC(SEG
$(M$,CT,1)))
2950 VR=VR+1
```

```
2960 NEXT CT
2970 CALL SOUND(200,700,0)
2980 RETURN

2990 REM *INSTRUCTIONS & DEM
O
3000 CALL CLEAR
3010 PRINT "BLACK BOX": : :
:

3020 REM
3030 PRINT "THIS PROGRAMME B
ASED ON ONE": "BY JEFF KENTO
N PUBLISHED IN": "CREATIVE C
OMPUTING (C)1978"
3040 PRINT "No longer publis
hed, alas!": " "
3050 PRINT "WRITTEN FOR 99/4
BY": "STEPHEN SHAW,10 ALSTO
NE RD": "STOCKPORT,CHESHIRE,
SK4 5AH"
3060 PRINT " ": "PRESS ANY K
EY TO CONTINUE"
3070 CALL HCHAR(1,28,120)
3080 CALL HCHAR(2,28,121)
3090 CALL KEY(0,R,VR)
3100 IF VR<1 THEN 3090
3110 CALL CLEAR
3120 CALL SCREEN(2)
3130 PRINT "YOU HAVE A BOX W
ITH 32": "WINDOWS. IT CONTAI
NS ATOMS": "YOU MUST LOCATE
THEM BY"
3140 PRINT "SHINING RAYS INT
O THE": "WINDOWS": "THE COMP
UTER WILL TELL YOU ": "IF TH
EY ARE ABSORBED,"
3150 PRINT "REFLECTED,OR DEF
LECTED": "(& WHERE TO).": "A
LOW SCORE BEATS ": "A HIGH
SCORE":
3160 PRINT "PRESS ANY KEY TO
CONTINUE"
3170 CALL SCREEN(4)
3180 CALL KEY(0,R,VR)
3190 IF VR<1 THEN 3180
3200 CALL CLEAR
3210 PRINT "THE NEXT DISPLAY
WILL": "ILLUSTRATE ATOMS (*
) AND": "RAYS.   ": "REMEMBE
R:"
3220 PRINT "IN PLAY ATOMS AN
D RAYS": "ARE INVISIBLE!"
```

```
3230 PRINT "A=ABSORBED": "R=
REFLECTED": : "TO ENTER GUES
SES,ENTER": "    RAY=0  (ZE
RO)"
3240 PRINT " ": "PRESS ANY
KEY TO CONTINUE"
3250 CALL HCHAR(1,28,120)
3260 CALL HCHAR(2,28,121)
3270 CALL KEY(0,R,VR)
3280 IF VR<1 THEN 3270
3290 CALL CLEAR
3300 GOSUB 3570
3310 RESTORE 3470
3320 FOR CT=1 TO 150
3330 READ R,VR,CODE
3340 IF R=1 THEN 3370
3350 CALL HCHAR(R,VR,CODE)
3360 NEXT CT
3370 R=23
3380 VR=3
3390 M$="PRESS ANY KEY TO CO
NTINUE"
3400 GOSUB 2920
3410 CALL KEY(0,R,VR)
3420 IF VR<1 THEN 3410
3430 CALL CLEAR
3440 RESTORE
3450 PRINT "BLACK BOX": : :
"PLEASE WAIT": : : : : : :
: : :
3460 GOTO 400
3470 DATA 5,10,115,7,10,116,
7,12,114,7,14,114
3480 DATA 7,16,117,5,16,115,
9,8,42,9,18,42,9,20,42
3490 DATA 15,12,42,15,14,42,
19,14,42,7,3,32,9,3,65,11,3,
32
3500 DATA 7,24,82,9,24,65,11
,24,82
3510 DATA 13,6,114,13,8,114,
13,10,117,11,10,117,11,12,11
4,11,14,114
3520 DATA 11,16,116,13,16,11
6,13,18,114,13,20,114
3530 DATA 17,6,114,17,8,114,
17,10,116,19,10,115
3540 DATA 17,20,114,17,18,11
4,17,16,114,17,24,82,1,1,32,
1,1,32
3550 STOP
3560 BREAK
```

```
3570 REM SET UP BOARD
3580 CALL CLEAR
3590 FOR R=4 TO 20 STEP 2
3600 FOR VR=6 TO 20 STEP 2
3610 CALL HCHAR(R,VR,96)
3620 CALL HCHAR(R,VR-1,97)
3630 IF R=4 THEN 3650
3640 CALL HCHAR(R-1,VR-1,98)
3650 NEXT VR
3660 NEXT R
3670 FOR R=4 TO 18 STEP 2
3680 CALL HCHAR(R,21,97)
3690 CALL HCHAR(R+1,21,98)
3700 NEXT R
3710 CALL HCHAR(20,21,97)
3720 FOR R=1 TO 32
3730 CODE=INT(R/10)+48
3740 IF CODE<>48 THEN 3760
3750 CODE=32
3760 CALL HCHAR(R1(R),V1(R),
CODE)
3770 CALL HCHAR(R2(R),V2(R),
R-10*INT(R/10)+48)
```

```
3780 NEXT R
3790 M$="PRESS ENTER AT END
OF ENTRY"
3800 R=24
3810 VR=3
3820 GOSUB 2920
3830 RETURN

3840 REM ARRAY R1 V1=TENS
3850 REM R2  V2 = UNITS
3860 PRINT " ": : : : : : :
: : "PLEASE WAIT": : : : : :
: : : : : : : : :
3870 RESTORE 3910
3880 FOR CT=1 TO 32
3890 READ R1(CT),R2(CT),V1(C
T),V2(CT)
3900 NEXT CT
3910 DATA 5,5,3,4,7,7,3,4,9,
9,3,4,11,11,3,4,13,13,3,4,15
,15,3,4,17,17,3,4,19,19,3,4
```

```
3920 DATA 21,22,6,6,21,22,8,
8,21,22,10,10,21,22,12,12,21
,22,14,14,21,22,16,16,21,22,
18,18,21,22,20,20
3930 DATA 19,19,22,23,17,17,
22,23,15,15,22,23,13,13,22,2
3,11,11,22,23,9,9,22,23,7,7,
22,23,5,5,22,23
3940 DATA 2,3,20,20,2,3,18,1
8,2,3,16,16,2,3,14,14,2,3,12
,12,2,3,10,10,2,3,8,8,2,3,6,
6
3950 CALL SCREEN(4)
3960 CALL COLOR(9,3,1)
3970 CALL COLOR(10,7,1)
3980 CALL COLOR(11,16,1)
3990 CALL CLEAR
4000 RESTORE
4010 RETURN
```


TI-CENTRONICS PARALLEL PRINTER CABLE SCHMATIC

80 TRACK DISK FORMAT EXPLAINED.
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[Some people have been] asking about the differences in the 80 track disk format, and, as I have not yet seen a full reply to the question, I will attempt to impart a tiny fragment of my great wisdom upon you <choke>.

The ONLY difference is in the bitmap table. The bitmap is NOT changed based on the number of tracks the disk has; rather, it is dependent on the number of sectors the disk has. If the disk has more than 1600 sectors, the bitmap is changed. For example, a SS/SD 80 track disk would have 720 sectors. Since this does not at all outstrip the capability of TI's bitmap, the bitmap remains normal.

Why the 1600 figure? <I sound like a school teacher> TI allocated 200 bytes for the sector bitmap (located in sector 0, in bytes 56-255, inclusive). Each byte contains 8 bits <this is the great wisdom I was to inpart to you?>. Each bit, of course, corresponds to one sector. 8 bits per byte times 200 byte = 1600 possible sectors.

The only way a disk will be more than 1600 sectors is if the disk is DS/DD, 80 tracks. It can be either 16 or 18 sectors per track. With 18 (the most common), the disk will have 2880 available sectors. With 16 sec/trk, the disk will have 2560 sectors available.

<Here comes the great wisdom part>... if the disk has over 1600 sectors, it will not fit. CorComp (in their 512K Memory Minus device) and MYARC (in the 80 track EPROM) went about this two·different ways. CorComp's design was, I believe, to put the rest of the sector bitmap in sector 2. I have never seen one of these, but I tend to recall someone telling me that. MYARC's design was quite different. Each bit in the sector bitmap now corresponds to two sectors. For example, suppose the least significant bit in the second byte of the bitmap is on. On a disk with 1600 sectors or less, that would indicate that sector 8 was used. On an 80 track disk, that would indicate that sectors 16 and 17 were used.

This method does have a minor drawback: each file has one or two wasted sectors. For example, the one line BASIC program 100 CALL CLEAR, when saved, will take up four sectors, as opposed to two on a normal (less than 1600 sectors) disk. First, the file header is stored in sector 2 (assuming we are saving a blank disk). Since the bit to mark sector 2 as used also covers sector 3, that sector becomes unuseable. Then, in sector 34, the one sector BASIC progrm is stored. Again, because of the bitmap, we must mark sector 35 as used, also, which accounts for the fourth used sector.

To detect a disk using the different bitmap, see if the total number of sectors (a word in sector 0, byte 10) is greater than 1600. Remember that it can be exactly 1600, which will keep the normal bitmap (for example, a MYARC RAM-disk partitioned for 400K will be 1600 sectors).

Everything else on the disk is normal. All the file pointers, cluster pointer, etc. remain identical to what they are on a standard disk.

By the way, don't think this too strange. The process of allocating two or more sectors to one bit in the bitmap is used all the time on IBM disk formats (as I discovered when writing PC-Transfer). It is known as "muliple sectors per AU". AU stands for "allocation unit" - another way of saying "a bit in the bitmap". A hard disk will use a very similar scheme, as far as having multiple sectors/AU. On a hard disk, however, the bitmap still takes up 31 sectors, and you can have anywhere from 1 sector per AU (i.e. what it is like on a normal disk) to (I think) 16 sec/AU. But that is a separate wisdom imparter unto itself.

I realize that I could have written this in about ten lines, but I'm feeling verbose. Besides, I have very little else to do. That's what you get for asking questions like that (this oughta teach 'em!).
    [from GEnie]

REPORTS AND REVIEWS   by Stephen Shaw

NOTE: The following is neither a review nor an endorsement!
It is the text of a product description issued by the publisher, and is
repeated here as an item of news.

BATCH-IT -a program by By Charles Earl & Tom Bentley

Asgard Software is very pleased to announce the release of Batch-It, by Charles
Earl (author of Telco) and Tom Bentley.
    Batch-It is a remarkable program that allows you to "program your programs",
and ultimately, do more on your computer with less work.

    Batch-It is a programming language that runs programs in a seperate area of
memory, outside of the area normally used by application software. These
programs can be used to monitor your applications, add features to them, move
data between two or more, do things to the application at a user command, and
even run them. Because of its unique design, Batch-It programs run at the same
time as your application does, with little discernable reduction in speed.
    The things you can do with Batch-It are really only limited to your
imagination. However, Batch-It can aid the following people:

    If you are a program user: Batch-It runs behind many popular application
programs, including Funnelweb, Telco, BA-Writer, DM1000, numerous databases,
drawing programs, and most program-image assembly programs ("E/A option 5
programs").
    Batch-It can be used to add macros to any of these programs (single
keystrokes which perform anywhere from a few dozen to a few-hundred commands),
make "help" screens for them, or make desk-accessory type programs that run
behind your application and pop-up at a given keystroke. Also, Batch-It
programs can run several applications in a row, be set to answer common
questions, and even take data from one application and put it in another (for
instance capture a TI-Writer screen and put it in Telco).

    Batch-It can even send any key command to these programs, in any order that
you like - including function key presses, cursor commands and control keys.
Batch-It supports variables, variable-testing, key scans, and routines that
allow you to look at a screen and capture part or all of its contents.
The technical stuff aside, what "real" stuff can it do for you? Well, you can
easily create a Batch-It program that sits behind TI-Writer, and on a key-press
saves the file you are currently working on (even have it ask you for the
filename), quits from the editor, loads the formatter, prints the file, and
then returns to the editor and loads your favorite template for the next letter
- all automatically and with no more effort then your initial key-press!

    You could create a Batch-It program that runs behind DM1000 and allows you
to make 100 copies of a disk simply by swapping the copy disks and pressing a
single key each time.
    You could create a Batch-It program for Telco that calls up your favorite
bulletin board, signs you in, takes you to the area that you want to go, and
downloads your messages, or new programs, or anything else you can think of.
    You probably have the idea by now.
    And because Batch-It programs can run other Batch-It programs, the only
limit to the capability and size of your Batch-It programs is your disk space.

For the Programmer: Batch-It makes any boring, repetitive programming task simple. In fact, it can almost be called the "Programmer's Apprentice". You can create batch programs that on the touch of a key compile, link and run hundreds of source files - whether you are using c99, Fortran 99 or assembly. You can create batch procedures to merge dozens of files, edit out the same bad piece of code that is in 20 files automatically, or do a global search and replace of a variable name in 50 source files, all automatically, and painlessly. Imagine pressing a single key to automatically save, compile, link, load and run your program, while you are away ordering pizza or picking up your favorite programmer fuel.

That isn't all, since Batch-It can send any keystroke from ASCII 0 to 255 to your program, you can easily create in a few hours a demo version of a program that would otherwise take you WEEKS to custom-write! Create a demo that automatically runs all the menus through their paces, inputs sample data and even prints out results while you are in the back counting your sales figures. Of course this applies to ANY program-image application (that uses a standard key scanning method that is), and not just your own.

Batch-It can even be used to patch your code for you automatically - change as little as 2 bytes and as much as you like.

To summarize, Batch-It is a remarkable program which makes other programs easier to use, and makes many tasks much lighter. It is an entirely unique program in the TI world, and there isn't anything quite like it anywhere else in the micro world.

The program includes a disk with example files, a thorough manual, and a limited free subscription to a user magazine, Key Notes, which features sample batch files, as well as articles on using Batch-It effectively.

The program requires a 99/4A with 32K, disk system, and either a Mini-Memory or Superspace/supercart module or GRAM device, or a Myarc Geneve 9640.

The retail cost is $19.95 plus carriage.

=======================================

PUBLISHERS ANNOUNCEMENT:
  PRESS RELEASE.
(You may not beleive this but Asgard are claiming PRESS as a Trade Mark. As required I have drawn this to your attention. Now my thoughts on the matter: silly,silly,silly.).

Asgard Software is pleased to introduce...something that will soon come to define "word processing" on the TI99/4A and Myarc Geneve 9640 - the program to which all others will be compared.

PRESS is the result of over a man-year of development by Charles Earl, Ruth O'Neill, Chris Bobbitt and dozens of others who have helped to define, implement, and test the next-generation word processor for the 99/4A. Starting from scratch, we examined the best word processors on PCs and other computers, and created a new word processor for the 4A that combined the best features of those other programs with the unique capabilities of the 99/4A.

        ....
We also designed a program that would take advantage of whatever hardware you have, including super-carts, RAM-disks, hard-drives, and 80 column displays. Yet it will run perfectly well on a TI99/4A plus 32k ram and one single disk drive.

Some of the major features are:

-The program will allow you to set a page width of up to 256 columns and define one or more newspaper style columns on the page, each with its own width. To format the text in columns, simply tell the program the page width, the number of columns on it, and start typing. At the end of one column it will automatically send you to the top of the next.

-The program is entirely "what you see is what you get" - in other words, you'll see right-justification, centering, indentation, bold text, underline, italics and other functions *on the screen* as it will appear on the page.
 You do not need to learn a code language or read a printer manual to produce a great looking page. There is no "formatter" in PRESS - all formatting is done on the screen as you type from options you select by pull down menus or short cut function key presses. Even page breaks are marked on the screen.

-Unlike any other editor for the TI99/4A or Geneve, the length of your document is limited only by the amount of disk space available. You can easily create or dit 90k, 180k or even 360k documents without breaking it up. If you have a hard rive you could create a 1000-page book all as a single document!

-A complete 100,000 word spelling checker is integrated into the program. To useit simply select a word, line or paragraph and tell it to check it. The program will tell you if there is a mis-spelling and the context it is in.

-The program supports the features of your printer. Simply select your printer type from a list and your printers features will be available within your documet and on the screen.

-The program WILL accept a standard TI Writer file. None of your documents have to be retyped to be used in PRESS.

-The program has many more features than can be listed: block operations that include column manipulation, multi-line headers and footers, footnotes, un-delete, a keyboard buffer so that yoj u never lose characters while typing, mail-merge and much more.

PRESS requires 32k, a disk drive, and either: Extended Basic, or Editor/Assembler.

It can utilize any 80 column card, most RAM-disks, an 8k or 32k Supercart, a hard-disk drive, any number of floppy drives, replacement keyboards, GRAM devices, and virtually any printer. It includes an extensive manual in a professonal binder and a limited subscription to a user magazine, PRESS REPORT.

Retail price is US$59.95 plus carriage.

This TI BASIC program was written for Computer and Video Games Magazine. It has since shown up in User Groups all over the world! Inspired by the many collapsing sewers of Manchester— where our museum now has a walk-in sewer with water sounds, smells and even a rat!

```
100 DEF V1=RND*10
110 DEF V2=RND*12
120 DEF F1=RND*290+110
130 DEF F2=RND*290+110
140 DEF TM=RND*500+300
150 DIM RT(2,80)
160 DEF FR=RND*100+400
170 S=30000
180 GOSUB 1930
190 CALL CLEAR

195 REM PRINT LINES MUST BE
ENTERED EXACTLY
196 REM AS SHOWN INCLUDING S
PACES FOR THIS
197 REM TO WORK OK! CHARACTE
R IS THE UNDERLINE
198 REM FCTN U
200 PRINT
210 PRINT " ----------------
--------"
220 PRINT " -  -   -  -  -
 -   -  -"
230 PRINT " -  -   ---------
 -   -  -"
240 PRINT " -  -   -
 -   -  -"
250 PRINT " ----------------
--------"
260 PRINT " -   -     -  -
    -   -"
270 PRINT " -   -     -  -
    -   -"
280 PRINT " -     -----------
----   -"
290 PRINT " -   -  -
 -  -   -"
300 PRINT " ----------------
--------"
310 PRINT " ----------------
--------"
320 PRINT " -     -  -
 -  -   -"
330 PRINT " -     -----------
----   -"
340 PRINT " -   -     -  -
     -  -"
350 PRINT " -   -     -  -
     -  -"
360 PRINT " ----------------
--------"
365 SCORE=1000
370 PRINT " -  -   -
 -   -  -"
380 PRINT " -  -   ---------

 -   -  -"
390 PRINT " -  -   -  -  -

 -   -  -"
400 PRINT " ----------------
--------"
410 PRINT
420 PRINT
430 CALL HCHAR(11,1,UTR,32)
440 CALL HCHAR(12,1,LTR,32)

450 REM ROAD MAP DRAWN
460 CALL COLOR(1,4,4)
470 CALL HCHAR(11,13,HOLE,6)
480 CALL HCHAR(12,13,HOLE,6)
490 CALL HCHAR(11,4,RD,9)
500 CALL HCHAR(12,4,RD,9)
510 CALL HCHAR(11,19,RD,9)
520 CALL HCHAR(12,19,RD,9)
530 A=1
540 ROW=11
550 COL=4
560 GOSUB 1520
570 A=2
580 ROW=12
590 COL=4
600 GOSUB 1520
610 CALL GCHAR(11,9,CDE)

620 REM CONTROL SECTION
630 CALL KEY(0,K,ST)
640 IF RND<.99 THEN 660
650 CALL SOUND(TM,F1,V1,F2,V
2)
660 CALL HCHAR(RR,RC,PLY)
670 CALL HCHAR(RR,RC,CDE)
680 IF ST=0 THEN 630
682 SCORE=SCORE-5
690 ON POS("ESDXR",CHR$(K),1
)+1 GOSUB 720,730,790,850,91
0,980
700 GOSUB 1190
710 GOTO 630
720 RETURN
730 CALL GCHAR(RR-1,RC,CD)
740 IF CD=32 THEN 780
750 RR=RR-1
760 CALL HCHAR(RR,RC,PLY)
770 CDE=CD
780 RETURN
790 CALL GCHAR(RR,RC-1,CD)
800 IF CD=32 THEN 780
810 RC=RC-1
820 CALL HCHAR(RR,RC,PLY)
```

```
830 CDE=CD
840 RETURN
850 CALL GCHAR(RR,RC+1,CD)
860 IF CD=32 THEN 840
870 RC=RC+1
880 CALL HCHAR(RR,RC,FLY)
890 CDE=CD
900 RETURN
910 CALL GCHAR(RR+1,RC,CD)
920 IF CD=32 THEN 900
930 RR=RR+1
940 CALL HCHAR(RR,RC,FLY)
950 CDE=CD
960 RETURN

970 REM REPAIR SECTION
980 IF (CDE<>HOLE)*(CDE<>REP
) THEN 1040
990 IF CDE=HOLE THEN 1000 EL
SE 1050
1000 CDE=REP
1010 FOR T=1 TO 10
1020 CALL SOUND(-199,S,30,S,
30,FR,30,-4,0)
1030 NEXT T
1040 RETURN
1050 IF CDE=REP THEN 1060 EL
SE 1040
1060 CDE=RD
1070 IF (RR=11)+(RR=12) THEN
 1080 ELSE 1040
1080 CALL HCHAR(RR,RC,CDE)
1090 FOR R=11 TO 12
1100 FOR C=3 TO 29
1110 CALL GCHAR(R,C,TEST)
1120 IF (TEST<>PLY)*(TEST<>R
D)*(TEST<>UTR)*(TEST<>LTR) T
HEN 1170
1130 NEXT C
1140 NEXT R

1150 REM WINNER***
1160 GOTO 2430
1170 RETURN

1180 REM DAMAGE
1190 C=INT(RND*22)+5
1200 R=INT(RND*20)+2
1210 CALL GCHAR(R,C,CD)
1220 IF (RR=R)*(RC=C) THEN 7
20
1230 IF (CD<>RD)*(CD<>UTR)*(
CD<>LTR) THEN 720
1240 IF RND>LEVEL THEN 720
```

```
1250 CALL HCHAR(R,C,HOLE)
1260 CALL SOUND(400,-8,0)
1270 IF (CD=UTR)+(CD=LTR) TH
EN 1290
1280 RETURN
1290 FOR T2=1 TO 4
1300 FOR T=1 TO 5
1310 CALL SOUND(-99,500+T*20
,T*4)
1320 NEXT T
1330 CALL SOUND(-99,250,12,2
66,10)
1340 NEXT T2
1350 IF CD=LTR THEN 1380
1360 A=1
1370 GOTO 1390
1380 A=2
1390 FOR T=1 TO NUMB(A)
1400 ROW=INT(RT(A,T)/32)
1410 COL=(RT(A,T)/32-ROW)*32

1420 CALL GCHAR(ROW,COL,CD)
1430 IF (CD<>LTR)*(CD<>UTR)
THEN 1450
1440 CALL HCHAR(ROW,COL,RD)
1450 NEXT T
1460 ROW=INT(RT(A,1)/32)
1470 COL=(RT(A,1)/32-ROW)*32

1480 CALL HCHAR(ROW,COL,PLY)
1490 GOSUB 1520
1500 RETURN

1510 REM ROUTE TRAFFIC
1520 NUMB(A)=0
1530 IF A=1 THEN 1570
1540 IF A<>2 THEN 1580
1550 TR=LTR
1560 GOTO 1580
1570 TR=UTR
1580 GOTO 1870
1590 CALL KEY(0,K,ST)
1600 CALL HCHAR(ROW,COL,PLY)
1610 CALL HCHAR(ROW,COL,TR)
1620 IF RND<.99 THEN 1640
1630 CALL SOUND(TM,F1,V1,F2,
V2)
1640 IF ST=0 THEN 1590
1650 CALL SOUND(100,110,4)
1660 ON POS("ESDX",CHR$(K),1
)+1 GOTO 1590,1670,1720,1820
,1770
1670 CALL GCHAR(ROW-1,COL,CD
)
```

```
1680 IF CD<>RD THEN 1590
1690 ROW=ROW-1
1700 CALL HCHAR(ROW,COL,TR)
1710 GOTO 1870
1720 CALL GCHAR(ROW,COL-1,CD
)
1730 IF CD<>RD THEN 1590
1740 COL=COL-1
1750 CALL HCHAR(ROW,COL,TR)
1760 GOTO 1870
1770 CALL GCHAR(ROW+1,COL,CD
)
1780 IF CD<>RD THEN 1590
1790 ROW=ROW+1
1800 CALL HCHAR(ROW,COL,TR)
1810 GOTO 1870
1820 CALL GCHAR(ROW,COL+1,CD
)
1830 IF CD<>RD THEN 1590
1840 COL=COL+1
1850 CALL HCHAR(ROW,COL,TR)
1860 GOTO 1870
1870 TOT=ROW*32+COL
1880 NUMB(A)=NUMB(A)+1
1890 RT(A,NUMB(A))=TOT
1900 IF (ROW=10+A)*(COL=27)
THEN 1920
1910 GOTO 1590
1920 RETURN
1930 CALL CLEAR
1940 PRINT "VICTORIAN SEWERS
": : "(C)1982 STEPHEN SHAW":
 :
1950 PRINT "YOU MUST KEEP TH
E CITY": "TRAFFIC FLOWING.":
 "DESPITE THE FREQUENT"
1960 PRINT "COLLAPSE OF SECTIONS
       OF ROADAS THE OLD SEWERS AT
      LAST   GIVE IN TO TIME."
1970 PRINT : : : "PRESS ENTE
R TO CONTINUE..."
1980 INPUT A$
1990 CALL CLEAR
2000 PRINT "A MAIN ROUTE RUN
S ACROSS THECENTRE OF THE  S
CREEN.": "A LARGE COLLAPSE T
AKES PLACE"
2010 PRINT "FIRST YOU MUST R
EROUTE EACH OF TWO LANES OF
TRAFFIC": "USING THE ARROW K
EYS:": "    E.S.D.& X."
2020 PRINT "YOUR ROUTE MUST
NOT CROSS    ANY OTHER ROUTE
NOR ANY": "DAMAGED SECTIONS.
"
2030 PRINT "PLAN YOUR ROUTE
BEFORE YOU   BEGIN AS CORRECT
IONS CANNOT BE MADE...": : :
2040 PRINT "PRESS ENTER TO C
ONTINUE..."
2050 INPUT A$
2060 CALL CLEAR
2070 PRINT "WHEN TWO LANES O
F TRAFFIC    HAVE BEEN ROUTED
 YOU ENTER   ANOTHER SECTION
OF PLAY."
2080 PRINT "YOU MUST MOVE YO
UR REPAIR    GANG (R) USING T
HE CURSOR    KEYS AND WHEN OV
ER DAMAGED   "
2090 PRINT "ROAD,REPAIR IT B
Y PRESSING   KEY 'R'."
2100 PRINT "IT TAKES TWO ENT
RIES TO      REPAIR EACH SECT
ION."
2110 PRINT "WHILE YOU ARE DO
ING THIS ": "OTHER SECTIONS
COLLAPSE.": "IF TRAFFIC FLOW
 IS HALTED,"
2120 PRINT "YOU MUST REROUTE
 THE TRAFFICBEFORE CONTINUIN
G THE REPAIR"
2130 PRINT "YOU WIN IF YOU C
AN RESTORE   THE MAIN ROAD."
2140 PRINT "YOU LOSE IF YOU
CANNOT": "RESTORE THE TRAFFI
C FLOW": "WHEN IT IS DISRUPT
ED.":
2150 PRINT "PRESS ENTER TO C
ONTINUE"
2160 INPUT A$
2170 CALL CLEAR
2180 PRINT "ENTER DIFFICULTY
 LEVEL:": "1.EASY": "2.MEDIO
CRE": "3.AVERAGE": "4.HARD":
 "5.VERY HARD": "6.INSANE"
2190 PRINT : :
2200 INPUT LEVEL
2210 IF LEVEL<0 THEN 2180
2220 IF LEVEL>6 THEN 2180
2230 LEVEL=LEVEL/7
2240 CALL CHAR(112,"FF818181
818181FF")
2250 CALL COLOR(11,10,12)
```

```
2260 CALL COLOR(8,15,15)
2270 CALL COLOR(10,16,16)
2280 RANDOMIZE
2290 HOLE=30
2300 REP=112
2310 RD=95
2320 UTR=104
2330 LTR=105
2340 PLY=82
2350 RR=11
2360 ROW=11
2370 COL=9
2380 RC=9
2390 CDE=RD
2400 RT(1,1)=11*32+4
2410 RT(2,1)=12*32+4
2420 RETURN

2430 REM *** WINNER ***
2440 CALL SOUND(600,300,0)
2450 PRINT "WELL DONE YOU MA
DE IT!"

2460 CALL COLOR(8,2,1)
2461 SCORE=INT(SCORE+LEVEL*3
00)
2462 PRINT " ";"SCORE=";SCOR
E
2463 IF SCORE<HISCORE THEN 2
468
2464 HISCORE=SCORE
2468 PRINT "BEST THIS SESSIO
N:": "   ";HISCORE : :
2470 PRINT "TO PLAY AGAIN PR
ESS ENTER"
2480 INPUT A$
2500 SCORE=0
2510 GOTO 170
2520 END
```

Well there you are! And the bottom of our road right now has a HUGE road closure sign indicating that our local sewers are about to be renovated — access to properties will be maintained "where possible". Hmmm! Enjoy.   Stephen Shaw

TI BITS ✱ Numbers 6 & 7
By Jim Swedlow

[This article originally appeared in the User Group of Orange County,
California ROM]
[Edited by S Shaw]

FORMATTING DISK TEXT FILES

This month we will explore further into using TI Writer and disk files as
output. Two simple utility programs accompany this article.

First, a bit about what the Text Formater does. If you include the command
".FI;AD", the Formatter will right justify your text (so both the right and
left columns are straight lines). When you save a file to disk from the
Editor, however, you have a "ragged right" (or not right justified). If you
want right justification on disk (and to use the other features of the
Formatter), all you do is specify a disk file name as the Print Devicename in
the Formatter.

There is a small hitch. Each and every line in the disk file will end in a
line feed <CHR$(10)>. Then if you print that file without adding ".LF" to the
printer name, your text will be double spaced. It will even be stranger if you
use underlining and bold face.

The reason is that the Formatter expects to output to a printer. Since line
feed and carriage return are about the only two universal printer command
codes, the folks who wrote TI Writer had to come up with a way to do bold face
and underline using only those two commands.

Here is what they did. Most printers will advance the print one line when they
receive a line feed and return the print head to the left column when fed a
carriage return.

To underline a word: print the line, execute a carriage return (so that the
print head goes back to the beginning of the same line) and print underline
characters (FCTN U) under the word to be underlined. Then send line feed and a
carriage return and start the next line. Bold face is similar except that TI
Writer prints the bold face word four times.

You add ".LF" to the printer name in the Formatter so that TI Writer can
control when line feeds are sent. All of this is fine for a printer but not
for a disk file.

If you are going to save your formatted text to disk, first do NOT use either
bold face or underline [if you want them use your printer commands rather than
the formatter commands, eg ESC G rather than @]. After you have run it thru
the Formatter, you must load the formatted file into the Editor and then save
it back to disk. Why? Well, if a line has 80 characters, the Formatter will
add an LF to the end making it 81 characters long. Then when a basic proram
attempts to read that line, it will lock your system up. By loading and saving
thru the editor, all lines are trimmed if they are over 80 characters long.
Use Print File to save the file so that the Editor will not add the tabs.

Then use the program LF STRIPPER (elsewhere in this issue) to strip the line feeds from the ends of the lines.

[If the text has no control codes that you wish to keep, you can strip ALL control codes, including LF and CR by using PF then C DSK1.FILENAME - that is a C in front of the disk filename, when renaming. This will remove all control codes and is much faster than using LF Stripper!]

```
100 ! LF STRIPPER
110 ! BY JIM SWEDLOW
120 ! OCTOBER 22, 1986
130 !
140 CALL CLEAR :: PRINT "Line Feed Strippe
r": :
150 INPUT "Old File:  DSK";A$ :: PRINT ::
INPUT "New File:  DSK";B$
160 PRINT :"Working"
170 OPEN #1:"DSK"&A$,INPUT :: OPEN #2:"DSK
"&B$,OUTPUT
180 IF EOF(1)THEN 220 ELSE LINPUT #1:A$
190 IF A$=CHR$(10)THEN PRINT #1:" " :: GOT
O 180
200 I=LEN(A$):: IF I=1 OR SEG$(A$,I,1)<>CH
R$(10)THEN I=I+1
210 PRINT #2:SEG$(A$,1,I-1):: GOTO 180
220 CLOSE #1 :: CLOSE #2 :: STOP
```
==============================

IF THEN IN XB

A number of the XB columns discussed alternatives to IF THEN. Here is another. Suppose that A$ depends on the value of I. You might use this code:

```
    IF I=1 THEN A$="FRED" ELSE A$="PAUL"
```

A simpler way is to use the SEG$ function:

```
    A$=SEG$("PAULFRED",1-4*(I=1),4)
```

Will this work if the two variables have different lengths? Yes. Remember that SEG$ does not produce an error if the length of the new string (the last number) is longer than the source string. If our two names are "PAUL" and "SAM", this works:

```
    A$=SEG$("PAULSAM",1-4*(I=1),4)
```
================================

ERROR TRAPPING AFTER RUN

The following will NOT work:

```
100 ON ERROR 200
110 RUN "DSK1.TEST"

. . . program continues

200 PRINT "TEST PROGRAM NOT FOUND"
210 PRINT "INSERT DISK IN DRIVE ONE"
220 PRINT "AND PRESS ANY KEY"
230 CALL KEY(0,K,S) ::
    IF S<1 THEN 230
240 RETURN 100
```


If you run this program with out a program called TEST in drive one, lines 200 thru 220 will print their message and then your program will fail in line 230 with 'SYNTAX ERROR IN 230'.

Why? As near as I can tell, when your TI executes the RUN part of RUN "DSK1.TEST", it clears memory including the variable table (think of it as 'un-pre-scanning' the program). The program and the line number table, however, remain.

When your TI tries to execute line 230, it looks for the variable table to find out where the values for S and K are stored. Finding none, the CPU decides that an error condition exists and ends the program.

What to do? One way is to add a disk directory reading routine to find out if the desired program is on the disk. This will significantly increase the time it takes to load the program, however.

Another way is to use RUN. This will recreate the variable table. Since you can specify the line number where program execution starts, you can control what happens. This works:

```
100 ON ERROR 200
110 RUN "DSK1.TEST"

. . . program continues
200 RUN 210
210 PRINT "TEST PROGRAM NOT FOUND"
220 PRINT "INSERT DISK IN DRIVE ONE"
230 PRINT "AND PRESS ANY KEY"
240 CALL KEY(0,K,S) ::
    IF S<1 THEN 240
250 GOTO 100
```

What about pre-scan? Even though you specified that program execution started at line 210, the entire program is pre-scanned. You must be careful, however, to return to a point in the program that will assure that all necessary variable initalization is completed.

Enjoy. _____

```
X   X   BBBB      # 10
 X X    B   B     # 11
  X     BBBB      By
 X X    B   B     Jim
X   X   BBBB      Swedlow
```
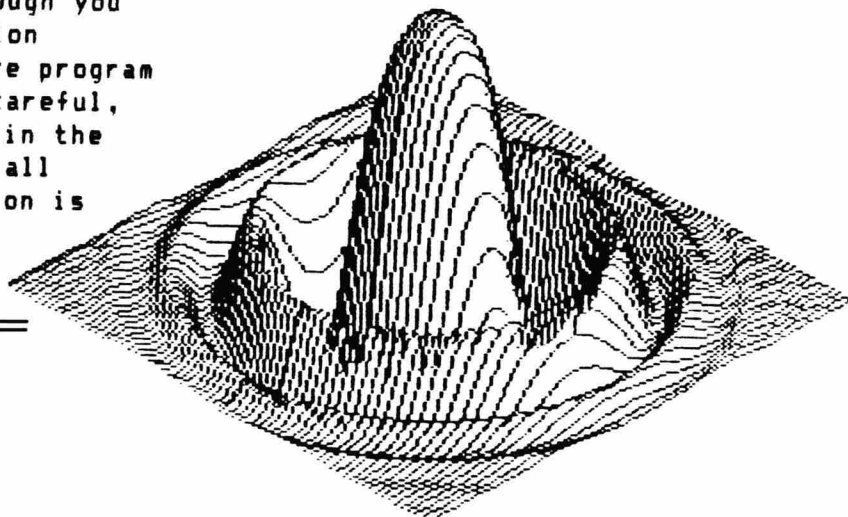
[This article originally appeared in the User Group of Orange County, California ROM]
[Edited by S Shaw]

IF THEN AGAIN

IF THEN is the most versatile command in extended basic.

Often you will use a variable as a flag. You set it to one value at the beginning of a program and then change it if something happens. Then, using IF THEN, you can tell if that 'something' happened and branch your program's operation accordingly.

When doing this, remember two things: First, during prescan, all numeric variables are set to zero. Second, the IF THEN test considers zero as false and all other values as true.

The variable that you are using as a flag, then, does not need to be given an initial value. Futher, any change to a non zero value would make it look like a true statement in an IF THEN test. If A is your flag you could do this:

    IF A THEN 220 ELSE 300

If the 'something' had not happened then A would still be zero, the IF test would be false and control would pass to line 300. If the 'something' had happened, A would not be zero, the IF test would be true and execution would branch to line 220.

This should help you simplify your IF THEN testing.

SPEED

You always hear how slow Basic and XB are when compared to assembly language. Alas, 'tis true. There are ways, however, to make your program run a bit faster. Consider this code:

    10 FOR I=1 TO 200
    20 B=3*I
    30 IF B>999 THEN 50
    40 NEXT I
    50 END

When you RUN this, your 99/4A notes that there are two variables and assigns memory space for each. Each time line 20 executes, the memory location for I is found and the value obtained and multiplied by three. Then the location of B is identified and this value stored there (the order of these steps may be a bit different but each step must happen).

Now look at this:

    10 FOR I=1 TO 200
    20 IF 3*I>999 THEN 40
    30 NEXT I
    40 END

Now there is only one variable and the number of steps is reduced. The result: running time drops from 3.80 seconds to 3.01 seconds and memory drops from 92 bytes to 69.

In this example time droped 21%. If there had been a PRINT command in the loop, running time would be 10 times higher and the time drop under 5%. The reason is that it takes a lot of time to print on your screen.

PRINT SEPARATORS

There are any number of ways to display text on your screen. In this and the next two items, I will cover some ideas that might help you. All of these will also work in BASIC except where noted.

31

Suppose that you want to display menu choices at screen lines 5, 7, 9 and 11.
You could use four DISPLAY commands:

```
DISPLAY AT(5,1):"FIRST LINE"
DISPLAY AT(7,1):"SECOND LINE"
DISPLAY AT(9,1):"THIRD LINE"
DISPLAY AT(11,1):"FOURTH LINE"
```

Anothr way to do this is to combine your DISPLAY's into one command:

```
DISPLAY AT(5,1):"FIRST LINE": :
"SECOND LINE": :"THIRD LINE": :
"FOURTH LINE"
```

Note that the print separator between lines is : :. I have seen (and used)
:"":. The double quote was inserted to tell the computer to display a blank
line. This is not necessary, : : works just as well and uses less memory. In
XB you must type a space between the colons or your 4A will think that you are
inputting a line separator.

This also works with PRINT statements in both BASIC and XB.
==========================
PROMPTS FOR INPUT

You have probably used a prompt with the INPUT command like:

```
INPUT "INPUT NAME":N$
```

The limitations here are frustrating. You can't use a string variable, if you
want to leave blank line then you must use a lot of spaces, etc, etc.
Sometimes I use a PRINT statement for the prompt and then follow with INPUT.
By accident I discovered that INPUT respects any trailing print separator on
the preceding PRINT command:

```
PRINT A$;TAB(20);
INPUT B$
```

The INPUT ? will appear at the 20th column.

PRINTING STRINGS

If you are printing two strings, you would normally use a semi-colon (;)
between them. When you do this, your 99/4A looks at the current location on
the screen and the length of the next print item. If it is longer than the
space left on the current line, the string starts at the beginning of the next
line.

This can result in annoying blanks in your right hand margin. There is another
way:

```
PRINT A$&B$
```

Regardless of the length of A$, B$ will start in the next empty column. This
may or may not give you the result you wanted, but it does give you options.
==========================

End of article by Jim Swedlow

from Stephen Shaw:

SECOND THOUGHTS ON TI PLANNER (aka TI CALC) from DATABIOTICS.

Following on from my earlier fairly good review, more serious use of the module
(I did say I was definitely using it!) has revealed two further bugs which
users must know about.
In putting together a long spreadsheet, a small period of slight panic was
caused when the module filled the disk (any size disk!) and reported that it
could not save the spread.
   Try loading.... no problem. Loaded... well, imperfectly... somewhat
corrupted.
Many hours later, the precise nature of the problems comes to light, and now I
am once more a very happy and satisfied user of this easy to use and reasonably
fast spread sheet module.
First bug: Filling the storage medium! (Whatever its size).
   This is caused by placing anything on line W. Actually, if you only place
something in cell W01 and leave the rest of line W blank, you merely have a
corrupted spread! Anywhere else on line W and your storage medium will be
filled and you will be told the save failed.
   In practice you may be able to load your data back in, delete all contents in
line W, and carry on.
   SO: Lesson 1: Never use Line W.
   (It may be unrelated, but Control W is used to change the size of an EMPTY
spread sheet. Pure coincidence. Is it ?)

Second bug:
   When writing a long basic program, you save it from time to time to protect
yourself against lockouts! (After the first lock out you do anyway).
   If you do this with TI Planner, you could find yourself with a hopelessly
corrupted spreadsheet unless defensive action is taken.
   When saving to disk with 32k attached, the user may select from a spreadsheet
measuring 50x50, 40x63, or 35 x 72.

   If you start with a 50x50 spread, the FIRST time you save it, it is saved
properly as a 50x50 spread. The next save will be 40x63, and the next will be
35x72. (Your screen will keep on telling you you have a 50x50 spread, it's
only when you reload you find a different sheet size and corrupted formulae and
possibly lost data.)
   If you start with a sheet measuring 35 x 72, the first save will be a correct
35 x 72, the second save will be 50x50 and the third save will be 40x63.

   Examining the disk files, it is apparent that the first word is a flag which
signals the sheet measurements. Apparently as you SAVE a sheet, an internal
flag is incremented, and from then on your spreadsheet thinks it is a different
size... UNLESS you reset the (register?) by reloading the sheet.

SO: Lesson 2: Everytime you save- to disk OR cassette, if you wish to do any
more work on the sheet, immediately RELOAD it!

These two defensive actions are now taken here, and no additional problems have
been found. The spreadsheet works like a charm.
Further examining the files created by the module seems to show that EVERY time
you save, the data is saved three times- once in each format, with the current
actual format first. Upon reloading however, only the first format is read.
This is especially noticeable when using cassette, as the save may occupy a
count of 15 on your tape indicator, but the load will terminate on a count of
five!
Tape users may wish to note that 102 cells save to tape (in the UK) in about
four minutes.
   STEPHEN SHAW NOVEMBER 1988

TIPS FROM THE TIGERCUB

#48 & #49
(EDITED BY S SHAW)

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TIGERCUB SOFTWARE
156 Collingwood Ave.
Columbus, OH 43213

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Over 120 original programs in Basic and Extended Basic, available on cassette or disk, NOW REDUCED TO JUST $1.00 EACH!, plus $4.00 per order for cassette or disk and PP&M. Minimum order of $10.00. Cassette programs will not be available after my present stock of blanks is exhausted. The Handy Dandy series, and Color Programming Tutor, are no longer available on cassette. Descriptive catalogs, while they last, $1.00 which is deductable from your first order.

Tigercub Full Disk Collections, reduced to $5 postpaid. Each of these contains either 5 or 6 of my regular catalog programs, and the remaining disk space has been filled with some of the best public domain programs of the same category. I am NOT selling public domain programs — they are a free bonus!
TIGERCUB'S BEST, PROGRAMMING TUTOR, PROGRAMMER'S UTILITIES, BRAIN GAMES, BRAIN TEASERS, BRAIN BUSTERS!, MANEUVERING GAMES, ACTION GAMES, REFLEX AND CONCENTRATION, TWO-PLAYER GAMES, KID GAMES, MORE GAMES, WORD GAMES, ELEMENTARY MATH, MID-DLE/HIGH SCHOOL MATH, VOCABULARY AND READING, MUSICAL EDUCATION, KALEIDOSCOPES AND DISPLAYS

NUTS & BOLTS DISKS

These are full disks of 100 or more utility subprograms in MERGE format, which you can merge into your own programs and use, almost like having another hundred CALLs available in Extended Basic. Each is accompanied by printed documentation giving an example of the use of each. NUTS & BOLTS (No. 1) has 100 subprograms, a tutorial on using them, and 5 pp. documentation. NUTS & BOLTS No. 2 has 108 subprograms, 10 pp. of documentation. NUTS & BOLTS #3 has 140 subprograms and 11 pp. of documentation. NOW JUST $15 EACH, POSTPAID.

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These are full disks which contain the programs and routines from the Tips from the Tigercub newsletters, in ready-to-run program format, plus text files of tips and instructions.
TIPS (Vol. 1) contains 50 original programs and files from Tips newsletters No. 1 through No. 14. TIPS VOL. 2 contains over 60 programs and files from Nos. 15 thru 24. TIPS VOL. 3 has another 62 from Nos. 25 through 32. TIPS VOL. 4 has 48 more from issues No. 33 through 41.
NOW JUST $10 EACH, POSTPAID.

```
*******************************
*        NOW READY            *
* TIPS FROM TIGERCUB VOL.5 *
* Another 49 programs and     *
* files from issues No. 42 *
* through 50. Also $10 ppd *
*******************************
```

TIGERCUB CARE DISKS #1,#2,#3 and #4. Full disks of text files (printer required).
No. 1 contains the Tips news letters #42 thru #45, etc. Nos. 2 and 3 have articles

mostly on Extended Basic programming. No. 4 contains Tips newsletters Nos. 46-52. These were prepared for user group newsletter editors but are available to anyone else for $5 each postpaid.

If you have ever used TRACE to debug a program, you know that it won't dump to a printer, and that it messes up the screen format. The new Super Extended Basic, or the Gram Kracker, will dump to the printer, but you still won't know what is going on line by line or within multiple-statement lines. Now, Supertrace will break the program into single-statement lines and TRACE each statement in the corner of the screen, or dump it to the printer, or both — and you can also pause at any time, or step through line by line.

```
100 GOTO 140
110 SET,C$,END$,Z$,E$,K$,S$,
K,S,IF$,OF$,Q$,FL,TL,M$,LN,L
N2,P,T,LN$,A$,R,P$,QQ,PD$,KC
,KC$
120 CALL CHAR :: CALL CLEAR
:: CALL COLOR :: CALL SCREEN
:: CALL KEY :: CALL SOUND
130 !@P-
140 CALL CHAR(94,"3C4299A1A1
99423C"):: CALL CLEAR :: FOR
SET=1 TO 14 :: CALL COLOR(S
ET,13,15):: NEXT SET :: CALL
SCREEN(13)
150 C$=CHR$(157)&CHR$(200)&C
HR$(1)&"A"&CHR$(183)&CHR$(20
0):: END$=CHR$(255)&CHR$(255
):: Z$=CHR$(131)&CHR$(147)&C
HR$(154)&CHR$(163)
160 E$=CHR$(0):: K$=CHR$(182
):: S$=CHR$(130)
170 DISPLAY AT(2,5)ERASE ALL
:"TIGERCUB SUPERTRACE": :"^
Tigercub Software for free":
"distribution but no price o
rcopying fee may be charged.
" !programmed by Jim Peterso
n 1/88
180 DISPLAY AT(8,1):" Howeve
r, if anyone should feel mo
ved to send me a few bucks f
```

or the use of this program , I would not be":"offended!
"
```
190 DISPLAY AT(15,1):"Jim Pe
terson":"156 Collingwood Ave
.":"Columbus, OH 43213"
200 DISPLAY AT(23,8):"PRESS
ANY KEY" :: DISPLAY AT(23,8)
:"press any key" :: CALL KEY
(0,K,S):: IF S=0 THEN 200
210 DISPLAY AT(2,1)ERASE ALL
:" Will break each program":
"line into single statement"
:"lines, unless they contain
"
220 DISPLAY AT(5,1):"an IF,
and add a CALL to a":"subpro
gram which will":"display ea
ch line number in":"the corn
er of the screen as"
230 DISPLAY AT(9,1):"it is b
eing executed, or":"will out
put it to a printer."
240 DISPLAY AT(13,1):" Progr
am must first be -": :"RESeq
uenced to greater in-":"crem
ents than the number"
250 DISPLAY AT(17,1):"of sta
tements in any one":"line. (
recommend RES 100,20)": :"an
d SAVEd by":" SAVE DSK(file
name),MERGE"
270 DISPLAY AT(23,8):"PRESS
ANY KEY" :: DISPLAY AT(23,8)
:"press any key" :: CALL KEY
(0,K,S):: IF S=0 THEN 270
310 DISPLAY AT(23,8):"PRESS
ANY KEY" :: DISPLAY AT(23,8)
:"press any key" :: CALL KEY
(0,K,S):: IF S=0 THEN 310 EL
SE CALL CLEAR
320 DISPLAY AT(3,1):"INPUT F
ILENAME?":"DSK" :: ACCEPT AT
(4,4):IF$ :: ON ERROR 330 ::
OPEN #1:"DSK"&IF$,INPUT ::
GOTO 340
330 CALL SOUND(300,110,0,-4,
0):: DISPLAY AT(6,1):"CANNOT
OPEN FILE!" :: RETURN 320
340 DISPLAY AT(6,1):"OUTPUT
FILENAME?":"DSK" :: ACCEPT A
T(7,4):OF$ :: ON ERROR 350 :
: OPEN #2:"DSK"&OF$,VARIABLE
163,OUTPUT :: ON ERROR STOP
:: GOTO 355
350 CALL SOUND(300,110,0,-4,
0):: DISPLAY AT(9,1):"CANNOT
OPEN FILE!" :: RETURN 340
355 DISPLAY AT(9,1):" Progra
ms of more than 50":"sectors
```

```
in length may become":"too
long to run if you break":"a
nd trace all lines."
360 DISPLAY AT(15,1):"Break
all lines? (Y/N)" :: ACCEPT
AT(15,24)SIZE(1)VALIDATE("YN
"):Q$ :: IF Q$="Y" THEN 390
370 DISPLAY AT(17,1):"From l
ine?" :: ACCEPT AT(17,12)VAL
IDATE(DIGIT):FL
380 DISPLAY AT(17,18):"To?"
:: ACCEPT AT(17,22):TL
390 DISPLAY AT(15,1):"TRACE
to 1":"":" (1) Screen":" (2)
 Printer":" (3) Both" :: ACC
EPT AT(15,10)SIZE(-1)VALIDAT
E("123"):QQ :: IF QQ=1 THEN
405
400 DISPLAY AT(21,1):"Printe
r? PIO" :: ACCEPT AT(21,10)S
IZE(-18):PD$
405 DISPLAY AT(3,1)ERASE ALL
:" Key code 1 allows the pro
-":"gram to run until you ho
ld":"down any key. It will b
e"
406 DISPLAY AT(6,1):"difficu
lt to execute CALL":"KEYs in
 the program.":"":" Key code
 2 requires a key":"to be pr
essed to execute"
407 DISPLAY AT(11,1):"each p
rogram line. You can":"step
through the program":"line b
y line, but this may":"be ve
ry slow if all lines"
408 DISPLAY AT(15,1):"are be
ing traced.":"":" Key code 3
 does not allow":"stopping t
he program."
409 DISPLAY AT(20,1):"Key co
de? 1" :: ACCEPT AT(20,11)SI
ZE(-1)VALIDATE("123"):KC410
IF KC=1 THEN KC$=CHR$(191)&C
HR$(192)&CHR$(200)&CHR$(1)&"
0" ELSE KC$=CHR$(191)&CHR$(2
00)&CHR$(1)&"1"
411 DISPLAY AT(12,7)ERASE AL
L:"Working line"
420 LINPUT #1:M$ :: IF M$=EN
D$ THEN 570
430 LN=ASC(SEG$(M$,1,1))*256
+ASC(SEG$(M$,2,1)):: IF Q$="
Y" THEN 440 :: IF LN<FL OR L
N>TL THEN PRINT #2:M$ :: GOT
O 420
440 IF LN>LN2 THEN 460
450 DISPLAY AT(12,1)ERASE AL
L BEEP:"ERROR! RESEQUENCE PR
OGRAM TO":"GREATER INCREMENT
```

```
S AND TRY":"AGAIN." :: CLOSE
 #1 :: CLOSE #2 :: STOP
460 LN2=LN :: IF POS(Z$,SEG$
(M$,3,1),1)<>0 THEN PRINT #2
:M$ :: DISPLAY AT(12,19):LN
:: GOTO 420
470 P=POS(M$,S$,3):: T=POS(M
$,CHR$(161),3):: IF T=0 THEN
 500
480 IF P=0 THEN PRINT #2:SEG
$(M$,1,LEN(M$)-1)&S$&C$&CHR$
(LEN(STR$(LN)))&STR$(LN)&K$&
E$ :: DISPLAY AT(12,19):LN :
: GOTO 420
490 PRINT #2:SEG$(M$,1,P)&C$
&CHR$(LEN(STR$(LN)))&STR$(LN
)&K$&E$ :: DISPLAY AT(12,19)
:LN :: LN=LN+1 :: GOSUB 690
:: M$=LN$&SEG$(M$,P+1,255)::
 GOTO 430
500 IF P=0 THEN PRINT #2:SEG
$(M$,1,2)&C$&CHR$(LEN(STR$(L
N)))&STR$(LN)&K$&S$&SEG$(M$,
3,255):: DISPLAY AT(12,19):L
N :: GOTO 420
510 A$=SEG$(M$,1,P-1):: R=PO
S(A$,CHR$(132),3):: S=POS(A$
,CHR$(201),3)
520 IF R=0 THEN GOSUB 750 ::
 GOTO 560
530 IF S=0 AND R<>0 THEN GOS
UB 700 :: GOTO 420
540 IF S<>0 THEN IF S-R<3 TH
EN GOSUB 750 :: GOTO 560
550 GOSUB 700 :: GOTO 420
560 LN=LN+1 :: LN2=LN :: GOS
UB 690 :: M$=LN$&SEG$(M$,P+1
,255):: P=POS(M$,S$,3):: GOT
O 500
570 LN=29999 :: GOSUB 690 ::
 PRINT #2:LN$&CHR$(131)&CHR$
(64)&CHR$(80)&CHR$(43)&CHR$(
0)
580 LN=30000 :: GOSUB 690 ::
 PRINT #2:LN$&CHR$(161)&CHR$
(200)&CHR$(1)&"A"&CHR$(183)&
"X"&K$&E$ :: IF QQ=1 THEN 63
0
590 LN=30001 :: GOSUB 690 ::
 P$=LN$&CHR$(132)&"F"&CHR$(1
90)&CHR$(200)&CHR$(1)&"0"&CH
R$(176)&CHR$(159)&CHR$(253)&
CHR$(200)&CHR$(3)&"250"
600 P$=P$&CHR$(181)&CHR$(199
)&CHR$(LEN(PD$))&PD$&CHR$(13
0)&"F"&CHR$(190)&CHR$(200)&C
HR$(1)&"1"&S$&CHR$(156)&CHR$
(253)&CHR$(200)&CHR$(3)&"250
"&CHR$(181)&CHR$(214)
610 P$=P$&CHR$(183)&CHR$(200
```

```
)&CHR$(2)&"27"&K$&CHR$(184)&
CHR$(199)&CHR$(1)&"N"&CHR$(1
84)&CHR$(214)&CHR$(183)&CHR$
(200)&CHR$(1)&"6"&K$&E$ :: P
RINT #2:P$
620 LN=30002 :: GOSUB 690 ::
  PRINT #2:LN$&CHR$(156)&CHR$
(253)&CHR$(200)&CHR$(3)&"250
"&CHR$(181)&"X"&CHR$(180)&E$
630 IF QQ=2 THEN 650
640 LN=30003 :: GOSUB 690 ::
  PRINT #2:LN$&CHR$(162)&CHR$
(240)&CHR$(183)&CHR$(200)&CH
R$(2)&"24"&CHR$(179)&CHR$(20
0)&CHR$(1)&"1"&K$&CHR$(181)&
"X"&CHR$(180)&E$
645 IF KC=3 THEN 670
650 LN=30004 :: GOSUB 690 ::
  P$=LN$&CHR$(157)&CHR$(200)&
CHR$(3)&"KEY"&CHR$(183)&CHR$
(200)&CHR$(1)&"0"&CHR$(179)&
"K"&CHR$(179)&"S"&K$
660 P$=P$&CHR$(130)&CHR$(132
)&"S"&KC$&CHR$(176)&CHR$(201
)&CHR$(INT(LN/256))&CHR$(LN-
256*INT(LN/256))&E$ :: PRINT
 #2:P$
670 LN=30005 :: GOSUB 690 ::
  PRINT #2:LN$&CHR$(168)&CHR$
(0):: PRINT #2:CHR$(255)&CHR
$(255)
680 CLOSE #1 :: CLOSE #2 ::
DISPLAY AT(12,1)ERASE ALL:"E
nter NEW": :"Then Enter":"
MERGE DSK"&OF$ :: END
690 LN$=CHR$(INT(LN/256))&CH
R$(LN-256*INT(LN/256)):: RET
URN
700 IF LEN(M$)>150 THEN 720
:: PRINT #2:SEG$(M$,1,2)&C$&
CHR$(LEN(STR$(LN)))&STR$(LN)
&K$&S$&SEG$(M$,3,255)
710 DISPLAY AT(12,19):LN ::
RETURN
720 PRINT #2:SEG$(M$,1,2)&C$
&CHR$(LEN(STR$(LN+1)))&STR$(
LN+1)&K$&E$
730 DISPLAY AT(12,19):LN
740 LN=LN+1 :: PRINT #2:CHR$
(INT(LN/256))&CHR$(LN-256*IN
T(LN/256))&SEG$(M$,3,255)::
DISPLAY AT(12,19):LN :: LN2=
LN :: RETURN
750 PRINT #2:SEG$(A$,1,2)&C$
&CHR$(LEN(STR$(LN)))&STR$(LN
)&K$&S$&SEG$(A$,3,255)&E$ ::
  DISPLAY AT(12,19):LN :: RET
URN
```

============================

This "tinygram" might give

you a surprise. SAVE it
BEFORE you run it.

```
100 CALL CLEAR :: CALL KEY(3
,K,S):: ON BREAK NEXT ! by J
im Peterson
110 DIM CH$(26):: FOR J=1 TO
 26 :: CALL CHARPAT(J+64,CH$
(J)):: NEXT J :: FOR J=1 TO
26 :: CALL CHAR(J+64,CH$(27-
J)):: NEXT J
120 DISPLAY AT(3,8):"MZNV ZM
ZOBAVI":"":"GSRH KILTIZN DRO
O ZMZOBAV   BLFI MZNV."
130 INPUT "BLFI MZNV? ":M$ :
: CALL SOUND(200,110,0,-4,0)
:: X=X+1 :: IF X<2 THEN 130
140 DISPLAY AT(12,1):"ZMZOBH
RH - ":"":"VRGSVI BLF XZM'G
HKVOO BLFI LDM MZNV LI MLYLW
B XZM      KILMLFMXV RG."
150 GOTO 150
```

============================

Here's another tinygram that
might help you editors who
reformat my Tips to wider
column widths.

```
100 DISPLAY AT(3,6)ERASE ALL
:"TIGERCUB UNFILLER":"":" To
 remove extra spaces from":"
a TI-Writer text which has":
"been Filled and Adjusted by
"
110 DISPLAY AT(8,1):"the For
matter, prior to":"reformatt
ing.":" It will, however, al
so":"remove paragraph indent
a-":"tions and other intende
d":"spacings."
120 DISPLAY AT(15,1):"Input
file? DSK" :: ACCEPT AT(15,1
6):IF$ :: OPEN #1:"DSK"&IF$,
INPUT
130 DISPLAY AT(17,1):"Output
 file? DSK" :: ACCEPT AT(17,
17):OF$ :: OPEN #2:"DSK"&OF$
140 LINPUT #1:M$
150 X=POS(M$," ",1):: IF X=
0 THEN PRINT #2:M$ :: GOTO 1
70
160 M$=SEG$(M$,1,X)&SEG$(M$,
X+2,255):: GOTO 150
170 IF EOF(1)<>1 THEN 140 ::
 CLOSE #1 :: CLOSE #2
```

============================

Here's another tinygram -

```
100 CALL CLEAR :: CALL CHAR(
```

```
47,"000000007C")::  DISPLAY A
T(2,1):"TIGERCUB ONE-FINGER
FIGURER"
110 DISPLAY AT(4,1):"  Add an
d subtract with one":"finger
 while the other hand keeps
track in a column -   you ca
n type the minus sign withou
t the shift key!"
120 ACCEPT AT(12,10)VALIDATE
(NUMERIC,"/"):A$ :: ON ERROR
 130 :: A=VAL(A$):: GOTO 150
130 ON ERROR 140 :: A=-VAL(S
EG$(A$,2,255)):: RETURN 150
140 CALL SOUND(100,110,5,-4,
5):: DISPLAY AT(18,1):"ERRON
EOUS INPUT!" :: RETURN 120
150 T=T+A :: DISPLAY AT(18,1
):"Total is";T :: GOTO 120
160 DISPLAY AT(18,1):"Total
is";T
```

========================

The new Super Extended Basic
offers CALL KEY input with
validation. Now you can have
it too. This subprogram will
accept only one of the char-
acters listed, ABCD in this
case, and the value returned
in K will be the position of
the input in the validation
string.

```
100 CALL KEYVAL(K,"ABCD")::
PRINT SEG$("ABCD",K,1):: GOT
O 100
10000 SUB KEYVAL(K,V$)
10001 CALL KEY(0,K,S):: IF S
=0 THEN 10001 :: K=POS(V$,CH
R$(K),1):: IF K=0 THEN CALL
```

```
SOUND(200,110,5,-4,5):: GOTO
 10001
10002 SUBEND
```

========================

CALL FLASH(L,R,C,T,K)where L
is the number of DATA items,
R and C are DISPLAY row and
column, T is the flashing
speed and J is the number of
the item selected, will dis-
play options alternately un-
til a key is pressed.

```
100 DATA FCTN 7=AID,FCTN 8=S
TART OVER,FCTN 4=QUIT
110 CALL CLEAR :: CALL FLASH
(3,1,8,15,J):: ON J GOTO 120
,130,140
120 PRINT "AID" :: STOP
130 PRINT "START OVER"::STOP
140 PRINT "QUIT"
10000 SUB FLASH(L,R,C,T,J)::
 FOR J=1 TO L :: READ M$(J):
: NEXT J :: J=1
10001 DISPLAY AT(R,C):M$(J):
: FOR A=1 TO T :: CALL KEY(0
,K,S)
10002 IF S<>0 THEN SUBEXIT
10003 NEXT A :: J=J+1+(J=L)*
L :: GOTO 10001
10004 SUBEND
```

MEMORY FULL......

Jim Peterson
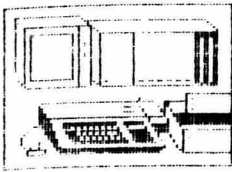
T I U G

CASSETTE PORT CONTROL

by Peter Walker

In the last issue of TI✳MES Mike Goddard reprinted an item about controlling the cassette motor ON/OFF ports, which he then used to control a robot. Some of you will have seen the robot in operation at the Aston Show. This reminded me of a similar program I wrote many years ago. I was asked how one could control the cassette from a program so that music could be played at certain parts of a game program. The following Assembler program does this. Each time it is called from ExBas it toggles the cassette No 1 on and off. When it goes off it also cuts the sound port to your TV/Monitor to give a clean break. On restarting, it delays the enabling of the sound port until the cassette has had time to get up to its proper speed.

```
          DEF   CASCON
R11SAV BSS   2
WRKSPC BSS   32
GPLWS  EQU   >83E0
STATUS EQU   >837C
*
CASCON MOV   R11,@R11SAV   SAVE R11
          LWPI  WRKSPC
          LI    12,>002C      LOAD R12 BASE FOR CS1 CONTROL
          TB    0             IS CS1 ON?
          JEQ   ON
          SBO   0             SWITCH ON MOTOR
          LI    1,>7000       SET DELAY=28672
DELAY  DEC   1
          JNE   DELAY
          SBZ   2             ENABLE AUDIO
          JMP   OUT
ON        SBO   2             KILL AUDIO
          SBZ   0             SWITCH OFF MOTOR
OUT      CLR   0
          MOVB  R0,@STATUS
          LWPI  GPLWS
          MOV   @R11SAV,R11   RESTORE R11
          RT
          END
```

To demonstrate this program, write a program like this:

```
100 CALL INIT::CALL LOAD("DSK1.CAS/OBJ")
110 CALL KEY(3,K,V)::IF V-1 THEN 110
120 CALL LINK("CASCON")::GOTO 110
```

Each time a key is pressed, the cassette is turned on or off.

Alternatively you may wish to try the following version where the Assembler is pre-defined as CALL LOADs.

```
100 CALL INIT
110 CALL LOAD(16376,67,65,83
,67,79,78,37,22)
120 CALL LOAD(8194,37,72,63,
248)
130 CALL LOAD(9460,6,28,0,0,
0,0,0,0,0,0,0,0,203,20,203,5
3,203,78,203,231,204,71)
140 CALL LOAD(9482,204,150,2
04,228,0,44,205,75,205,96,33
,131,200,11,36,244,2,224,36,
246,2,12)
```

```
150 CALL LOAD(9504,0,44,31,0
,19,7,29,0,2,1,112,0,6,1,22,
254,30,2,16,2,29,2)
160 CALL LOAD(9526,30,0,4,19
2,216,0,131,124,2,224,131,22
4,194,224,36,244,4,91,73,221
)
170 CALL KEY(3,K,V):: IF V-1
  THEN 170
180 CALL LINK("CASCON"):: GO
TO 170
```

Making the joystick UP work regardless of ALPHA lock (addendum)

ALAN BAILEY WRITES

Consoles with keyboards by HITEK:

GEOFFREY'S DIODE *

When I dismantled the console to fit the above, & connectors for a couple of footswitches for Shift & Function, I found my keyboard is by HITEK. This has bare wire jumpers in the tracks from some of the bottom edge keys, where they cross the 'east-west' tracks just over half-way up the board. One of them is the connection from the Alpha-Lock switch to the keyboard connector socket. Just replace this jumper with the diode, anode towards the socket side of the connection of course, & you do not have to cut anything!

Alan Bailey

* original article in Issue 18, page 52
Addendum for keyboard made by Futaba see Issue 20 p50

ON THE SUBJECT OF EXPANSION   by Mike Goddard

I receive many letters from people asking how to expand their system and
the easiest way of going about it. Well the obvious and quickest way is to
buy a secondhand expansion system and plug it in. Simple, eh? But there are
those of us who for various reasons either don't have vast amounts of the
clinking stuff or are perverse enough to want to do it themselves.

Probably the "essential" start to any expansion is a 32K memory which gives
access to much of the "disk" software available on tape, which includes
module software, etc.

Next I think would come a disk drive system either standalone or PEB,
although many don't realize a PEB drive controller can be used as a
standalone with a separate power supply.

Then must come a printer interface, again these are easiest obtained in
a PEB, but Dave Hewitt's parallel interface is available in kit form or
ready-built, and there are still several of the small Alphacon printers
about which have their own interface.

As you will see from the above there are several possibilities. I've listed
them in what I consider the order of usefulness although many' will decide
their own priorities. None of the sections of a full system depends
on each other to operate. However, it is desirable to have a 32K memory
with a disk drive for example.

The other point which I found quite heartening was the discovery at the
Alternative Micro Show of a firm called Capri Marketing Ltd which is run
by Richard and S ue Gandy, who are active TI hardware and software
wholesalers and the module library was much enlarged by coming into
contact with them. Richard has promised to keep in touch with us so things
could look a little better in the future.

If anybody has any queries about expansion please get in touch because if
I haven't got the answer I probably know someone who has.

[Retyped and reformatted 2022
due to light original print]

Mike

Dave Hewitt writes:

FROM ROMOX TO RAMOX. convert your romox to 8K battery backed static RAM.

This short article is to describe my recent work in converting a ROMOX cartridge to battery backed 8K static RAM and to describe possible uses for it.

The device I used is a 6264LP-15 which is 8K by 8 bit cmos static ram, the same as used in the matchbox 32K memory expansion, chosen because it is pin compatable with the eprom that it is replacing.

The first step (obviously) is to open the case and carefully desolder the eprom and remove it. In it's place fit a 28 pin DIL socket. The ram will fit here but don't plug it in yet.

You now have to do four modifications to the existing circuit to modify the unit for use with ram. The first and less obvious is to break the link between the module connector pins 1 and 29. This disables the reset when the module is inserted which is esential to use it as described later.

The second mod is to the ram read/write line (pin27). Break the existing connection to pin 27 and fit the switch and pull up resistor as shown. When the switch is closed the device can be read or written but when the switch is open can only be read. This is required since it is likely that a glitch on this line during module insertion or removal will corrupt the data stored. The normal way of using the module is to close the switch to enable writing only when programming it and to otherwise leave the switch open. It is esential to open the switch before inserting or removing the module or before powering down the computer. I used a small toggle switch and mounted it on the left of the sloping part of the module case but it was a tight squeeze. A small slide switch would be a better choice.

The third mod is simply to fit a pull up resistor to the chip select line (pin 20) to ensure it always remains high when the module is removed. This is esential for correct battery backup operation.

Lastly the power supply to the ram needs to be modified. The supply is fed via two diodes. Normally when connected to the computer it is powered from it's supply but when it is removed or the computer switched off the battery will take over and retain the data. This means the battery voltage must be less than 5 Volts but greater than 3 Volts. The battery that I use is a Duracell TR134N which is a 4 cell mercury battery. With one cell removed this gives 4 Volts which is ideal. The only drawback is that this battery is to large to fit within the module so must be mounted externally. Alternatively you could use one of the very small lithium batteries available which will probably fit inside the module. Standby current consumption is only a few microamps so battery life should be many years.

The diagrams show the modified parts of the circuit as they were and after the modifications and a partial layout of the PCB is given showing how I performed the modifications.

With these modifications complete you can now plug the 6264 into it's socket.

Okay we now have 8K battery backed ram in a module. What use is it?

The main use I have for my RAMOX is for loading Funnelweb. The observent among you will notice that with the Funnelweb package there is a utility program called CTRAM. The documentation given on this program is minimal but esentially what it does is to copy your version of funnelweb into cartridge ram including the appropriate headers to enable it to then be subsequently loaded from the module.

The procedure to load your RAMOX with Funnelweb requires a bit of luck and is as follows: Firstly load Funnelweb from the Editor/Assembler module. Exercise the quick directory function and user list menu to ensure that all utilities are loaded. Then carefully remove the Editor/Assembler cartridge. If the wind is behind you the computer will still be running (if it crashes, hard luck, start again!). Now carefully insert the RAMOX module (now you see why we need to disable the reset line) If you are still in luck the computer will still be running. Ensure the write protect switch on the RAMOX is closed. Select the LOADERS menu then option 4 LOAD/RUN. Enter DSK1.CTRAM for the program name then sit back and wait. The program will auto run, copy Funnelweb into cartridge ram and return to the main title screen. Open the RAMOX write protect switch and press any key. If everything is working you now have Funnelweb as option 2. Press 2 and after a short pause you will be asked which drive the Funnelweb disk is in with a default of drive 1 offered. Once you have pressed Enter to this question Funnelweb will function as normal.

Just to give you some idea of what happens when you load Funnelweb from RAMOX, it appears to simply copy it's module version into CPU RAM at the normal load address and then run it from there. This explains the slight pause before the question. You can in fact remove the RAMOX once Funnelweb is running.

Now provided you always leave the write protect switch open you can treat your RAMOX as a normal module and have Funnelweb instantly available, No more waiting for loaders!.

This so far is the only use I have put my RAMOX to. It of course should be possible for you to modify any program to load from RAMOX. The stumbling block here is that the module requires a particular header block at the start of it which I assume gives certain information such as program name, Start address etc probably in much the same way as the header block in the DSR rom's. Unfortunately I have never seen this information documented so I have been unable to continue my work. It is my intention to try and find a way of copying c99 programs onto RAMOX and so make a plea that if anybody knows the format of the module header please tell us all about it, or failing that tell me!.

There is one more development that logically follows the RAMOX. Although I have not tried it yet, by making a suitable adapter from the cartridge edge connector to a 28 pin header, it should be possible to read data from a programmed RAMOX into an eprom programmer as if it were a master prom and then connect a blank ROMOX with the same adapter and program it's eprom. Thus you should end up with Funnelweb (or whatever) on ROMOX with absolutely no fears about data retention in RAM.

I will be pleased to answer any queries on this subject and would be particularly interested to hear what uses you find for your RAMOX.

Dave Hewitt.

CIRCUIT DIAGRAMS

BEFORE

o 26
o 28

19

o 20

34

o 27

25

RESET
LINK

1   21

AFTER

o 26
o 28

D2   D1

19

BATTERY
3-5V

+
0V

R1

o 20

34

R2

o 27

WRITE
PROTECT
SWITCH

32
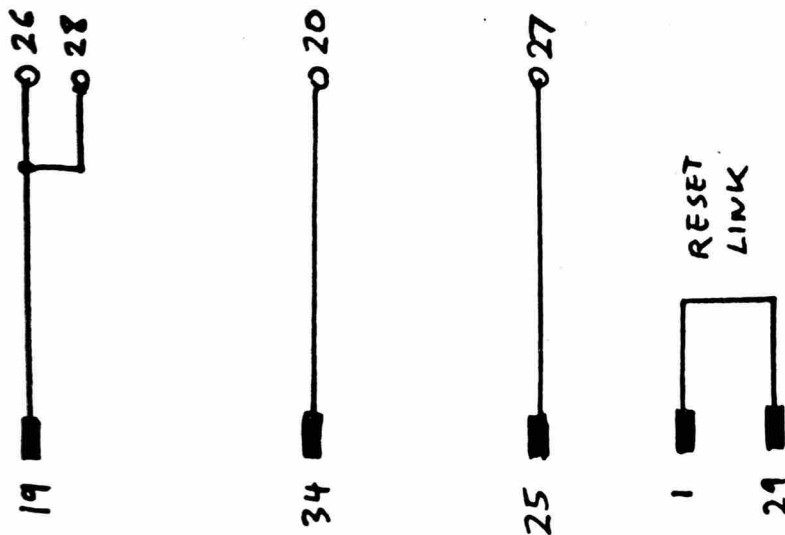
D1, D2 = 1N916

R1, R2 = 47 kΩ

■ DENOTES EDGE CONNECTOR PIN

O DENOTES EPROM / RAM PIN

BOTTOM VIEW OF PCB SHOWING MODIFICATIONS (NOT ALL TRACKS SHOWN)

LIST OF BOOKS FOR THE TI-99/4A.

by Mike Wright. Version 29-Jun-88.

From The Boston Computer Society - Jul 88 (Part 1)
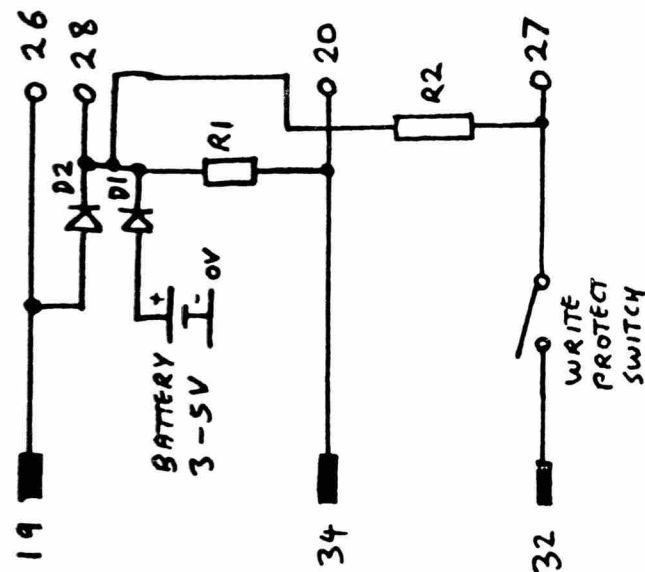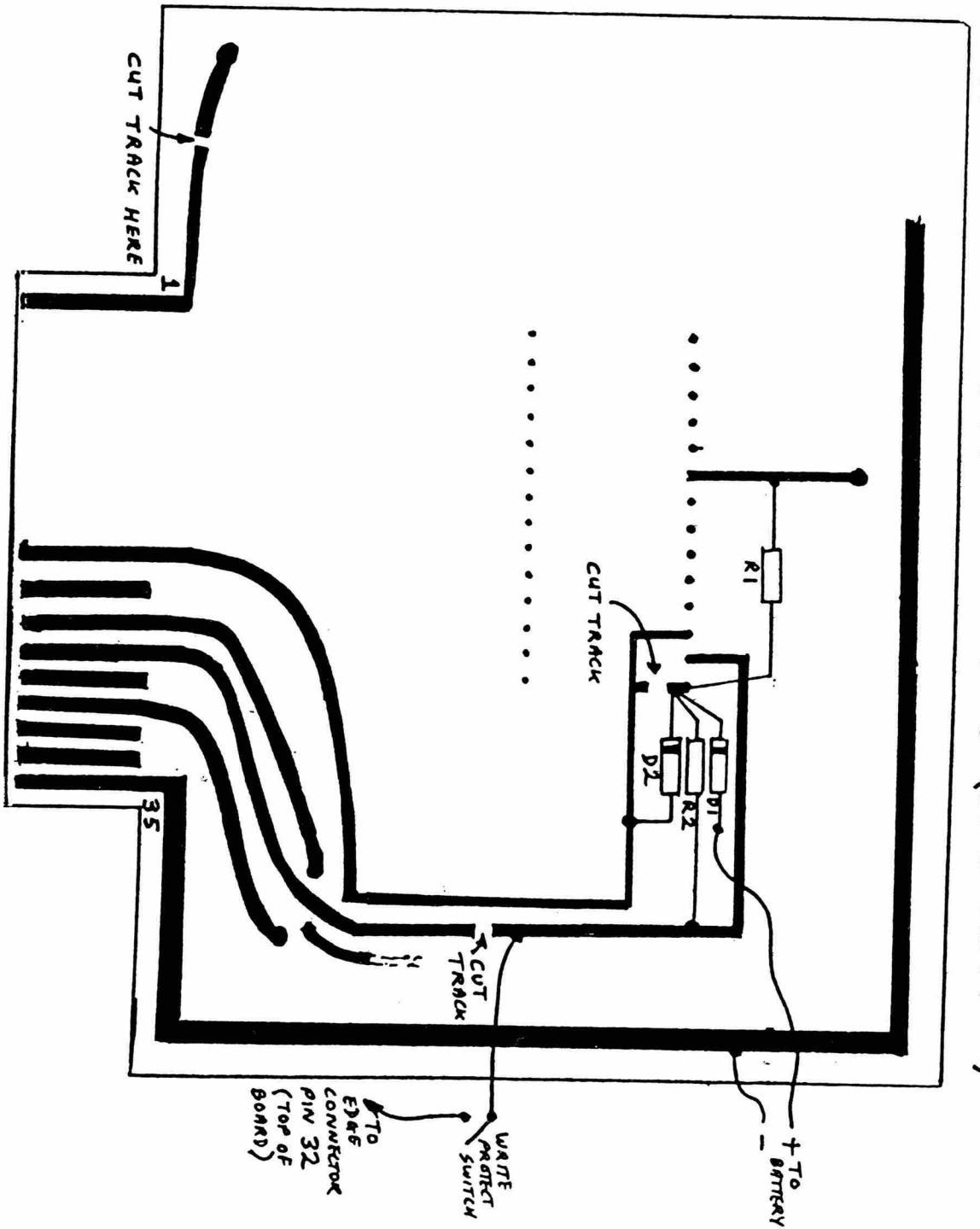
Supplement to the BCS TI-99/4A User Group July 1988 meeting newsletter.

A "book" is considered to be something that is typeset, printed (not photocopied) and published. A manual supplied with a cartridge — such as the TI Extended Basic manual — or with a device — such as the RS232 manual — is not considered a "book" for this listing, even though it contains valuable information. However, manuals such as the Terminal Emulator Protocol Manual, which were not generally available, are considered to be "books".

This list is based on the one published by Barry Traver in Genial Traveler 1.2. It has been expanded with titles published or "discovered" since then. The portions extracted from Traveler are published by permission of Barry Traver.

An entry consists of: the book title, the author(s), the publisher, and year of publication. Then follows a short description of the contents of the book with, sometimes, an evaluation that tries to be as objective as possible.

An entry that consists of just the title (and perhaps the publisher) has usually been taken from a catalog. The actual title may not be 100 per cent accurate, but is included for completeness.

If you come across any errors or omissions please write to me care of the BCS so that the list can be kept up to date.

1, 2, 3, My Computer and Me by Donna Bearden. Prentice-Hall, 1983. Though not just for the TI, this "Logo funbook for kids" contains an appendix on "editing features for Apple Logo, MIT Logo, and TI Logo".

32 Basic Programs for the TI-99/4A by Tom Rugg and others. dilithium Press, 1984. Programs include applications, education, games, graphics display, and mathematics. 30 programs in TI Basic, 2 in TI Extended Basic. The programs can be ordered on disk or cassette.

33 Programs for the TI-99/4A by Brian Flynn. Compute! Publications, 1984. Although this book contains a few games, including a version of "Chomp" called "Vanilla Cookie", it is primarily concerned with programs that are mathematically-oriented, including money management and business programs, curve-fitting routines, matrix manipulations, statistics, and numerical analysis, all in Extended Basic.

36 Texas Instruments TI-99/4A Programs for Home, School and Office by Len Turner. ARCsoft, 1983. Many other books on this list contain a much better selection of programs in TI Basic.

101 Programming Tips and Tricks for the Texas Instruments TI-99/4A Home Computer by Len Turner. ARCsoft Publications, 1983. An unimpressive book carried in many bookstores.

Academic TI (see The Academic TI).

Basic Programs for Small Computers by C. Regena. Compute! Publications, 1984. Although this book contains "things to do in 4K or less" for other computers (notably the Vic-20 and TRS-80), it also contains programs in TI in TI Basic for the TI-99/4A.

Basic TIPS by AMLIST by Terrance K. Castle. AMLIST, 1983. An unexpectedly fine book, even though it restricts itself essentially to TI Basic. Its greatest strength is that it teaches not merely TI Basic, but principles of good programming practice in general, unlike most books otherwise similar.

Basic Tricks for the TI-99/4A by Allen Wyatt. Howard W. Sams, 1984. Available with optional program cassette. A good collection of 28 useful subroutines dealing with selective input, rounding, dollars and cents, report formatting, time and dates, upper and lower cases, sorting, and menus.

Computer Art and Animation: A User's Guide to TI-99/4A Color Logo by David D. Thornburg. Addison-Wesley Publishing Company, 1984. This book is also an introduction to TI Logo, more general in content than the title might suggest.

Computerfacts. Sams, April 1984. Includes schematics and picture foldouts showing component placement on the 4A main board. Contains a complete parts list with optional replacement components, disassembly instructions, and hints on troubleshooting. There are also adjustment procedures and diagrams of the required oscilloscope waveforms.

Computer Playground on the TI-99/4A by Mary Jean Winter. A colorful collection of TI Basic computer activities intended for children in grades 2 through 6. Adapted for the TI-99/4A by Marcia Carrozzo.

Compute!'s Beginner's Guide to Assembly Language on the TI-99/4A by Peter M.L. Lottrup. Compute! Publications, 1985. Although oriented toward Mini-Memory, this book is excellent for beginners, with very clear explanations and lots of short but useful program examples.

Compute!'s First Book of TI Games by C. Regena. Compute! Publications, 1983. 29 games for the TI-99/4A, mostly in TI Basic, but including 7 in TI Extended Basic, including the excellent "Mystery Spell" and "Mosaic Puzzle".

Compute!'s Guide to Extended Basic Home Applications on the TI-99/4A by Christopher Flynn. Compute! Publications, 1984. An excellent book containing data file management utilities, bar graph programs, an electronic card file, an appointment calendar, and two electronic spreadsheets. Flynn's programs always allow data to be saved on either tape or disk.

Compute!'s Guide to TI-99/4A Sound and Graphics by Raymond J. Herold. Compute! Publications, 1984. A fairly good guide to sound, graphics, and speech synthesis on the TI-99/4A (including coverage of TI's text-to-speech diskette). Of the games, "Alphabet Invasion" and "Slot Machine" are done quite well.

Compute!'s TI Collection: Volume One. Compute! Publications, 1984. A worthwhile collection of "over 30 TI-99/4A games, applications, utilities, and tutorials – most never before published", including a word processor, a data base management system, an electronic spreadsheet, some games, helpful programming tricks, and a super graphics program called "SuperFont".

Cracking the 99/4A by Brian Prothro.

Creating Arcade Games on the TI-99/4A by Seth McEvoy. Compute! Publications, 1984. With the exception of one chapter devoted to TI Extended Basic, this book tells "how to" write arcade games in TI Basic, and includes eight finished games.

Creative Programming for Young Minds... on the TI-99/4A. Four volumes: Volume 1, Volume II, Volume III, Yellow All Stars. Creative Programming, 1981-1982. Hands-on instruction in TI Basic (plus some small later reference to TI Extended Basic). This series – like Carlson's *Kids and the TI-99/4A* — is "not just for kids".

Data and File Management for the TI-99/4A by John P. Grillo, J.D. Robertson and Henry M. Zbyszynski.

Wm. C. Brown, 1984. "Includes 48 programs to give the more advanced user techniques for information management". All programs are in TI Extended Basic, and many make use of disk. Topics included: pointers, sorting, strings, linear and linked lists, sequential access files, direct access files, trees, and inverted files.

Easy programming with the TI-99/4A by Richard Guenette and James Vogel. Birkhauser Boston, 1984. An introductory text that has little to distinguish it.

Entertainment Games in TI Basic and Extended Basic by Khoa Ton and Quyen Ton. Howard W. Sams, 1984. Available with optional program cassette. A very fine program collection; "Frogger"-lookalike "Home Bound" is excellent. Book also contains a few non-game programs, e.g., "Address Inventory" and "Auto Sprite Editor".

Financial Analysis on TI Computers by Joseph and Susan Berk. Chilton Book Company.

Free Software for Your TI-99/4A by David Heller and Dorothy Heller. Enrich Div./Ohaus, 1984. Although the information is not always entirely accurate, this book (now somewhat dated) contains much information not readily available elsewhere.

Fundamentals of TI-99/4A Assembly Language by M.S. Morley. TAB Books, 1984. A good book for those who have the Mini-Memory cartridge but not the Editor/Assembler.

Fun to program your TI-99 series by Speed Walker, Pinnacle, 1984. A small book printed on cheap paper that contains many cartoons but nothing of substance.

Games TIs Play by Scott L. Singer and Tony E. Bartels. DATAMOST, 1983. 32 TI Basic game programs based on the book Games Apples Play by Mark James Capella and Michael D. Weinstock. (Programs are available on disk.)

Get Personal with your TI-99/4A by William A. Manning and Lon Ingalsbe. dilithium Press, 1984. A fairly comprehensive introduction to programming in TI Basic with many short example listings.

Hardware Manual for the Texas Instruments 99/4A Home Computer by Michael L. Bunyard. The Bunyard Group, 1986. A complete reference to all hardware aspects of the 4A. Includes sections on the TMS 9900 processor, the PE Box, and all TI manufactured cards. The author is a former senior member of the technical staff of TI.

List of Books for the TI-99/4A

How to build your own working 16-bit microcomputer by Ken Tracton. TAB, 1979. Although not strictly for the TI-99/4A, this book covers the fundamentals of the TMS 9900 processor. At the time of its introduction the TMS 9900 was considered to be the most advanced single-chip processor available.

How to feel at home with a home computer by Garry G. Bitter and Roger S. Walker. Texas Instruments, 1983. This is probably as good an introduction as there is to the Home Computer. It is well presented and full of informative pictures and diagrams. Unfortunately for TI this first-class book was published after they pulled out of the home computer market.

How to use the TI-99/4A Computer by Bill Brewer and Jerry Willis. dilithium Press, 1984. A good introductory book with many useful half-tone illustrations, including all the ill-fated Hex-Bus peripherals.

Introducing Logo: For the Apple II Computer, Texas Instruments 99/4A, and Tandy Color Computer by Peter Ross. Ross comments that "TI Logo differs from Terrapin Logo and Apple Logo in several important ways... The main difference is that TI Logo has 'sprites' and 'tiles' as well as the turtle". TI Logo II also has music. Ross' book is useful, but perhaps unspectacular.

Introduction to Assembly Language for the TI Home Computer by Ralph Molesworth. Steve Davis Publishing, 1983. Primarily for use with the Editor/Assembler, but also can be used with Mini-Memory.

Introduction to Graphics for the TI-99/4A by John P. Grillo, J.D. Robertson and Terry F. Zbyszynski. Wm. C. Brown, 1984. Includes 38 programs in TI Extended Basic, some making use of disk, BUT note this comment by the authors: "In this book, we have limited our discussion to low-resolution graphics only. We do not discuss the color, sound, joystick, and lightpen features of this fine machine. We hope to cover these topics in a subsequent book".

Introduction to TI Basic by Don Inman, Ramon Zamora and Bob Albrecht. Hayden Book Company, 1980. A straight-forward textbook on TI Basic which does not go far beyond the two manuals supplied with the TI-99/4A.

I speak Basic to my TI-99/4A by Aubrey B. Jones. Hayden, 1984. This book claims to be a "field-tested computer literacy course that introduces students to

Basic language programming". It is a large book set in large type that largely covers the information in the User's Reference Manual.

Itty Bitty Bytes of Space.

Kids and the TI 99/4A by Edward H. Carslon. Reston Publishing, 1982. This book is truly "not just for kids", but one of the best introductions to learning how to program in TI Basic.

Learning TI-99/4A Home Computer Assembly Language Programming by Ira McComic. Wordware, 1984. A good book for beginners who have the Editor/Assembler but no previous experience in assembly language.

Learning with Logo. McGraw-Hill, 1983 by Daniel Watt. Although mainly concerned with Terrapin/Krell Logo and secondarily with TI Logo, this is one of the best and most comprehensive books on Logo presently available.

Micronova's Home Computer Directory for the TI-99/4A. Micronova, 1983. A useful book when it first appeared, although some of the information is now significantly dated.

Night Mission by Craig G. Miller. Millers Graphics, 1985. Although usually sold as a game (plus instructions), this is really a 90-page book (plus cassette), similar to the Sams "combo" packs. Here the author provides not only extremely full documentation and detailed explanation of a nice arcade-style XB game, but also other worthwhile programming material (e.g., "The Power of AND" plus many useful CALL PEEKs and CALL LOADs).

Numerical Analysis with the TI.

Orphan Survival Handbook by Dr. Ron Albright. Disk Only Software, 1987. A collection of articles extracted from user group newsletters and organized into sections on Basic, Assembly, c99, Forth, Pascal and Pilot, Hardware, Telecommunications, and TI Writer.

Programmer's Reference Guide to the TI-99/4A by C. Regena. Compute! Publications, 1983. Not so much a reference guide as an instruction manual on how to program in TI Basic, this book contains 48 programs by popular columnist Cheryl Whitelaw (or "Regena" of 99'er and Compute! fame).

Programming Basic with the TI Home Computer by Herbert D. Peckham. McGraw-Hill Book Company,

1979. Another straight-forward textbook on TI Basic, going a bit further than Inman's *Introduction to TI Basic*.

Programming Discovery in TI Logo. Texas Instruments, 1982. This attractive "student guide" was used by Texas Instruments with their Computer Advantage Clubs and is very well designed.

Programs for the TI Home Computer by Steve Davis. Steve Davis Publishing, 1983. Four dozen programs that do make use of the special features of the TI-99/4A. Most of the programs only require TI Basic and a cassette system, though some make use of TI Extended Basic, disk system, memory expansion, or Terminal Emulator II and speech synthesizer.

Scott Adams Adventure Hints

Smart Programming Guide for Sprites by Craig G. Miller. Millers Graphics, 1983. This book contains many examples of ways to improve your programs by using sprites. In particular, there are techniques listed that will allow you to achieve better coincidences.

Sprites, A Turtle, and TI Logo by Jim Conlan and Don Inman. Reston Publishing, 1984. "A friendly, playful introduction to the TI Logo computer language", very well done.

Starting Forth by Leo Brodie. Prentice-Hall, 1981. This is the book recommended in the TI Forth manual. Brodie combines cartoons with an elegant simplicity of presentation as he unfolds the intricacies of Forth.

Stimulating Simulations for the TI-99/4A by C.W. Engel. Hayden Book Company, 1984. 11 "simulation game programs" in TI Basic, 2 in TI Extended Basic, adapted from a popular book first published in 1977.

Taking off with Basic on the TI-99/4A.

Technical Drive by Monty Schmidt. Monty Schmidt, 1987. Contains hard-to-find information on how to access peripherals using their built-in Device Service Routines (DSRs). Includes commented disassembled DSRs for the Mini Memory, Corcomp 9900 clock card, TI RS232 and TI Disk Controller.

Terrific Games for the TI 99/4A by Hal Renko and Sam Edwards. Addison-Wesley Publishing Company, 1983. A mixed bag of 30-some unusual game programs from the Netherlands in TI Basic and TI Extended Basic.

Texas Instruments Basic Programming for Adults by staff of TI Computer Advantage Club. Texas Instru-

ments, 1983. This was the course book for the TI Computer Advantage Club. It is designed for the absolute beginner.

Texas Instruments Computer Awareness Program for Children by staff of the TI Learning Center. Texas Instruments, 1982. This was the course book for the TI Computer Awareness Program. It was designed to let children discover computers, learn how they work and see what they can do. Includes a few pages on introducing Logo.

Texas Instruments Home Computer Games Programs by Len Turner. ARCsoft, 1984. A poor collection of Basic games including two variations of High-Low numbers because it's "the all-time most favorite computer game".

Texas Instruments Terminal Emulator Protocol Manual. Texas Instruments, May 18, 1981. This manual provides a complete description of the communication protocol used by the Terminal Emulator 2 package. It describes the steps needed to display text, create and display graphics and create and execute sound and speech on the TI-99/4A using the TE2 protocols.

The Academic TI by Richard Mowe and Ron Mummaw. Reston Publishing, 1984. A broad introduction aimed at younger users, but includes sections on Logo, Writing Software and TI Writer.

The Best of 99'er: Volume 1. Emerald Valley Publishing, 1983. A very worthwhile collection of articles on "Starting Out", "Programming Techniques and Languages", "Inside Basic and Extended Basic", "Logo", "Assembly Language", "Computer-Assisted Instruction", "Computer Gaming" and "Applications and Utilities".

The Best of TI-99/4A Cartridges by Thomas Blackadar. SYBEX, 1984. As the title indicates, this book covers only some of the cartridges, and not always the best. Nevertheless, this is one of the few books that has any significant treatment of cartridges for the TI.

The Best Texas Instruments Software by the editors of Consumer Guide. Publications International, 1984. Contains one-page program reviews (Basic, Xbasic and cartridges) with ratings. Subjects include: word processing, business, home, education, networking, strategy games, arcade games and programming aids.

The Elementary TI-99/4A by William B. Sanders. DATAMOST, 1983. This book contains useful chapters on "Data and Text Files" and "You and Your Printer", topics usually ignored in similar books.

GETTING THE MOST FROM YOUR CASSETTE SYSTEM: by MICKEY SCHMITT

LOADING AND SAVING PROGRAMS

While LOADing and SAV(E)ing programs with the use of a cassette recorder is not a difficult process in itself – reading and understanding the instructions for the very first time can be quite confusing. With that thought in mind I have tried to keep the instructions as simple as possible.

Instructions for LOADing programs:

1. Type: OLD CS1
2. Then: Press ENTER
3. Follow the directions as they appear on your monitor or TV screen:
    3.1 • REWIND CASSETTE TAPE   CS1
            THEN PRESS ENTER
    3.2 • PRESS CASSETTE PLAY   CS1
            THEN PRESS ENTER
    3.3   Computer displays message:
         • READING
    3.4   Computer displays message:
         • DATA OK
    3.5 • PRESS CASSETTE STOP   CS1
            THEN PRESS ENTER
4. Wait for the flashing cursor to appear in the lower Left-hand corner of your monitor or TV screen.
5. Type: RUN
6. Then: Press ENTER

Instructions for SAV(E)ing programs:

1. Type: SAVE CS1
2. Then: Press ENTER
3. Follow the directions as they appear on your monitor or TV screen:
    3.1 • REWIND CASSETTE TAPE   CS1
            THEN PRESS ENTER
    3.2 • PRESS CASSETTE RECORD CS1
            THEN PRESS ENTER
    3.3   Computer displays message:
         • RECORDING
    3.4 • PRESS CASSETTE STOP   CS1
            THEN PRESS ENTER
4. Your program is now SAVEd – But you should get into the habit of checking all your programs to be sure that they were SAVEd without error.
5. Continue to follow the directions as they appear on your monitor or TV screen:
    5.1   Computer displays message:
         • CHECK TAPE (Y OR N)?
    5.2   Type: Y
    5.3   Then: Press ENTER
    5.4 • REWIND CASSETTE TAPE   CS1
            THEN PRESS ENTER
    5.5 • PRESS CASSETTE PLAY   CS1
            THEN PRESS ENTER
    5.6   Computer displays message:
         • CHECKING
    5.7   Computer displays message:
         • DATA OK
    5.8 • PRESS CASSETTE STOP   CS1
            THEN PRESS ENTER
6. Your program is now SAVEd – Safely and without error! That's all there is to it!

GETTING THE MOST FROM YOUR CASSETTE SYSTEM: BY MICKEY SCHMITT

KEEPING YOUR CASSETTE TAPES AND PROGRAMS ORGANIZED

How many times have you wanted to find a specific program that you had BUT...

1. You can't remember which cassette you put it on.

2. or... You can remember which cassette you put in on... But now you can't remember whether you put it on side A or B.

3. or... You can remember whether you put it on side A or B... But now you can't remember what the counter reading was for the program.

4. or... You can remember what the counter reading was for the beginning of the program... But now you can't remember if the program was written in BASIC or EXTENDED BASIC... or maybe it was that you needed TEII... or was it MINI-MEMORY?

If all of this sounds way too familiar to you... Don't panic. You are not alone! The same situations have happened to all of us who use a cassette recorder - At least at one point of time or another.

```
*************************************************************************
*                                                                     *
*                  THE SOLUTION - GET ORGANIZED!                      *
*            STOP WASTING ALL OF YOUR VALUABLE COMPUTER TIME          *
*                      HUNTING FOR PROGRAMS!                          *
*                                                                     *
*************************************************************************
```

Now that you see the need for some "ORGANIZATION" - Let me be one of the first to tell you that there are alot of different ways in which to go about organizing your programs. Keep in mind that while one method may seem to work the best for you - It may not be the best method for someone else. Only you know what method will best meet your own needs!

If you are not using any system right now... I would suggest organizing your programs with the use of 3 x 5 index cards... Using the following information as a guideline:

1. CASSETTE TITLE AND/OR CASSETTE NUMBER
2. CASSETTE SIDE
3. PROGRAM NAME
4. COUNTER READING
5. LANGUAGE USED
6. PERIPHERALS NEEDED
7. PROGRAM DESCRIPTION

That should be enough to get you started and keep you quite busy for awhile. I know that it all sounds like alot of work... But it will be appreciated in the long run... When you need to find a specific program and you don't have all day to hunt for it!!!

Next   I will continue with the topic of keeping your cassette tapes and programs organized... Using the information generated by the 3 x 5 index cards as a foundation for a program which can be saved onto the beginning of your cassettes.

GETTING THE MOST FROM YOUR CASSETTE SYSTEM: by MICKEY SCHMITT

KEEPING YOUR CASSETTE TAPES AND PROGRAMS ORGANIZED

        I am continuing with the topic of keeping your cassette tapes and
programs organized - Using the information generated by last month's "3 x 5"
index cards - As the foundation for the following program.

    Although this program will work as written - You are encouraged to make any
changes that you may want - In order to meet your own personal needs. Don't be
afraid to do a little experimenting. It can't hurt and you just may learn a
thing or two in the process.

    This particular program was created with the intent of giving you the
following two options:

    1. You may type in the following program as listed - Filling in the blanks
        as they appear or ...

    2. You could just type in the information that would appear in the blank
        area and forget about typing in all of the "Formal Titles".

    Personally, I like the latter choice myself, as it saves alot of unnecessary
repetitive typing, and it keeps my screen information down to a bare minimum
when I run the program.

    Next month's topic will be cassette Tips - Tricks - And Tidbits. It should
prove to be quite interesting - As I pass along what I've found out the hard
way - And what I've learned from my fellow T.I. friends. I guarantee that
you'll enjoy a few good laughs - At my own expense!

```
100 REM ••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
110 REM •                                                                      •
120 REM •      PROGRAM LISTING FOR A CASSETTE TAPE CATALOG IN T.I. BASIC        •
130 REM •              CREATED BY: MICKEY SCHMITT                              •
140 REM •                                                                      •
150 REM ••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
160 CALL CLEAR
170 PRINT "CASSETTE TITLE:_____"::.
180 PRINT "CASSETTE NUMBER:_____"::
190 PRINT "CASSETTE SIDE:_____"::::
200 PRINT "COUNTER READING:_____"::
210 PRINT "LANGUAGE USED:_____"::
220 PRINT "PERIPHERALS NEEDED:_____"::
230 PRINT "PROGRAM NAME:_____"::
240 PRINT "PROGRAM DESCRIPTION:_____":::
250 GOSUB 10000
260 CALL CLEAR
270 REM TO CATALOG MORE THAN ONE PROGRAM - FOLLOW THE SAME FORMAT AS USED IN
280 REM LINE NUMBERS 200 - 260.  CONTINUE USING THIS SAME FORMAT TILL ALL OF
290 REM YOUR PROGRAMS HAVE BEEN CATALOGED.
300 REM CAUTION:  AFTER YOUR FINAL ENTRY - REMEMBER TO USE AN "END" STATEMENT
310 REM RIGHT AFTER YOUR FINAL "CALL CLEAR" STATEMENT.
320 REM FOLLOWING THIS FORMAT WILL HELP KEEP ALL OF YOUR PROGRAMING
330 REM INFORMATION UNIFORM AND EASIER TO FOLLOW ON YOUR MONITOR OR TV SCREEN.
340 END
10000 PRINT "PRESS: ANY KEY TO CONTINUE"
10010 CALL KEY(0,K,S)
10020 IF S=0 THEN 10010
10030 RETURN
```

TI✳MES

+---------------------------+   +---------------------------+
: September 1988   : CIN-DAY : Page 12   :
+---------------------------+   +---------------------------+

TI Writer Tips
by Dennis Sherfy
(from The HUGgers Newsletter March 1988)

Saving and merging PARTIAL FILES is a useful feature in TI WRITER. Portions of previously written letters can be incorporated into new letters without re-typing the text over again. If you have gone to the trouble to prepare an involved letter-head, you can easily merge it into the beginning of subsequent letters. If you want to take out a paragraph from a letter, but possibly use it later, you can save it as a separate file that can be expanded, or merged later. If you write to a variety of family and friends, you can write a long letter, then combine the paragraphs selectively to your brother, uncle, friend, etc. Each letter will be unique, combining the appropriate paragraphs for each person.

If you are going to do a lot of work with paritial files, it's convenient to have a hard copy printed with line numbers. You can do this through the editor. Normally, when I print through the editor, I key PF <ENTER> PIO <ENTER>. When I want a printout with line numbers, I key PF <ENTER> L <SPACE> PIO <ENTER>. Of course, you have to have room to print the line numbers on your printer. If your printer will print 80 characters on a line, and you want to print line numbers plus 80 characters, it won't work. Your text line cannot be more than 74 characters wide if you want to print line numbers.

Once you have a printout with line numbers, it's easy to save or merge a partial file. If I want to save lines 11 through 23, I key SF <ENTER> 11 <SPACE> 23 <SPACE> DSK1.FILENAME <ENTER>. What if you don't want a whole line? What if you only want the last two words on line 1? You can do this by moving your cursor in front of the last two words and pressing INSERT CHARACTER, (FCTN-2/CTRL-G). This will break your sentence into two, causing the last two words to be placed on the next line. In this example, they would be on line 12. This would shift the rest of the lines in your document down also so you would save lines 12-24 instead of lines 11-23. If you don't want everything on line 24, you can get rid of part of it in the same way you split line 11. Move your cursor to the end of what you want to keep, and press INSERT CHARACTER again. The portion of the line you don't want to save will drop down to the next line. In this way you can save only the exact portion of the text you want.

If you plan to split a lot of lines, it's best to do so before you make your printout with line numbers because after you split several lines your line numbers will be changed.

You can merge entire files into your present document, or just part of a file can be added to your present document. If you want to merge an entire file, first determine where you want it to go. Let's say you want to print a file after line 14 in your present document. You would key LF <ENTER> 14 <SPACE> DSK1.FILENAME <ENTER>. This will insert the document called FILENAME between lines 14 and 15 of your present document. If you only want to merge lines 7-15 of FILENAME, you would key LF <ENTER> 14 <SPACE> 7 <SPACE> 15 <SPACE> DSK1.FILENAME <ENTER>.

After you merge a file, you can use REFORMAT (CTRL-2/CTRL-R) to eliminate extra spaces and merge all of the text into a single paragraph.

In a previous column, I described how I developed a series of Transliterations and formatting commands that I used in all my letters. I merge this file at the beginning of subsequent documents by typing LF <ENTER> 0 <SPACE> DSK1.FILENAME <ENTER>. This places FILENAME in front of line 1 of my new document file.

This is one of the features that puts TI WRITER up there with more expensive word processing programs.

Christmas Tree by Maurice Rymill

```
10 REM   ***************
20 REM   *   XMAS TREE *
30 REM   ***************
40 REM   TI BASIC
50 REM   18/11/35
60 REM   ABOUT 11000 BYTES
70 REM   PRESS ANY KEY TO END SCREEN DISP
LAY
80 CALL CLEAR
90 CALL SCREEN(2)
100 CALL COLOR(1,3,1)
110 CALL COLOR(2,3,1)
120 CALL COLOR(3,7,1)
130 CALL COLOR(4,7,1)
140 CALL COLOR(5,10,1)
150 CALL COLOR(6,10,1)
160 CALL COLOR(7,10,1)
170 CALL COLOR(8,10,1)
180 CALL COLOR(9,7,1)
190 CALL COLOR(10,14,1)
200 CALL COLOR(11,6,4)
210 CALL COLOR(12,8,4)
220 CALL COLOR(13,12,4)
230 CALL COLOR(14,7,4)
240 CALL COLOR(15,15,1)
250 CALL COLOR(16,5,16)
260 REM   PATTERN-IDENTIFIERS
270 REM   FORMAT: IDENTIFICATION, CHARACT
ER NUMBER, HEXADECIMAL STRING...
280 REM   EXAMPLE: TREE TRUNK,142,4E53B6
35C659487A, TREE BODY,143,0000000000000
00...
290 DATA DEC,33,0103070E1C3830E0,DEC,34,
8060383C1E0F0F07
300 DATA M,35,03060C0103060C18,M,36,8099
FADD193366CC,M,37,0080808080386CD8,M,38,
0000000000007699
310 DATA M,39,000000000030C987,M,40,0000
00000088983A,M,41,3163C60000000000,M,42,
9831JE0000000000
320 DATA M,43,A3CCF00000000000,M,44,3163
C60000000000,M,45,0306030101030203,M,46,
6CD838D6183060C0
330 DATA M,48,0000000001030600,M,49,0000
0000F0890B0E,M,50,00000000F0800000,M,51,
0000000200000000
340 DATA M,52,0000000000030638,M,53,1030
60E0E0E1633E,M,54,0000003C67CC9831,M,55,
000000CC766CC99F
```

TI BASIC
COLOUR
GRAPHICS
AND
MUSIC

```
352 DATA M,56,0000003E6C99B6DC,M,57,0000
00JE66831EF8
362 DATA LEFTSIDE OUT,96,0107070F0F0FJF7
F,RIGHTSIDE OUT,97,80E0E0F8F0F0F8FE,BORD
ER TOP,98,7F7F3F0707010100
372 DATA TREE BOTTOM,99,FFF8F8F0F0E0C000
,B,100,FF3F0F0707030100,DEC,101,00063632
JE64740E
382 DATA BORDER TOP,102,FFFFFFFFFF000000
,BORDER BOTTOM,103,000000FFFFFFFFFF
390 DATA PLUM,104,10FEFEFEFE7C3810,BELL,
107,101038387C7C7CFE
400 DATA PLUM,112,10FEFEFEFE7C3810,DIAMO
ND,113,1010387CFE7C3810,BELL,115,1010383
87C7C7CFE
410 DATA PLUM,120,10FEFEFEFE7C3810,DIA,1
21,1010387CFE7C3810,BELL,123,101038387C7
C7CFE
420 DATA PLUM,128,10FEFEFEFE7C3810,DIAMO
ND,129,1010387CFE7C3810,BELL,131,1010383
87C7C7CFE
430 DATA LEFT INSIDE,136,FEF8F0F0E0E0C00
0,RIGHT INSIDE,137,7F1F0F0F07070300,CT,1
38,FFE7E78301010101
440 DATA BOTTOM IN,139,0107070F0F0F3FFF,
B,140,80C0E0E0E0F0FCFF
450 DATA TRUNK,142,4E53B635C659487A,TREE
 BODY,143,0000000000000000,POT L,144,3F3
F3F3F3F3F3F3F
460 DATA POT LEFT BOTTOM,146,3F3F3F3F3F3
F0F0F,POT R,147,FCFCFCFCFCFCFCFC
470 DATA POT R B,149,FCFCFCFCFCFCFCF0F0,P
B,150,FFFFFFFFFFFFFFFF
480 DATA TOP,152,C3C33C18183CC3C3,STAR R
ADIAL,153;FFFFFF0000FFFFFF,STAR RADIAL,1
54,E7E7E7E7E7E7E7E7
490 DATA REM DEFINE-LOOP
500 RESTORE 290
510 FOR CODE=33 TO 154
520 READ IDENTIFICATION$,CHARACTERNUMBER
,HEX$
530 IF CHARACTERNUMBER>CODE THEN 550
540 GOTO 560
550 CODE=CHARACTERNUMBER
560 CALL CHAR(CODE,HEX$)
570 NEXT CODE
580 REM   START SCREEN DISPLAY
590 CALL CLEAR
600 REM   ----TREE BODY----
610 CALL HCHAR(24,1,143,32)
620 CALL HCHAR(19,7,143)
630 CALL HCHAR(18,2,143,11)
640 CALL HCHAR(17,3,143,9)
650 CALL HCHAR(16,3,143,8)
660 CALL HCHAR(15,4,143,7)
670 CALL HCHAR(14,4,143,7)
680 CALL HCHAR(13,4,143,6)
690 CALL HCHAR(12,5,143,5)
```
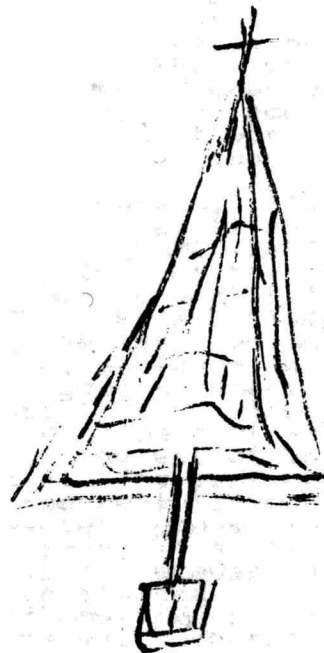
```
700 CALL HCHAR(11,6,143,4)
710 CALL HCHAR(10,6,143,3)
720 CALL HCHAR(9,6,143,3)
725 CALL HCHAR(8,6,143,2)
730 CALL VCHAR(7,7,143,2)
740 REM ----TREE TRUNK----
750 CALL VCHAR(20,7,142,2)
760 REM ----PLANT POT----
770 CALL VCHAR(22,6,144,2)
780 CALL VCHAR(22,7,150,3)
790 CALL VCHAR(22,8,147,2)
800 REM SCREEN LOCATION DATA
810 REM FORMAT: IDENTIFICATI
ON$,ROW,COLUMN,CHARACTERNUMB
ER
820 DATA POT BASE LEFT SIDE,
24,6,146,POT BASE RIGHT SIDE
,24,8,149
830 REM ----FOLIAGE----
840 DATA L0,18,1,96,L1,18,2,
136,L0,17,1,96,L1,17,2,136,L
0,16,1,96,L1,16,2,136,L0,15,
2,96,L1,15,3,136
850 DATA L0,14,2,96,L1,14,3,
136,L0,13,2,96,L1,13,3,136,L
0,12,3,96,L1,12,4,136,L0,11,
4,96,L1,11,5,136
860 DATA L0,10,4,96,L1,10,5,
136,L0,9,4,96,L1,9,5,136
870 DATA L0,5,6,96,CT,5,7,13
8,L0,6,6,96,L1,6,7,136,L0,7,
5,96,L1,7,6,136,L0,8,5,96,L1
,8,6,136
880 DATA R0,5,8,97,R0,6,9,97
,R1,6,8,137,R0,7,9,97,R1,7,8
,137,R0,8,9,97,R1,8,8,137,R0
,9,10,97
890 DATA R1,9,9,137,R0,10,10
,97,R1,10,9,137,R0,11,11,97,
R1,11,10,137,R0,12,11,97,R1,
12,10,137
900 DATA R0,13,11,97,R1,13,1
0,137,R0,14,12,97,R1,14,11,1
37,R0,15,12,97,R1,15,11,137,
L0,16,12,97
910 DATA L1,16,11,137,L0,17,
13,97,L1,17,12,137,L0,18,13,
97,B,18,12,137,B,19,12,99,B1
,19,11,139
920 DATA B1,19,10,140,B0,19,
9,100
930 DATA BOTTOM,19,5,96,B,19
,6,99,B,19,7,139,B,19,8,99,B
,19,4,100,B,19,5,140,B,19,2,
96,B,19,3,99
940 DATA B IN,18,7,139,B OUT
,18,8,136
950 REM ----CROSS----
960 DATA TOP,2,7,152,L RADIA
L,2,6,153,R RADIAL,2,8,153,T
 RADIAL,1,7,154,B RADIAL,3,7
,154,B RAD,4,7,154
970 REM ----ORNAMENTS----
980 DATA OUTSIDE PLUM,7,9,10
4,BELL,20,2,107,PLUM,16,6,11
2,DIAMOND,17,8,121,BELL,16,1
0,115
990 DATA DIAM,11,7,113,PLUM,
12,9,128,DIAMOND,14,4,129,BE
LL,17,3,131,PLUM,12,3,107
1000 DATA PLUM,10,6,120,DIAM
,9,8,129,BEL,13,5,123,BELL,1
5,9,131,PLUM,20,11,104

1010 REM ----DECORATION----
1020 DATA D,6,18,34,D,6,19,3
3,D,6,20,101,D,6,21,34,D,6,2
2,33,D,6,23,101
1030 DATA D,6,24,34,D,6,25,3
3,D,6,26,101,D,6,27,34,D,7,2
7,33,D,8,27,101,D,9,27,34
1040 DATA D,10,27,33,D,11,27
,101,D,12,27,34,D,13,27,33,D
,13,26,101,D,13,25,34,D,13,2
4,33
1050 DATA D,13,23,101,D,13,2
2,34,D,13,21,33,D,13,20,101,
D,13,19,34,D,13,18,33
1060 DATA D,12,18,34,D,11,18
,101,D,10,18,33,D,9,18,34,D,
8,18,101,D,7,18,33
1070 REM ----MESSAGE----
1080 DATA M,8,20,35,M,8,21,3
6,M,8,22,37,M,8,23,38,M,8,24
,39,M,8,25,40
1090 DATA M,9,20,41,M,9,21,4
2,M,9,22,43,M,9,23,44,M,9,24
,45,M,9,25,46
1100 DATA M,10,20,48,M,10,21
,49,M,10,22,50,M,10,23,51,M,
10,24,51,M,10,25,51
1110 DATA M,11,20,52,M,11,21
,53,M,11,22,54,M,11,23,55,M,
11,24,56,M,11,25,57
1120 REM SCREEN LOCATION LOO
P
1130 HOWMANY=148
1140 RESTORE 820
```

```
1150 FOR CHARACTER=1 TO HOWM
ANY
1160 READ IDENTIFICATION$,RO
W,COLUMN,CHARACTERNUMBER
1170 CALL HCHAR(ROW,COLUMN,C
HARACTERNUMBER)
1180 NEXT CHARACTER
1190 RESTORE 1330
1200 DIM X(67),Y(67),Z(67)
1210 FOR I=1 TO 67
1220 READ X(I)
1230 NEXT I
1240 FOR I=1 TO 67
1250 READ Y(I)
1260 NEXT I
1270 FOR I=1 TO 67
1280 READ Z(I)
1290 NEXT I
1300 FOR I=1 TO 67
1310 CALL SOUND(X(I),Y(I),2,
Z(I),6)
1320 NEXT I
1330 DATA 250,250,250,250,25
0,250,250,250,250,250,250,25
0,250,250,250,250,250,250,25
0,250,250,250
1340 DATA 250,250,250,250,25
0,250,250,250,250,250,250,25
0,250,250,250,250,250,250,25
0,250,250,250
1350 DATA 500,250,250,250,25
0,250,250,500,125,125,250,50
0,250,250,250,250,250,250,25
0,250,250,250,900
1360 DATA 330,330,494,494,44
0,392,370,330,234,330,370,39
2,440,494,330,330,494,494,44
0,392,370,330
```

```
1370 DATA 294,330,370,392,44
0,494,494,523,440,494,523,58
7,659,494,440,392,330,370,39
2,440,392,440
1380 DATA 494,523,494,494,44
0,392,370,330,392,370,330,44
0,392,440,494,523,587,659,49
4,440,392,370,330
1390 DATA 40000,165,165,165,
165,165,123,131,196,165,165,
165,165,123,40000,165,165,16
5,165,165,123,131,196
1400 DATA 165,165,165,165,12
3,208,220,185,196,196,123,13
1,147,147,165,165,165,165,18
5,40000,40000,196,196
1410 DATA 196,196,185,165,40
000,165,196,185,40000,185,16
5,185,196,196,196,196,147,14
7,156,156,165
1420 A$="FROM"
1430 V=16
1440 W=20
1450 GOSUB 1570
1460 A$="MAURICE R RYMILL"
1470 V=18
1480 W=14
1490 GOSUB 1570
1500 A$="BOURNVILLE"
1510 V=20
1520 W=17
1530 GOSUB 1570
1540 CALL KEY(0,K,S)
1550 IF S<1 THEN 1540
1560 END
1570 FOR I=1 TO LEN(A$)
1580 CALL HCHAR(V,W+I,ASC(SE
G$(A$,I,1)))
1590 NEXT I
1600 RETURN
```

2022 Copied from Issue No 18
due to poor quality in No 23.
Graphic from No.23.
Some reformatting has been done.
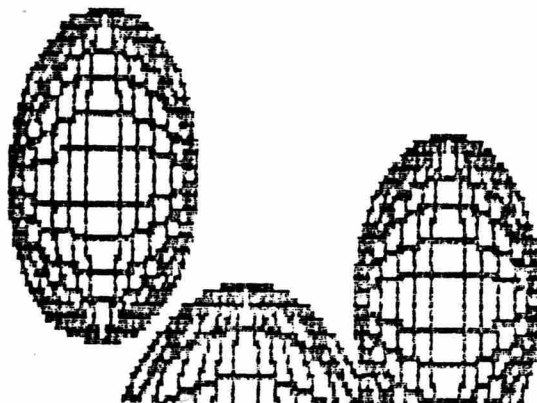
Reprinted from M.U.N.C.H. Newsletter - October 1988

●IMPACT/99●
BY JACK SUGHRUE

TI-BASE: PART ONE

EXHILARATION!

YOU KNOW THAT DIZZYING, EXHILARATING FEELING YOU GET WHEN YOU'VE TRUDGED ALL MORNING UP A MOUNTAIN PATH AND HAVE COME OUT OF THE BRUSH AT THE CREST. YOU CAN LOOK BACK FROM THAT PEAK AND SEE HOW FAR YOU'VE COME AND LOOK AHEAD TO SEE HOW FAR YOU'VE YET TO GO.

IT'S A WONDERFUL, SPIRIT-LIFTING KIND OF FEELING AS YOU STAND THERE BREATHING IN THAT RARE AIR. YOU'VE COME TO A DEFINITE POINT IN YOUR LIFE, BUT THE JOURNEY'S FAR FROM OVER.

WELL, I FELT A LITTLE LIKE THAT TODAY AFTER SPENDING JUST FOUR HOURS WITH A PROGRAM CALLED TI-BASE. I FEEL I HAVE SCALED NEW HEIGHTS WITH MY TI, BUT I REALIZE I HAVE A LONG WAY YET TO GO.

TI-BASE OPENS UP CREATIVE AND CRITICAL USER POSSIBILITIES IN A WAY NOTHING ELSE HAS EVER DONE FOR THE TI WITH THE POSSIBLE EXCEPTION OF FUNNELWEB AND TI-ARTIST. (I KNOW GRAPHX IS WONDERFUL. IT'S THE ART PROGRAM I TEETHED ON. AND BA WRITER IS GREAT. AND DON'T FORGET _____. [FILL IN THE BLANK WITH YOUR FAVORITE.]

BUT TI-ARTIST (BY CHRIS FAHERTY OF INSCEBOT) HAS BECOME THE TI WORLD'S STANDARD AGAINST WHICH ALL ART PRODUCTS FOR OUR MACHINE ARE JUDGED. CAN THE PICTURES BE CONVERTED? IS THE DRAWING/PAINTING PROGRAM COMPATIBLE? AND SO ON. CAN NEW ENHANCEMENTS BE MADE FOR IT (SUCH AS DISPLAY MASTER, ARTIST EXTRAS, ARTIST COMPANIONS)? AND, EQUALLY IMPORTANT, IS IT USED PRODUCTIVELY BY THE VAST MAJORITY OF USERS? NO QUESTION, TI-ARTIST HAS, JUSTIFIABLY, BECOME THE MOST PRODUCTIVE ART TOOL FOR THE 99.

FUNNELWEB (BY TONY McGOVERN AND HIS SON WILL) HAS HAD A PARALLEL EXPERIENCE AS A MODIFIED DISK OPERATING SYSTEM FOR THE 4A, AN ENVIRONMENT THAT IS CENTERED AROUND THE COMBINED FUNCTIONS OF WORD-PROCESSING, ASSEMBLING, AND DISK MANAGING. IT HAS BECOME THE SINGLE, MOST-USED DISK PROGRAM FOR THE TI. AGAIN, JUSTIFIABLY.

NOW COMES TI-BASE.

IT, TOO, WILL BECOME - WITHOUT QUESTION - THE DATABASE TOOL FOR NORMAL USERS TO ASTOUND THEMSELVES WITH AND FOR GENIUSES TO CREATE UNLIMITED ENHANCEMENTS AND TEMPLATES. TI-BASE IS AN OPEN-ENDED DATA SYSTEM THAT INCLUDES, IN PASSING, TEXT AND DISK MANAGEMENT PACKAGING FOR INCREDIBLE CONVENIENCE. YET IT ALSO ALLOWS SUCH FREEDOM OF PERSONALIZATION THAT IT IS MIND-BOGGLING. THE ONLY THING I CAN EQUATE IT TO IS DBIII+ FOR IBM. AND THAT SELLS FOR ABOUT $800 AND COMES WITH PILES OF DISKS AND A 500+ PAGE MANUAL. AND, IF YOU LOOK IN ANY BOOKSTORE'S COMPUTER SECTION, YOU WILL FIND LOADS OF BOOKS ON HOW TO USE DBIII+ (OR ANY OF THE EARLIER ONES IN THE SERIES). COLLEGES AND NIGHT SCHOOLS OFFER COURSES ON JUST THE USE OF DBIII+.

AND HERE'S THE RUB. INSCEBOT (P.O. BOX 291610, PORT ORANGE, FL 32027) PROVIDES THEIR MASTERPIECE ON TWO SSSD DISKS AND ONE OF THOSE IS A TUTORIAL DISK. THEIR MANUAL IS A MERE 40 5x7 PAGES.

WHAT THIS MEANS IS 1) THAT A GENIUS CREATED THIS EXTREMELY COMPACT BASE AND 2) THAT THE MANUAL IS IN NO WAY COMPLETE FOR THOSE WHO WANT TO DIVE DEEPLY INTO THIS REMARKABLE PIECE OF SOFTWARE. I CAN PICTURE ALL KINDS OF COMPANION DISKS BEING CREATED FOR TI-BASE BY USERS WORLD-WIDE, STARTING WITH DISKS OF TEMPLATES. I CAN ALSO PICTURE ALL KINDS OF THINGS BEING WRITTEN FOR IT, STARTING WITH TUTORIALS.

LET ME CATCH MY BREATH HERE A MINUTE. YOU'RE PROBABLY GETTING THE IMPRESSION I LIKE THIS PROGRAM. LIKE IS NOT A STRONG ENOUGH WORD. YOU'LL SEE WHY IN A MOMENT.

BUT FIRST LET ME EXPLAIN THAT CHRIS FAHERTY'S FATHER, DENNIS, IS THE BRILLIANT CREATOR OF TI-BASE. NOW WE HAVE ANOTHER FATHER-SON 4A GENIUS TEAM, LIKE THE McGOVERNS. DENNIS HAS BEEN A DATA-PROCESSING PROFESSIONAL FOR ALMOST A QUARTER CENTURY. IT'S APPARENT ON TI-BASE THAT HE BROUGHT ALL HIS EXPERTISE AND EXPERIENCE TO THIS SOFTWARE.

TO TELL YOU THE TRUTH, WHEN I FIRST READ THE MANUAL I PANICKED. I DIDN'T (AND STILL DON'T) UNDERSTAND SUCH THINGS AS THE FOLLOWING PARAGRAPH:

'THE CASE DIRECTIVE ALLOWS SELECTIVE PROCESSING OF DIRECTIVES. CASE DIRECTIVES ARE INCLUDED BETWEEN DOCASE AND ENDCASE DIRECTIVES. EACH CASE IS EXAMINED SEQUENTIALLY. THE FIRST CASE WHICH RESOLVES TO 'TRUE', WILL BE EXECUTED. EXECUTION WILL BE CONTINUED UNTIL A BREAK DIRECTIVE IS ENCOUNTERED. EXECUTION WILL THEN BE DISCONTINUED UNTIL THE ENDCASE IS ENCOUNTERED.'

THAT'S AS BAD AS IT GETS.

I'M SURE PEOPLE WHO USE DATABASES WITH REGULARITY AT WORK WILL FIND THAT PARAGRAPH A PIECE OF CAKE. I DON'T.

MY DATABASE EXPERIENCE (EXCEPT TO WATCH OTHERS ON THE DB SERIES ON THE IBM AND, ONCE IN A WHILE, TO PLAY WITH THE BASE PART OF APPLEWORKS) HAS BEEN STRICTLY TI: DB 300/500, PR BASE, CFS, AND A FEW OTHER DISKS AND MODULES. ALL OF WHICH WERE GOOD FOR SOME THINGS BUT WERE NOT USER-FRIENDLY AND WERE VERY LIMITING. I DIDN'T FEEL CREATIVE USING THEM. NONE OF THEM SEEMED TO BE ABLE TO DO THE KINDS OF THINGS I HAD PICTURED IN MY MIND. WHAT TI-BASE DOES BEST IS LET YOU

CREATE EXACTLY WHAT YOU WANT IN AN EASY AND DIRECT WAY.

THE BEST WAY TO EXPLAIN THIS, I THINK, WOULD BE TO RUN THROUGH MY VERY FIRST APPLICATION.

I HAVE A COLLECTION (MOSTLY PAPERBACKS AND FLEA-MARKET SPECIALS) OF BOOKS BY P.G. WODEHOUSE, WHO IS THE FUNNIEST WRITER YOU EVER LIVED.

HE WROTE 97 BOOKS. HE ALSO WROTE 285 SHORT STORIES, 33 MUSICALS, 18 PLAYS, OVER 200 SONGS, AND AN UNTOLD NUMBER OF ESSAYS AND REVIEWS. HE HOLDS THE GUINNESS BOOK OF RECORDS FOR HAVING FIVE OF HIS MUSICAL COMEDIES RUNNING SIMULTANEOUSLY ON BROADWAY. THERE HAVE BEEN DOZENS OF BOOKS WRITTEN ABOUT HIM AND THERE HAVE BEEN COLLECTIONS OF EARLIER WORKS INTO FIRST-TIME ANTHOLOGIES. PLUS, HE WROTE MOVIES AND HAD MANY THAT WERE BASED ON HIS WORKS. THERE WERE NUMEROUS TELEVISION AND RADIO SERIES IN THIS COUNTRY AND ENGLAND (MANY INTRODUCED BY WODEHOUSE), AND THERE WERE RECORDS AND TAPES MADE OF MANY OF HIS WORKS.

IN SHORT, HE WAS A PROLIFIC WRITER. I HAD PILES OF HIS WORKS AND NEEDED A DATA BASE TO FIND OUT WHAT I DID AND DID NOT HAVE. IN ADDITION, MANY OF HIS WORKS WERE PUBLISHED UNDER TWO (AND SOMETIMES THREE) DIFFERENT TITLES: AMERICAN, BRITISH, PAPERBACK.

I WANTED A DATABASE THAT WOULD LET ME PUT HIS WORKS IN ORDER BY PUBLICATION DATE, BY TITLE, BY BIBLIOGRAPHICAL ASSIGNED NUMBER, BY TYPE (HARDBOUND, PAPERBACK, TAPE, VIDEO, ETC.), BY SPECIAL SERIES (THE JEEVES BOOKS, THE BLANDINGS CASTLE BOOKS, ETC.), BY FIRST EDITIONS (FOR THE FEW I HAD), BY OWNERSHIP (DID I OR DIDN'T I OWN A PARTICULAR BOOK UNDER ANY TITLE), AND, MOST IMPORTANTLY, BY COMMENTS. I WANTED A LARGE COMMENT BLOCK THAT WOULD GIVE ME ALTERNATIVE TITLES, PLOT SUMMARIES, MAIN CHARACTERS, WHETHER THIS WAS THE FIFTH IN THE BLANDINGS SERIES, AND SO ON). AND I WANTED TO SORT THESE IN ALL DIFFERENT WAYS. I WANTED TO BE ABLE TO DISPLAY ANY COMBINATIONS OF FIELDS TOGETHER (SUCH AS ALPHABETICAL TITLE ALONG WITH OWNERSHIP OR PUBLICATION ORDER WITH SPECIAL SERIES AND TITLES AND MEDIA TYPE). AND, OF COURSE, I DESIRED THE CAPABILITY TO PRINT OUT IN ANY COMBINATION OF FIELDS AND IN ANY SORT ORDER. AND INSTANTLY.

NOW THAT DOESN'T SEEM LIKE TOO MUCH TO ASK, DOES IT?

HOWEVER, I'VE NEVER BEEN ABLE TO DO IT WITH ANY OF THE DATABASES FOR THE TI, WHETHER CARTRIDGE, DISK, OR RAM.

I ALSO WANTED TO BE ABLE TO HOUSE THE DATABASE IN THE RAM OF MY MYARC 512 OR ANY DRIVE OF MY CHOICE ON DISKS NAMED ANYTHING OF MY CHOICE.

I WANTED TO BE ABLE TO CHANGE COLUMN STRUCTURE, LINE LENGTH, AND SPACING AT WILL FROM INSIDE THE PROGRAM. I SECRETLY WISHED FOR THE ABILITY TO INITIALIZE DISKS OF ANY CONFIGURATION, CATALOG DISKS, AND COPY FILES ALL WITHIN THE PROGRAM SO I WOULDN'T LOSE THE BASE IN MEMORY OR THE SCREEN I WAS WORKING ON.

IT STANDS TO REASON THAT I WOULD LIKE TO EDIT AND APPEND AND DISPLAY AND FIND AND SORT AND PRINT AND MOVE FILES AT WILL.

WELL, IF I TELL YOU THAT I NEVER FOUND A DATABASE FOR THE TI THAT WOULD EVEN BEGIN TO APPROACH THIS DREAM OF MINE, YOU WOULD NOT BE SURPRISED. I FIDDLED AND MANIPULATED EVERY BASE I COULD FIND TO BEGIN TO HANDLE SOME OF THESE VERY SIMPLE WISHES OF MINE. FOR YEARS! TO NO AVAIL.

WITHIN FOUR HOURS TODAY I DID ALL OF THE ABOVE AND MUCH, MUCH MORE. AND I DIDN'T EVEN BEGIN TO TAP THE POTENTIAL OF THIS REMARKABLE PROGRAM. I DIDN'T EVEN TRY THE INCREDIBLE MATHEMATICAL POSSIBILITIES OR THE MANIPULATION OF VARIABLES. I DIDN'T EVEN GET A CHANCE TO TRY ONE-THIRD OF THE STUFF IN THE MANUAL. I HAVEN'T EVEN TRIED THE TUTORIAL DISK YET. (MAYBE THAT'LL TELL ME ABOUT THOSE DOCASE DIRECTIVES AND SUCH.)

BUT I HAD, FOR THE FIRST TIME, MY P.G. WODEHOUSE DATABASE. I HAD HARDCOPIES OF 10 DIFFERENT CONFIGURATIONS OF THE FIELDS. I'M STILL AGHAST WITH THE EASE AND SPEED (TI-BASE IS 100% ASSEMBLY) WITH WHICH I CREATED AND FILLED THIS FILE. DON'T GET ME WRONG; THERE ARE LIMITATIONS TO TI-BASE. BUT NOTHING THAT WOULD EFFECT ME IN THE SLIGHTEST.

THE LIMITS ARE 255 CHARACTERS PER FIELD (THE BASIC ITEM, SUCH AS TITLE OR PUBLICATION DATE); 17 FIELDS PER RECORD; AND - GET THIS! - 8,192 RECORDS PER DATABASE! (THIS IS LIMITING????) AND ABSOLUTELY NO LIMIT ON THE NUMBER OF DATABASES YOU MAY CREATE.

AS PROLIFIC A WRITER AS WODEHOUSE WAS, HIS WORKS ARE JUST A TINY DROP IN THE BUCKET TO TI-BASE.

NOW YOU CAN USE YOUR DATABASE FOR YOUR CHECKING ACCOUNT. EXACTLY THE WAY YOU WANT IT (AS THE NUMERICALS WILL HANDLE YOUR MATH WORK). OR YOU CAN DEVELOP THE ULTIMATE ADDRESS BOOK OR A SERIES OF INTERRELATED FILES. TI-BASE WILL LET YOU HAVE UP TO 5 DATA BASES OPERATING AT THE SAME TIME!

BEFORE I GET CARRIED AWAY, I WANT TO SAY THREE THINGS: FIRST, I'LL DO THE WODEHOUSE TUTORIAL IN THE NEXT IMPACT COLUMN STEP-BY-EASY-STEP; SECOND, ALL YOU NEED IS ONE SINGLE-SIDED DRIVE AND 32K WITH XB, E/A, OR MM, THOUGH THE HIGHER CONFIGURATIONS MAKE THINGS, AS ALWAYS, A BIT EASIER; AND, THIRD, THE PRICE OF THIS MASTERPIECE IS ONLY $24.95 (PLUS $1.50 S&H) OR A FEW DOLLARS LESS IF PURCHASED BY USER GROUPS IN GROUP ORDERS OF ANY SIZE). THIS IS THE BEST BUY OF THE YEAR FOR TI OWNERS WITH DISK SYSTEMS. YOU MAY ORDER FROM INSCEBOT (ABOVE) OR TEXAMENTS; 53 CENTER ST.; PATCHOGUE, NY 11772 OR CHARGE 516-475-3480.

[JACK SUGHRUE, BOX 459, E.DOUGLAS, MA 01516]

KIDS ************
KORNER
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10 ! ***TRICKS OR TREAT***
20 !    by Chick De Marti
30 !    from a TinyGram by
40 !        Margaret of
50 ! Aloha 99ers, Honolulu
60 ! ********************
70 CALL CLEAR :: CALL SCREEN
(2):: CALL COLOR(10,15,2,4,1
6,2)
80 CALL CHAR(108,"003C7E7E7E
7E7E7E"):: CALL CHAR(56,"003
C5A7E5A66562A")
90 CALL HCHAR(24,3,108,7)::
CALL HCHAR(24,15,108,5)
100 FOR I=1 TO 10
110 R=INT(RND*21)+2 :: C=INT
(RND*26)+2 :: CALL HCHAR(R,C
,56)
120 RANDOMIZE
130 FREQ=INT(RND*4)*350+1
140 FOR ME2=1 TO 30
150 CALL SOUND(-1,ME2+150+FR
EQ,ME2):: NEXT ME2
160 CALL HCHAR(R,C,32)
170 NEXT I
180 FOR SET=3 TO 9 :: CALL C
OLOR(SET,11,2):: NEXT SET
190 DISPLAY AT(7,11):"HAPPY"
 :: DISPLAY AT(10,9):"HOLLOW
EEN"
200 CALL KEY(0,K,S):: IF S=0
THEN 200
```
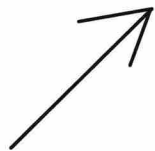
Alphabet Song by Jim Peterson

```
100 CALL CLEAR
110 PRINT "    ALPHABET SONG
"
120 FOR J=1 TO 15
130 PRINT
140 NEXT J
```

```
150 PRINT "          by Jim
Peterson"; :"Wait, please";
160 OPEN #2:"SPEECH",OUTPUT
170 DIM T$(26,2)
180 DATA 12,12,4,4,1,1,4,7,7
,8,8,10,10,10,10,12,4,4,7,8,
8,10,4,7,8,10
190 FOR J=1 TO 26
200 READ X
210 T$(J,1)="//"&STR$(X)&" "
&STR$(X/10*32)
220 T$(J,2)=CHR$(J=64)
230 NEXT J
240 T$(23,2)="DOUBLE"&"!"&"U
"
250 CALL CLEAR
260 PRINT " READY - TYPE THE
 ALPHABET"
270 T=0
280 K2=64
290 CALL KEY(3,K,ST)
300 IF (ST<1)+(K<65)+(K>90)T
HEN 290
310 IF K<>K2+1 THEN 330
320 T=T+1
330 PRINT #2:T$(L-64,1):T$(K
/64,2)
340 CALL HCHAR(12,17,K)
350 K2=K
360 IF K<>90 THEN 290
370 IF T=26 THEN 390
380 GOTO 270
390 FOR K=65 TO 90
400 CALL HCHAR(12,17,K)
410 PRINT #2:T$(K-64,1):T$(K
-62,2)
420 NEXT K
430 PRINT #2:T$(1,1):"NOW I'
VE";T$(3,1):"SAID MY";T$(5,1
):"A B";T$(3,1):"SEEZ"
440 PRINT #2:T$(8,1):"WON'T
YOU";T$(10,1):"COME AND";T$(
12,1):"PLAY WITH";T$(1,1):"M
E"
450 GOTO 270
```
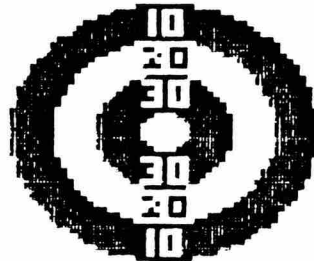
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