

ON THREE

The Magazine For Apple III Owners and Users

Volume 3 - Number 8

August 1986
\$4.00

• A Character Editor

Roll your own!

• Review ON:

Omnis 3

• AppleWriter Forever

• Animation Techniques

• Why Pascal?

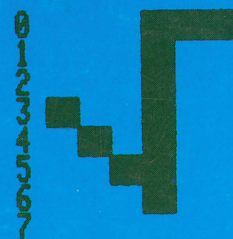
Edit character set

0 1 2 3 4 5 6



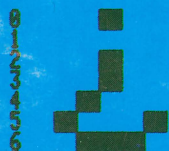
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(Ascii '\$')

0 1 2 3 4 5 6



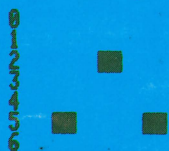
character 123
(Ascii 'E')

0 1 2 3 4 5 6



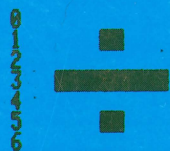
character 63
(Ascii '?')

0 1 2 3 4 5 6



character 59
(Ascii ';')

0 1 2 3 4 5 6



character 47
(Ascii '/')

0 1 2 3 4 5 6



character 65
(Ascii 'A')

0 1 2 3 4 5 6



character 69
(Ascii 'E')

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| ✓ AppleWriter /// | ✓ Keystroke Data Base * | ✓ Senior Analyst /// |
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ON THREE

The Magazine For Apple III Owners and Users

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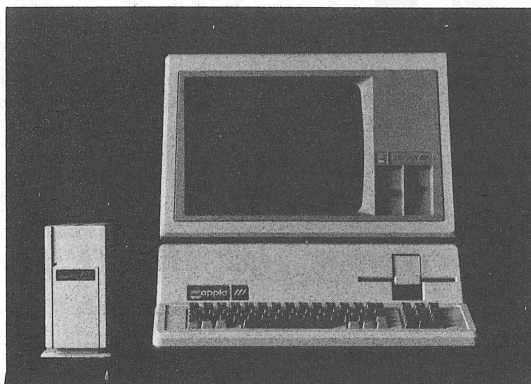
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ON: The Cover

How easy it is... The grids on this month's cover illustrate the use of a character set editor to modify a standard Apple /// character into your own unique character using the program in our lead story.

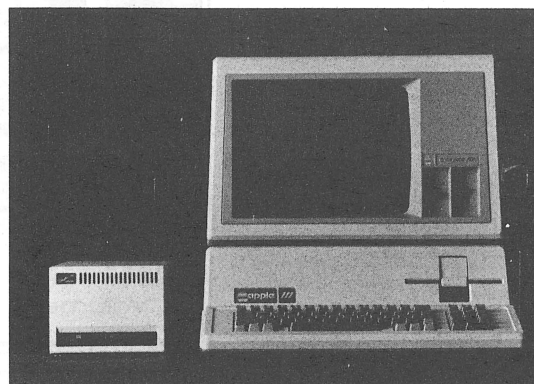
ON THREE Presents...

a new line of high capacity Apple /// disk drives



10-20 MegaBytes

or



34 MegaBytes

ON THREE has exciting news for you! A brand new line of low-priced hard disk drives for the Apple ///.

10-, 20- or even 34-MegaBytes (million characters) of very fast hard disk storage can be yours, priced so low you can't pass them up! These drives will allow you to consolidate all your files on a single disk and reduce the time you waste searching through stacks of floppies.

Combined with our **Selector /// Program Switching Utility**, you can place all (see the Selector ad) of your programs on a hard disk and put your floppy disks away forever. Think of how convenient it will be to be able to run any program from your hard disk—in just seconds.

All our hard drives are manufactured by Xebec—A leading manufacturer of hard disks for the Apple II. They come with a full one year parts and labor warranty, another mark of **ON THREE quality**.

Sider 10—Sider 20

You may have heard of the Sider 10 and Sider 20 for the Apple II. We have modified these drives to work in the Apple ///. They come complete with interface card, cabling, documentation and driver diskette, ready to run on your Apple ///.

The Sider 10 and 20 are attractively styled hard disk drives with a unique daisy-chain option that allows you to attach a second drive to the back of the first, just in case you ever outgrow the 20808 blocks on the Sider 10 or the 41616 blocks on the Sider 20.

Priced at only \$999* for the Sider 10 and \$1299* for the Sider 20, these drives are the best hard disk value on the market today!

Added Bonus: How would you like to be able to backup your entire hard disk in a matter of minutes? We will shortly be shipping the **B-Sider**, a high speed, low cost tape backup to attach to the Sider 10 or Sider 20. Call for pricing and availability.

Xebec 9730 The Xebec 9730 is the Sider's big brother. With a capacity of 69,632 blocks (34-MegaBytes), it is one of the fastest disk drives on the market. If you have very large disk storage needs, the 9730 is the drive for you. Like the Sider drives, the 9730 comes with everything you need to get it running on your Apple ///.

The 9730 is only \$1999* and is available right now from **ON THREE**.

A Note On Large Hard Drives:

Since the Apple /// can only work with disk volumes up to 16-MegaBytes in size, each of our large hard drives (Sider 20 and 9730) have been split into two or more sections. Our 20-MegaByte disk is partitioned into a 16-MegaByte volume and a four-Megabyte volume. The 34-MegaByte disk is partitioned into two 16-MegaByte volumes and one two-MegaByte volume. Partitioning simply means you will have two or three disk volumes in one drive box.

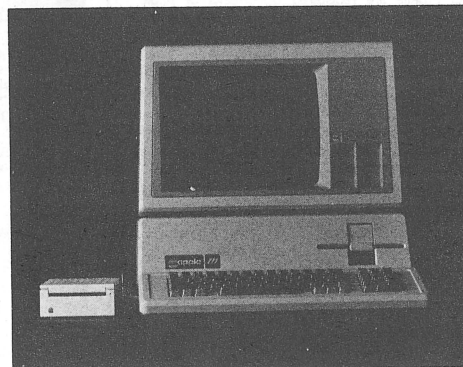
UniDisk ///.5 800K Micro-Floppy

The **UniDisk ///.5** is an 800K 3.5 inch disk drive for the Apple ///. If you have a hard disk and hate to do backups, the UniDisk ///.5 is the ideal solution. You can backup an entire ProFile with just seven UniDisk micro-floppies. Faster than a normal disk drive, the UniDisk ///.5 is a great time-saver.

Even if you don't have a hard disk, wouldn't it be great to get rid of your regular floppy disks? The new 3.5 inch disks are great! They fit in purses, briefcases, and even shirt pockets much easier than standard 5¼ inch disks. With a hard plastic shell, they can take far more punishment than the easily destructible 5¼ inch diskettes. You can also use your diskettes on UniDisk-equipped Apple //e and //c computers. Since these same 3.5 inch disks are used on the Macintosh, a utility will be coming soon to transfer files to and from the Mac.

The **ON THREE UniDisk ///.5** comes complete and ready to run on an Apple ///, including drive, interface card, cabling, documentation and driver disk. A truly great buy, priced at only \$499*.

If you already have a UniDisk for your Apple //e, the driver and diskette are available separately at \$50 plus shipping.



*Shipping charges extra: Sider 10, Sider 20 and Xebec 9730: \$35. UniDisk ///.5: \$10. UniDisk ///.5 documentation and driver disk: \$3.

To order, call (805) 644-3514 or write:

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Apple.Sauce

val j. golding

Holy Macro!

...is what Robin would have said if he could have seen our *Macro Manager*. As usual, we are in a somewhat privileged position of being able to use—and test—the program prior to its public release and in addition to offer suggestions for its improvement and human interface qualities. In combination with the *Desktop Manager*,™ we believe this combination represents the best desktop accessory program written for any microcomputer.

The sheer capacity is overwhelming. Who ever heard of a macro program with a cumulative capacity of over 400K. But in version 2.0 (coming soon), that figure is for real. It is derived from the following characteristics: a *MacroMap*™ may contain up to 50 different macros, each activated by a single keystroke, up to a total of 2048 characters. However, a single macro may itself be composed of 2048 characters, and since one macro may “call” another, even in a separate *MacroMap*, up to 200 *MacroMaps* may be linked together.

To give you but one example of a macro we use daily, consider the copy that we prepare for typesetting. Each time the name *ON THREE* appears in type, it is italicized, standard editorial treatment in most publications wherever emphasis is desired. To do this in a manner that the typesetting machine can understand, it is necessary to code the text in a fashion similar to that of the printer format section of a word processor. In our case, it is necessary to add special characters to our name, so that the final string “;f1*ON THREE*;f2” tells the typesetting machine to shift to italics and back again. Considering the number of times we use *ON THREE* in an article promoting our products, the savings of entering just a single keystroke is substantial.

Moreover, *Macro Manager* has a “record” mode, which after being turned on allows you to continue with your current application, recording each and every keystroke along the way until it is turned off. For each separate recording, you can assign one of up to 50 different keystroke combinations for future recall of each new macro. Most people tend to assign something mnemonic (such as “O” for *ON THREE*), but later find out that “O” is more appropriate for a newer macro. No problem, a couple of keystrokes can swap macro names. Like all of the *Desktop Manager* modules, *Macro Manager*, in addition to a complete manual, has online help screens, available at a keypress. Need we say more?

We've been Robbed

Yes we do. And we start on a sad note. Both *Macro Manager* and most of *Desktop Manager* were written by the brilliant **Rob Turner** who, very regrettably has been stolen away by Apple Computer, where he is now busily at work developing new products for the Apple //x. Of course, we wish Rob all the luck in the world with his new endeavor, and while he will be sorely missed at *ON THREE*, Rob has promised us on a stack of Apple /// reference manuals to continue working with us as time permits.

So goodbye, Rob, but not farewell. The thoughts of Bob and ourselves, and the whole staff of *ON THREE* will be with you.

We have Character

Ever since we published **Ron Puckett's** *Space Convoy* in the May *ON THREE*, we've been intrigued by the idea that standard text characters (for example, the letter “S” as shown in that issue) can be redefined as a pseudo-graphic image. Basically, the Apple ///, with its downloadable character sets, allows you, with the appropriate software, to redefine any character. In our lead story for this issue, **Ian Barland** has come up with a Pascal program titled *Character Set Editor*, which will make the process all but automatic. It starts on page five.

Next, judging by the letters we have received asking for information on a relational database, **Earl Brelje** has submitted for your edification a comprehensive review of *Omnis 3*. After our review of his material, we'd be pretty convinced it is the way to go. Read it and see if you agree.

In *AppleWriter Forever*, Novelist **Sharon Webb**, no stranger to our pages, returns this month to introduce a series to help you make the most from *AppleWriter*. In future installments you will learn to use WPL (word processing language), glossaries and other shortcuts. This time Sharon offers a pair of WPL programs. One will act as an autoreplace function on multiple files, and the other provides a simple way to lock or unlock all files on a disk without leaving *AppleWriter*.

For those of you desiring the “real skinny” on the advantages of Pascal over BASIC, **Dennis Cohen's** *ON Pascal* /// is back to explain (at our suggestion) just that.

And in our continuing series *Graphically Speaking*, **Mel Astrahan** brings forth the first of a group of articles on graphics animation, along with a short assembly program to invert the state of a single pixel. If you don't understand what a pixel is, then we suggest you go back to the May issue and read the first part of his three-part series on graphics memory allocation. Mel, by the way, is the author of our famous *Draw ON* /// graphics tool and the forthcoming *Desktop Manager* module *Grafix Manager*™.

In addition to other timely topics, our popular *One, Two, /// Forum* raises the question of ethics on copying Apple /// products that are no longer produced and/or supported. The Forum is your soap box, and we urge your participation. Letters are selected for publication on the basis of reader interest and are subject to editing for space purposes. Anonymous letters will not be published, but names will be withheld on request. Addresses and/or phone numbers will not be published unless specifically requested, and viewpoints not shared by *ON THREE* will be given equal consideration. Join in the fun.

And speaking of viewpoints, we are still looking for yours. What you want to see in *your* magazine. We also welcome article and program contributions which if accepted will be paid for at our standard page rates.

Next month, look forward to the premiere of a new department: *Ranntings*, where co-authors **Richard and Lavona Rann** (of Third Apple Users) will tempt you with relevant tidbits of Apple /// news, gossip and goings on. Until then, have a good one and remember to keep the /// flying.



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It's time to renew . . . if your subscription began with Vol. I, No. 3, this is your **last issue** of *ON THREE*. Use the renewal form on page 26 or call toll-free (except in California) **(800) 443-8877**.

Disk of the Month

What is the ultimate time-saver? Why *ON THREE*'s Disk of the Month diskettes, of course. Why use your precious time typing in *ON THREE* program listings when they are available on diskette for just \$14.95 (plus \$2 shipping and handling) each?

Better yet, mix and match. Any two or more for \$12.50 each (plus \$4 total shipping and handling). Best bet: the works. Now is the time to start your collection of these program-filled diskettes from all issues of *ON THREE Magazine*. Bulk and group purchase rates are also available, call (805) 644-3514 to inquire about these super savers.

DOM #1—Extra Disk Space Plus!

This diskette contains all programs from volume I, nos. 1 and 2 of *ON THREE Magazine*. Included: Disk Pak1 with a program to give you four additional blocks of space on your data disks, and Disk Pak2, something you can't do without if you are a Pascal user, a convenient and easy way to list the files on a Pascal directory. Plus graphics and sound demos and more.

DOM #2—Changing Printer Characters

Here is an amazing program you won't want to miss. With it you can print to the Apple Dot Matrix and compatibles such as Imagewriter or ProWriter the same characters that are shown on your video display. Many special fonts, including fancy gothic characters, can enhance your printed output. And, it comes with complete documentation. Also on DOM #2 are the other programs from issue number 3, more graphic demos plus: a program to list files from an Apple II diskette without needing to enter emulation mode.

DOM #3—Redefining a Keyboard

This disk is jam-packed full with programs that appeared in Volume I, No. 4 of *ON THREE*, and includes an easy-to-use program that allows you to redefine any or all keys on the Apple /// keyboard. Of particular interest is the ability to reassign the "V" to be the delete key so it can be used on AppleWriter /// and other programs. Also included are all the WPL programs, a disk formatting utility, a graphics sketching tool and still more that we don't have room to list here.

DOM #4—Emulation Patch

Volume II, No. 1 had so many great programs it took two disks, DOM's 4 and 5, to hold them all. DOM 4 has all of the Pascal programs and the Apple II Emulation Patch, a way to use any Apple /// Font in emulation. Also included is the Pascal startup program for Access /// that lets you autodial. Another fine utility is a Pascal program and UNIT to permit calculations from within the Pascal environment. Demos haven't been forgotten either with Radiate Graphics Demo and Beatles Music Demo. To top things off, we have included a number of Draw ON pictures you can view with the program on DOM #5.

DOM #5—Access Draw ON

Here we find the BASIC startup program to autodial from Access ///, and Ben's SUPER Slot Machine, along with all of the VisiCalc and WPL programs, and the Circling Graphics Demo which will show some of the fantastic images that Draw ON can create, plus still more Draw ON pictures, along with the Draw ON ///Picture Demo which you use to view Draw ON pictures.

DOM #6—BASIC Lister Plus!

Straight from the pages of Vol. II, No. 2 is a program which will give you perfectly formatted listings of Business Basic programs, and a Pascal program to guide and assist you in selecting noises for animation and game programs. Both the Pascal Noisemaker and the BASIC lister come with full documentation. We've also tossed in still more Draw ON pictures and some new fonts, as well. You can use the Draw ON viewer from DOM 5 to see them.

DOM #7—Heap Good Stuff

From Vol. ///, Nos. 1 and 2 we present a BASIC heap sort routine and demo, IMAGEHELPER, a neat graphics utility to simplify graphic image design, and a menu-driven program to pre-select printer codes and parameters.

DOM #8—Directory Sorting

Here is what you have been waiting for, a complete BASIC and Assembly program to take those old chopped up directories and sort them out in just the order you want. Included also is Clean.Heads, a Pascal program which exercises your disk drive at cleaning time and writes a program to remind you when you last cleaned heads, and a simple utility to read a text file and find out what the contents are without having to write a program on the spot.

Design your own Characters with:

A Character Set Editor

ian barland

A powerful feature of the Apple /// is its ability to change character fonts from within a program. You may have seen this feature in programs such as AppleWriter ///, and if you have purchased a DOM from *ON THREE*, you have also seen an example of a special character set. Would you like to design your own character set to use with AppleWriter? Do you crave a Business Basic equivalent of Apple-soft's FLASH command (or want a flashing cursor)? Or how about writing a game in the text mode that looks like it uses the graphics shape tables? This program allows you to do all these things. You can load a character font from disk, edit it, save it back to a disk, and even activate that character set in the program.

The program can be typed in as shown and compiled. However, if the unit List_Stuff (*ON THREE*, Vol 1, No. 2, DiskPak 2) is not in the system.library of your Pascal system disk, make sure that the compile-time variable List_Stuff_on_line is set to false in the {\$SETC} statement near the beginning of the program. If the unit is in your system library, the compiled program will be able to catalog disks while using the Load and Save options, which can be useful in finding the exact name of a file.

When the program is started, it must first initialize the font being edited to blanks. If you know that you want to load a character font from a file (such as the files ending in ".chr" on the AppleWriter disk or in the "fonts" subdirectory on the Utilities data disk), you may press "L" to immediately go to the Load subroutine. (If List_Stuff is available to the program, you will then be able to type ? and [return] to catalog a disk.)

```
{
                                A Character Set Editor
                                by Ian Barland
                                }
{
                                Copyright (c) 1986 by ON THREE
                                }
{
{$setc List_Stuff_on_line := true}
{If the unit List_Stuff (ON THREE, Vol 1, Num 2, DiskPak 2) is not in the}
{ system library, change the above compiler variable and re-compile. }
}

Program change_chars;
uses apple_stu  ($ifc list_stuff_on_line), list_stuff {$endc};

type chr_shape = packed array[0..63] of      {access chr_shape[x,y] as}
                                boolean;      { chr_shape[x+8*yl] }
                                { (you can't pack 2 dimensions) }

    chr_set  = array[0..127] of chr_shape;

var Current_name : string;
    finished : boolean;
    charset : chr_set;

procedure clear_screen;
begin
    write(chr(28))
end;

procedure clear_line;
begin
    write(chr(30))      {the control character to clear the cursor's line}
end;

procedure center(message:string);
var indent : integer;
begin
    indent := 40 - (length(message) div 2);
    if indent < 0 then indent:=0;
    writeln(chr(30), chr(24), chr(indent), message)
end;

procedure showtime;
var present : string[8];
begin
    write(chr(6)); {Turn cursor off. It's distracting.}
    while not keypress do
        begin
            time of day(present);
            insert(':', present, 3);
            insert(':', present, 6);
            write(chr(26), chr(72), chr(0), present)
        end;
    write(chr(5)) {turn cursor on again.}
end; {When this subroutine ends, a keystroke is in the buffer}

function prompt : char;
var letter : char;
    i : integer;
```

```

begin
  clear_line;
  write(chr(24), chr(30)); (tab 30)
  write('Enter your choice: ');
  show_time;
  read(keyboard, letter);
  prompt := letter
end;

procedure init;
var i : 0..127;
    j : 0..63;

begin
  finished := false;
  current_name := 'None';
  writeln;
  writeln('Pressing a key will abort initialization and enact that
command,');
  writeln(' allowing you to Load a character set. ');
  writeln;
  write('initializing character ');
  for i := 127 downto 0 do
    begin
      if keypress then exit(init);
      write(chr(24), chr(24), i+1, ' '); {write i+1 at column 24}
      for j := 0 to 63 do
        charset[i,j] := false
      end
    end
  end;

procedure get_file(message : string; var filename : string);

  ($Ifc List_Stuff_on_line)
  var cats_name, err_msg, dest : string;
      err_lines : integer;      {These variables are for cataloging}
  ($endc)

begin
  clear screen;
  writeln;
  writeln;
  writeln('Pascal system disk is assumed if no volume is given. ');
  if message = 'save to' then writeln
    ('WARNING: It is inadvisable (but possible) to overwrite a
directory! ');

  ($Ifc List_Stuff_on_line)
  lines := 20;
  dest := '.console';
  writeln('Enter "?" to catalog a directory. ');
  Repeat ($endc)
  writeln;
  write('What is the name of the file to ', message, '? ');
  readln(filename);
  if filename = '' then exit(get_file);
  ($Ifc List_Stuff_on_line)
  if filename[1] = '?' then
    begin
      err_msg := ''; err := 0;
      write('Enter the name of the directory to catalog: ');
      readln(cats_name);
      if cats_name <> '' then
        begin
          list_SDS_directory(cats_name, dest, lines, err, err_msg);
          if err <> 0 then writeln('Error ', err, '. ', err_msg);
          writeln
        end
      end
    end
  until filename[1] <> '?';
  ($endc)
end;

```

After loading a file or setting the entire font to blanks, you can then type "E" from the main menu to edit a particular character. You will first be presented with character number 32, an ASCII space. It is shown three times: once in a large grid where the actual editing is done, and twice in regular size below this grid (once as it would appear, and again in inverse mode).

If you wanted to change the appearance of the standard exclamation point, you can press the right arrow key to find character 33, or if you wanted to edit character 65 (the letter A), you could repeatedly press the right arrow key, or simply type in a capital A. Assume you now want to change the shape of the letter A. By pressing the up arrow, a cursor appears on the grid of the large letter A. By using the arrow keys, you can move the cursor to a desired spot and press the space bar. The space bar will turn a lit pixel off, and vice versa. The change you make in the letter as it would appear in regular-sized text is immediately reflected in the two normal letters below the grid. (Keep in mind that you are manipulating ordinary variables; the actual system font being used will not change at this point in the program.)

It is also possible to change the appearance of each row in the inverse mode: each row individually can be totally inverted, or alternate between the normal and inverted state at about three times per second (i.e., flash). Thus, while editing the letter A if you wanted it to flash every time it was put into the inverse mode, you could type the letter "F" (for flash) and that row would then flash in the inverse mode (and an F would appear to the right of that row on the grid). To get the entire letter to flash, each row must be set to flash separately. Again, you can see the effect of the changes in the small letter A underneath the grid (the one written in inverse would be flashing). If you decided you liked the normal inverted state better, pressing "I" would negate the flashing for that row.

If you didn't like the changes you made, pressing "E" would erase all changes and restore the letter-shape to its previous state. When finished editing a letter, pressing [escape]

will accept the change and return you to viewing the entire character set. After you have finished changing the entire font, pressing [escape] again will return you to the main menu, allowing you to save the new font to disk. (If in doubt as to what to press, all choices are always listed on the screen.) If you want to see right away how the newly-edited font looks, pressing "A" will activate the font in memory, making it the system font. (So don't press A from the main menu if the character set was just initialized, or else all letters will look like spaces, and the screen will be blank. If this does happen, you would have to blindly try to Load a good font and activate it, or re-boot.)

Once you have a font stored on a disk, it can be transferred to other programs fairly easily. AppleWriter, for instance, will download a new font through the [Q]7 command. If you have download.inv for the current version of BASIC, you can use something like the program line:

```
10 Dim fonts%(511, n):Perform getfont(@fonts%(0,k))
   .d2/fonts/letterman.chr":Perform loadfont
   (@fonts%(0,k)).
```

(Note that this program is unrelated to the procedure Newfont in Bgraf.inv, which only changes the font of the graphics driver.) To change fonts from Pascal, you can use the procedures load_a_file, activate, and the data types chr_shape and chr_set. Or, if you want the new font to be loaded automatically when the disk is booted, you can use the System Configuration Program of the utilities disk to change the character font in the "Change System Parameters" option.

One last note: if you are trying to load a font from AppleWriter, it appends the suffix ".chr" to the file name you enter. This can cause some confusion if you must refer to the same file by different names from different programs. Therefore, if this program tries to load a file that doesn't exist, it will toggle the ".chr" ending and try again. The "current character set" shown with the main menu, however, shows the exact file name loaded.

Good luck, and happy editing!



```
procedure load_a_file(var charset : chrset);
var alphabet : file of chr_shape;
    filename : string;
    stall : char;
    letter, IO_snafu : integer;

begin
    get file('load from', filename);
    if filename = '' then exit(load_a_file);
    {$IOcheck-} (We don't want the program to crash on an IO error)
    reset(alphabet, filename);
    {$IOcheck+}
    IO_snafu := IO_result; (IO_result is set to 0 after being looked at once)

    if IO_snafu = 10 then (toggle the '.chr' ending & try again)
    begin
        if (length(filename) <= 4)
            or (copy(filename, length(filename)-4+1, 4) <> '.chr')
            then filename := concat(filename, '.chr')
            else filename := copy(filename, 1, length(filename)-4);

            (try to load under the new filename)
            {$IOcheck-}
            reset(alphabet, filename);
            {$IOcheck+}
            IO_snafu := IO_result
        end;

        if IO_snafu <> 0 then (we have a real error)
        begin
            writeln(chr(7));
            writeln('IO error ', IO_snafu);
            writeln(' (see page 171, "Pascal Programmer''s Manual, Volume 1)');
            writeln(' (hit a key to continue)');
            read(stall);
            exit(load_a_file)
        end;

        for letter := 0 to 127 do
        begin
            charset[letter] := alphabet^;
            get(alphabet)
        end;
        close(alphabet);
        current_name := filename
    end;

procedure save_a_file(charset : chrset);
var alphabet : file of chr_shape;
    filename : string;
    letter, IO_snafu : integer;

begin
    get file('save to', filename);
    if filename = '' then exit(save_a_file);
    {$IOcheck-}
    rewrite(alphabet, filename);
    {$IOcheck+}
    IO_snafu := IO_result;

    if IO_snafu <> 0 then
    begin
        writeln(chr(7));
        writeln('IO error #', IO_snafu);
        writeln(' (see page 171, "Pascal Programmer''s Manual, Volume 1)');
        writeln(' (hit return to continue)');
        readln(filename);
        exit(save_a_file)
    end;
end;
```

Products & Services Available for the Apple ///

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Xebec 9730 (34Mb hard drive)	\$1999.00	\$35.00	
Reconditioned 512K Apple /// w/monitor ///	\$1148.00	\$50.00	
512K Memory Upgrade, 256 to 512K (Remit \$449 and \$50 cash or \$60 credit is rebated when old board is returned)	\$399.00	\$10.00	
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```
for letter := 0 to 127 do
begin
  alphabet^ := charset[letter];
  put(alphabet)
end;
close(alphabet, lock);
current_name := filename
end;
```

```
procedure activate(charset : chrset);
begin
  unitstatus(1, charset, 66)
end;
```

```
{-----}
procedure view(var charset : chrset);
```

```
const xcorner = 32;
ycorner = 6;
```

```
var command, escape, up, down, left, right, inverse, normal : char;
current char : integer;
finished : boolean;
```

```
procedure init_keys;
```

```
begin
  escape := chr(27);
  up := chr(11);
  down := chr(10);
  left := chr(8);
  right := chr(21);
  inverse := chr(18);
  normal := chr(17);
  current char := 32;
  finished := false
end;
```

```
procedure init screen;
```

```
var i : integer;
begin
  clear screen;
  center('Edit character set');
```

```
for i := 0 to 6 do
```

```
begin
  gotoxy(xcorner+2*i+1, ycorner-2); {write the number across top}
  write(i);
  gotoxy(xcorner-2, ycorner+i); {write the number down side}
  write(i)
end;
gotoxy(xcorner-2, ycorner+7);
write(7);
```

```
gotoxy(35, 16);
write('Ascii ' ' ');
gotoxy(39, 17);
write(chr(128), ' ', inverse, chr(128), normal)
end;
```

```
procedure print_directions;
```

```
begin
  gotoxy(1,20);
  center ('Type <Escape> to quit,');
  center ('the up arrow to edit a character,');
  center ('the right & left arrows to view an adjacent character');
  write(' or any other key to view that character.')
end;
```

```
procedure shrink(patient:chr_shape); {i.e., shrink to life size}
```

```
var info : packed record
  num : 0..127;
  ascii_id : 0..127;
  measurements : chr_shape
end; {of the record}
```



```

begin
  info.num      := 1; (we'll only change one character)
  info.ascii_id := 0; (a.k.a. 128)
  info.measurements := patient;
  unitstatus(1, info, 70)
end; (procedure shrink)

procedure introduce(a_character : chr_shape);

procedure picture(puzzle : chr_shape);
  var i, j : integer;
  begin
    for j := 0 to 7 do (map out a row)
      begin
        gotoxy(xcorner, ycorner+j);
        for i := 0 to 6 do
          if puzzle[i+8*j] then write(inverse, ' ', normal)
          else write(' ');
        gotoxy(xcorner+17, ycorner+j);
        if puzzle[7+8*j] then write('F')
        else write(' ');
      end
    end; (of procedure picture)

  begin
    shrink(a_character); (load the character into chr(128))
    picture(a_character);
    write(chr(25), chr(15), chr(30), chr(24), chr(32), 'character');
    (clear line 15, tab to 32)
    if current_char >= 32 then write('s ', current_char, ' and');
    writeln(' ', current_char+128);
    gotoxy(43, 16);
    write(chr(current_char+128))
  end; (of the introduction)

procedure edit(var a_character : chr_shape);
const cursor = '++';
var x, y, i : integer;
    command : char;
    finished : boolean;
    guinea_pig : chr_shape;

procedure shrink_a(doctor:chr_shape);
begin
  shrink(doctor) (For some unknown reason, calling 'shrink' must be the
  end; (first statement in a procedure to work properly.)

begin
  gotoxy(1,20);
  center('Arrow keys to move cursor, <space> to toggle square, ');
  center('F' to set row to flashing, 'I' to set it to inverse,');
  center('E' to erase changes, or <escape> to quit. ');
  clear line;
  x := 0;
  y := 0;
  finished := false;
  guinea_pig := a_character;
  repeat
    gotoxy(xcorner+2*x, ycorner+y);
    if guinea_pig[x+8*y] then write(inverse, cursor, normal)
    else write(cursor); (put up cursor)

  gotoxy(1,19);
  command := prompt;
  case command of
    ' ' : begin
      guinea_pig[x+8*y] := not guinea_pig[x+8*y];
      shrink_a(guinea_pig)
    end;
  end;

```

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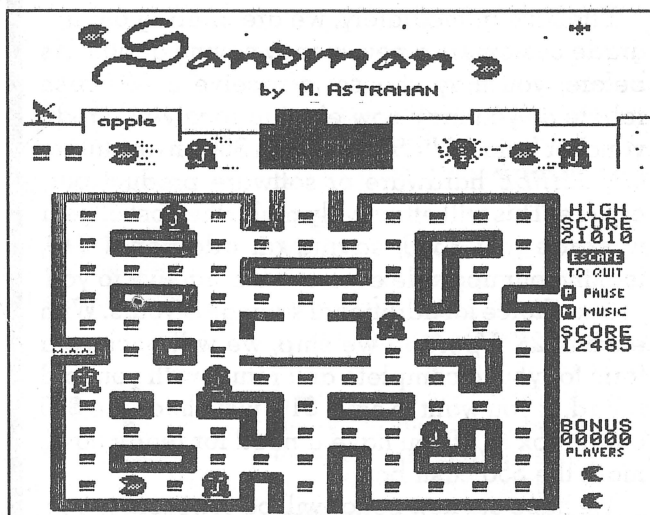
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The objective of SANDMAN is to score as many points as possible. Salvage all of the Apple /// parts discarded throughout the halls of Apple's labyrinthian research lab to receive points. WARNING! The lab is haunted by the ghosts of JOBS. . . if they catch you, you're done for!

Your only weapon against the JOBS is to find the WOZ who wanders about the lab peeking in on various projects. For a short time following a meeting of SANDMAN and WOZ the JOBS turn blue and may be exorcised if you can catch them.

"—Brilliant, colorful and fast moving, Sandman will provide hours of fun."



```

'F', 'f' : begin
    guinea_pig[7+88y] := true;
    shrink_a(guinea_pig);
    gotoxy(xcorner+17, ycorner+y);
    write('F')
end;
'I', 'i' : begin
    guinea_pig[7+88y] := false;
    shrink_a(guinea_pig);
    gotoxy(xcorner+17, ycorner+y);
    write(' ')
end;
'E', 'e' : begin
    guinea_pig := a_character;
    introduce(a_character)
end
end; {case closed}

if command = escape then finished := true;
if command in [right, left, up, down] then
begin
    gotoxy(xcorner+28x, ycorner+y);
    if guinea_pig[x+88y] then write(inverse, ' ', normal)
    else write(' '); {erase old cursor}

    if command = right then x:=x+1 else
    if command = left then x:=x-1 else
    if command = up then y:=y-1 else
    if command = down then y:=y+1;
    if x= 7 then x:=0 else
    if x=-1 then x:=6 else
    if y= 8 then y:=0 else
    if y=-1 then y:=7

end
until finished;

a_character := guinea_pig {don't throw away the changes}
end;

```

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```

begin {viewing}
    init keys;
    init screen;
    print directions;
    repeat
        introduce(charset[current_char]);
        gotoxy(1,19);
        command := prompt;
        if command = up then
            begin
                edit(charset[current_char]);
                print directions
            end;
        if command = right then current_char := current_char + 1 else
        if command = left then current_char := current_char - 1 else
        if command = escape then finished := true;
        if not (command in [up, right, left])
            then current_char := ord(command);
        if current_char > 127 then current_char := current_char - 128
        if current_char < 0 then current_char := current_char + 128
    until finished;
end; {of procedure view}

```

```

procedure print_menu;
begin
    clear_screen;
    center('Character Set Editor');
    writeln;
    writeln;
    writeln('Current character set: ', current_name);
    writeln;
    writeln;
    writeln;
    center('E)dit and view the current set ');
    center('A)ctivate current character set ');
    center('L)oad a character file from disk ');
    center('S)ave current character set to disk');
    writeln;
    center('Q)uit ');
    writeln
end;

```

```

procedure taking_orders;
var choice : char;
begin
    gotoxy(1,15);
    choice := prompt;
    case choice of
        'E', 'e' : view(charset);
        'A', 'a' : activate(charset);
        'L', 'l' : load_a_file(charset);
        'S', 's' : save_a_file(charset);
        'Q', 'q' : begin
            gotoxy(49, 15);
            write('Quit');
            finished := true
        end
    end; {of case "choice"}
    if choice in ['E', 'e', 'L', 'l', 'S', 's'] then print_menu {again}
end;

```

```

Begin
    init;
    print_menu;
    repeat
        taking_orders
    until finished

```

End.

Omnis 3—The Database Manager

earl t. brelje

Any one who requires a large database has probably faced frustration with the database they are now using. Not enough fields per record, insufficient indexed fields to speed sorting and searching, limited data entry formats or limited data output formats. Many programs do not allow you to output to any preprinted form, to design your own forms and then print the forms with the correct data inserted. If these are some of the problems you have faced, then read on, for the Omnis 3 database could be the program to solve your problems.

Omnis 3 is the third program in the OMNIS series from Blyth Computers. Omnis 1 and 2 are also databases, but less comprehensive than Omnis 3. If you are already using Omnis 1 or 2, the data files are compatible and can be used by Omnis 3. I will review only Omnis 3 because of the three it is the only relational database.

Omnis 3 allows 12 related files to be open at one time

Omnis 3 allows up to twelve related files to be open at one time. This means you could have one master customer file and eleven related transaction files for labor, material, etc. After the first few hours of using this program you will begin to appreciate the easy file, screen and report definition routines.

The manual is very well written and goes through the step by step creation of a sample database. This is a complex program that requires very careful reading of the manual and in many cases rereading, again and again. In time you will realize

that if you can conceive of an application, Omnis 3 will not take long to create it. Invoicing, job costing, medical records, stock control and time/cost recording, these are but a few of the many applications that can be created with Omnis 3. Enough advertising for the program, let's get on with the review.

The library file holds the structural data, the data set stores the actual data

An Omnis 3 application consists of a library file with its associated data set or sets. The library file holds the data concerning the structure of your application, how you want the information stored, processed, retrieved and printed. The data set stores the actual data that is entered: names, addresses, time, costs and whatever. The data file may consist of up to four files which are regarded by Omnis 3 as a single data file. Each of these four sections may have a maximum size of 32767 blocks or 131068 blocks per data set, approximately 64 megabytes. On a hard drive like the Xebec 9730 you would generally have to create only one section, since the drive is limited to a 16-megabyte volume size. On standard 140K Apple /// disks you could have a four-section database for a total of 1120 blocks.

The first files to be created are the library formats. There are six different files to be created as you set up your database:

1. List

List formats are a list of the file format names, used by your application. Multiple file lists can be created if required.

2. File

File formats contain information about the format of each file within the application as it is to be stored on the disk. For each field in the file, the format contains information about the field name, type, number of decimal places (numeric only), length, indexing and the index length. A Maximum of 24 file formats are allowed per data set.

3. Entry

Entry formats contain information about the format of each entry screen. Twelve screens are possible, together with screen-specific information about the fields allocated to each file, uniqueness of index, default values and check functions.

4. Report

Report formats contain information about the format of reports defined for your application, print specification, sort requirements, header information, detail information, up to nine subtotals and a grand total. A maximum of 240 columns, 60 totalled fields and 60 calculated fields are allowed per report.

5. Search

Search formats contain information about the searches defined for the application. A maximum of 50 comparisons per search are allowed.

6. Menu

Menu formats contain information about the menus you define for your application. A maximum of six entries are allowed per menu. However, one menu entry may lead to another menu. With the use of the menus you can create an easy to use and in some cases completely automated custom system.

Creating the Library File.

From the main Omnis menu you can go to the hardware setup. This allows you to define your printer configuration, redefine the basic control keys in the system, set the prefix to your data files and set up the security access code, of which nine are allowed. The main menu also contains a disk utilities option, but it is not used by the Apple /// version of the program. When you select OMNIS from the main menu, the first thing you must do is to create a library file. The system will prompt:

Omnis library Name ? OMNIS
ESC for the system menu

You may now enter the name for your library or accept the name shown, OMNIS. Next the system will prompt for the volume to be used to store the library. If you have entered a prefix through hardware setup, it will also be displayed.

Volume selection

default	(.PROFILE/whatever/)
[Unit 4]	(often floppy number 1)
Unit 5	(often floppy number 2)
Unit 9	
Unit 10	
Unit 11	
Unit 12	

Select, Up, Down, Z to spin, ESC

Each unit number represents a Pascal floppy disk or hard disk volume. If you press Z, the system will spin the volume indicated by the square brackets. Next the system will display:

Maximum number of Blocks ? ...
Between 10 and 4000, 0 to fill volume

You may enter any number from 10 up to a total of 4000 blocks. A word of caution, do not enter 0 unless you want your entire drive set up for the library file.

Creating the File Format

Now we get to the most important part of our database, setting up the file formats. File formats define the individual fields for each record. After naming this file format, the following screen will be displayed:

	Name	Ty	Dp	Ln	Ind?	ILn	DL
[1]							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

Up to 120 fields may be defined for each file format and 24 file formats for each data set. The following entries must be made for each field:

- 1) Name
Up to seven alphanumeric characters and unique throughout the whole Omnis application.
- 2) Type
There are five possible types—Character, Numeric, Date, Boolean, Sequential.
- 3) Decimal Places
0 to 6 for numeric fields.
- 4) Length
1 to 79 for character fields.
- 5) Indexed?
Is this field to be indexed? Only 12 fields may be indexed, minus 1 for each connected file.
- 6) Index Length
The portion of the indexed field, 1 to 79, to be indexed.

you can print a list of the file format

When all of the field information your application requires has been entered, you can also print out a list of the file format, reorganize data and estimate disk blocks. Reorganize allows you to add or delete fields without having to re-enter the data you have in the system. Estimate will give you an estimate of disk blocks required for any number of records you enter. When you set up the data file, the system requires that the data file be set for a specific number of disk blocks, in the same manner as you set up the library file.

These file sizes can be increased or decreased at any time by using the Omnis utilities.

Creating the Entry Formats.

The entry format defines the appearance of the entry screens, any calculations involved, and the effects of one file on another. After giving the new entry format a name, you will be presented with a blank screen 80 columns wide by 21 rows deep.

you can create invoices that are currently hand-written

You should consider this screen a blank piece of paper onto which you will be writing your information. You can create invoices that you are currently hand writing, add extra information that you have always wanted, or create entirely new entry formats. The screen is your canvas; arrange your own picture on it. With 12 screens to use, there are no limits to the entry formats you can create.

Entries that are indexed can be made unique; the entry will be checked and rejected if a duplicate. Entries can be checked to determine whether the entered value is acceptable according to the check function you have set for this particular entry. Default values can be set for each entry and unless changed by the operator will automatically be entered.

formulas can be entered for a calculated field

Formulas can also be entered for a calculated field and calculations will automatically be performed upon data entry. Thus in a labor cost application using an entry format for labor cost, you can enter an amount and the system will automatically increase the customer master file monthly balance field by the amount entered. This would be a simple example of the use of connected files.

OUR COMPANY INC.	CUSTOMER MASTER FILE
Customer Reference Number : 1	****
Customer Name : 2	*****
Customer Address : 3	*****
	4*****
	5*****
Telephone : 6	*****
Contact Person : 7	*****
Labor Rate : 8	*****
Outstanding Balance : 9	*****

The customer information would only have to be entered once and after that all labor entries would be entered using just the customer reference code, thereby saving entry time and disk space. Figure 1 is an example of the entry screen as it would appear after you have entered your descriptions and field information.

The numbers to the right of the colons are the order in which the cursor will move as you enter data. These can be changed if you want to enter the information in a different sequence. The remaining marks indicate the space the entry will take on your screen. To describe fully the ways in which these entries can be formatted, checked, defined and calculated would take more pages than we have available. Just one example, number nine could be set for display only; it cannot be changed except by entering labor or material charges on the connected files, and the customer file cannot be deleted as long as the outstanding balance is non-zero.

At this point you can begin to enter data. After you have entered data, it can be found in seconds using the FIND command for indexed fields. If you are not sure of the spelling of a name and enter just the first two letters, such as Sm for Smith, which will take a few seconds for the first name beginning Sm to be recalled. Type N for the NEXT command and the next record is instantly available.

Type B for the Back command and the previous record appears. Non-indexed fields can be checked using the search command. The speed at which the record is found is not nearly as impressive as FIND but here the system must search each record for your specific search parameters. Using the J command will insert the same data as the previous record and you then only have to make the necessary changes. The data entry commands can be easily customized to your own particular requirements.

Creating the Report Formats

The production of clear, concise and meaningful reports is probably the most important part of any database system. The variety of applications in a database system is of necessity greater than dedicated systems such as ledgers, accounts receivable, payable, inventory, or payroll. The database should therefore have the greatest possible flexibility and variation in output.

The possibilities in the reporting formats in Omnis 3 are almost overwhelming; you can easily use your existing invoices, statements and preprinted forms from city, state and federal governments. You can create reports that are just subtotals, up to nine levels of subtotals, sorted using nine different fields, searched using 50 different fields, 9600 fields per report, 240 columns per report, 60 totalled fields per report and 60

calculated fields per report. There is even a special field to insert printer commands into a report at any point you wish. Printer values concerning paper width, lines per page, line spacing, top, bottom and left margin and single sheet paper are filed for each report. A default search format can even be assigned to a particular report. If you can imagine the report you want, you can get it.

Creating Search Formats

A maximum of 50 search fields can be used when creating the search format. The search can be AND, OR, or a calculated search. The modes are equal, not equal, equal or greater, and equal or less, commencing with the value or containing the value. As you can see with these specifications, the search possibilities are again almost limitless.

Creating Menu Formats

The creation of menus to suit your requirements is probably one of the best features of Omnis 3. Menus can be created to do exactly what you need, when you want. Menus can be created to go to another menu, change user code, change date, open a data set, select a search format, select an entry format, and print a report by automatically selecting all previous choices. With the use of custom menus, the person entering data, editing data or printing reports does not have to understand the operation of Omnis 3. The entire system can be run from the menus that you create.

The Omnis utilities section of the program, besides allowing the maintenance of the library and data files, also will create DIF files to your requirements. You can select any or all fields in the data set. DIF files can also be used to insert data into the Omnis data set.

Over all I would have to rate Omnis 3 as one of the best programs I have ever used on the Apple ///. It will take more time in the beginning to set up a database with Omnis 3, but as you become familiar with the operation and flexibility of the program, it gets easier and after a while you will begin to wonder why you ever used anything else.



ON THREE Presents...

ON THREE O'Clock

***Now is the Time
for a real-time clock***

Believe it or not, a lot of folks have plain forgotten (or never knew) that the Apple /// was designed to operate with a built-in clock and that, with a clock chip installed, SOS will automatically time stamp and date all file saves.

When the Apple /// was first released, the supplier of Apple's clock chips could not supply a working clock. As a result, the /// was supplied without a clock of any kind. Now maybe you are wondering when you list a disk directory, how the time and date magically appears.

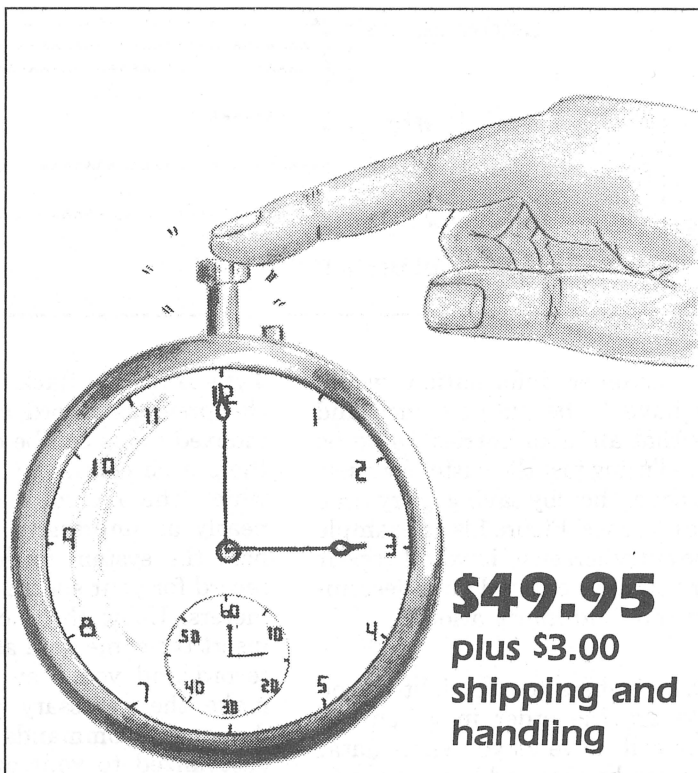
Not too long ago ON THREE developed a clock for the Apple /// which plugs in right where the never-released Apple clock was supposed to go, and for just \$49.95 plus \$3.00 shipping and handling, this easy to install, SOS-compatible clock can be yours. It comes with comprehensive instructions and ON THREE's limited six-month warranty and does not use any of your precious slots.

With an ON THREE O'Clock installed, whenever you save or modify any type of file, the current time and date will be added to the directory listing so you can always tell at a glance which file you last worked on, and when. But that's not all. Business Basic has two reserved variables, DATE\$ and TIME\$, which return, respectively, the current date and time to your BASIC program. These reserved variables can then be used whenever you want to print the date and/or time in a BASIC program.

Special Combination Offer

There's a great deal more you can do with ON THREE's ON THREE O'Clock if you also have our Desktop Manager. Whenever you want, you can display the current date and time on the screen with one keypress. Since this is a background function, you can be word processing with AppleWriter or entering data into VisiCalc, and with one keystroke you can obtain updated time information. In addition, you can use the Desktop Manager's Appointment Calendar to enter items you want to be reminded of and, like magic, when the time comes, no matter what you are doing, a message will appear on your screen to gently chide you via the Desktop Manager to make that phone call now, etc.

Now The Appointment Calendar is not the only feature of the Desktop Manager, you can read about the Calculator, the Notepad, and the others elsewhere, but since the Desktop Manager requires a clock, we want to offer you a money-saving deal. Purchased together, you can get the ON THREE O'Clock and the Desktop Manager for only \$173.95 plus \$8.00 shipping and handling. Now is the time to take advantage of this special offer.



Desktop Manager/ON THREE O'Clock Combo

\$173.95 plus \$8.00 shipping and handling

Stereo Spiral

richard m. smith

Stereo.Spiral is a program that displays a figure that can be viewed in [simulated] three dimensions. To see the "stereo" effect, run the program and seat yourself approximately two feet away from the monitor screen, with your eyes at about screen level.

There are two ways to achieve the stereo effect. One way is to relax your eyes as though you are looking past the display. Not everyone can do this, but if you are successful the two images will converge, and as they come together you will see a stereo, or 3-D, image. The other way is to cross your eyes slightly to converge the images. Note it may be possible for this to cause eye strain.

To create the stereo effect, the two images are slightly rotated, relative to each other. This emulates the effect of two eyes looking at one object. When looking at an object, each eye sees the object at a slightly different angle. In this case, to achieve the effect, we have two eyes looking at two objects.

The program is divided into six parts. The first part (line 140) sets up several factors related to pi that are used in the trigonometric conversion functions later in the program. The variable "sc" is a scale factor that compensates for distortion on the screen caused by a difference in pixels-per-inch between the vertical and horizontal directions on the screen. The amount of difference may vary among displays, so the user may have to change the value assigned to sc in line 140.

Lines 160 through 180 convert three-dimensional Cartesian coordinates to flat-screen coordinates. These or similar algorithms can be found in various references. These particular algorithms were derived from those found in "Microcomputer Graphics" by Roy E. Myers, Addison Wesley, 1982.

Lines 220 through 310 create the values for the spiral figure and display it on the screen. This section first creates modified spherical coordinates for the spiral and then converts them

The program Stereo.Spiral grew out of the author's interest in displaying three-dimensional objects on a flat screen. As a result of working in the space program for many years, he had seen many stereo-pair photographs of the moon and Mars and wondered whether or not the effect could be realistically reproduced on a microcomputer graphics screen. Stereo.Spiral is the pleasant outcome.

to Cartesian (x,y,z) coordinates. The GOSUB in line 280 takes care of the conversion to flat-screen coordinates.

Line 380 sets up the original values for viewpoint distance, magnification factor, and object rotation around the x-axis.

Lines 390 through 440 display viewing parameters and lines 460 through 510 allow the user to change the parameters to experiment with the effects of rotation, distance, and magnification.

When adjusting the distance and magnification, the best results are obtained when the two images do not overlap. Be sure that in addition to the usual SOS files, your diskette contains BGRAF.INV, as well as STEREO.SPIRAL.



```

10 REM
20 REM :-----:
30 REM : Stereo.Spiral by Richard M. Smith :
40 REM : Copyright (c) 1986 by ON THREE :
50 REM :-----:
60 REM
70 OPEN#1,".grafix"
80 ON ERR INVOKE"bgraf.inv"
90 PERFORM initgrafix:OFF ERR:FOR i=1 TO 3:PERFORM
  release:NEXT i
100 no=2:bu=2
110 PERFORM fillport
120 TEXT:HOME
130 PERFORM grafixmode(Zno,Zbu)
140 sc=2.0:pi=3.1415926:po=pi/180:pu=180/pi
150 GOTO 370
160 xe=-x$1+y$1:ye=-x$1$2-y$1$2+z$1$2
  ze=-x$2$1-y$2$1-z$2$1+rho
170 IF ze=0 THEN ze=.0001
180 sx=d$xe/ze+cx:sy=cy-d$ye/ze:RETURN
190 PERFORM fillport:PERFORM grafixon
200 s1=SIN(theta):c1=cos(theta):s2=SIN(phi):c2=cos(phi)
210 cx=85:vy=0
220 FOR n=1 TO 2:i=00:z=-2
230 x=SIN(i$po):y=COS(i$po)+vy
240 GOSUB 160
250 PERFORM moveto(Zsc$sx,Zsy):z=z+.02

```

```

260 FOR i=10 TO 1260 STEP 10
270 x=SIN(i$po):y=COS(i$po)+vy
280 GOSUB 160
290 PERFORM lineto(Zsc$sx,Zsy):z=z+.02
300 NEXT cx:vy=.5
310 NEXT
320 PERFORM moveto(Z1,Z10):PRINT#1,"ESC-exit CR-CHANGE"
330 GET a$
340 IF ASC(a$)=27 THEN TEXT:HOME:END
350 IF ASC(a$)<>13 THEN GOTO 330
360 RETURN
370 rho=008:d=0220:theta=.0000:phi=0.5236:cx=85:cy=96
380 GOSUB 190:TEXT:HOME
390 PRINT"Distance=";rho
400 PRINT"X-axis rotation=";
410 PRINT USING"###";phi$pu
420 PRINT"Magnification=";d
430 PRINT
440 PRINT"To accept, press CR"
450 PRINT
460 INPUT"Distance=";r$
470 IF LEN(r$)<>0 THEN rho=VAL(r$)
480 INPUT"X-axis rotation=";p$
490 IF LEN(p$)<>0 THEN phi=VAL(p$)$po
500 INPUT"Magnification=";d$
510 IF LEN(d$)<>0 THEN d=VAL(d$)
520 GOTO 380

```

ON THREE Presents . . .

The Desktop Manager™

by Rob Turner and Bob Consorti

• The most complete and sophisticated desk accessory program ever written!

• For once and for all, unclutter your desk the Desktop Manager way!

The screenshot shows a spreadsheet with columns for 'Straight Line', 'Declining Balance', and 'Double Declining Balance'. The Desktop Manager main menu is overlaid on the right side of the spreadsheet, listing various utilities like Note Pad, Calculator, Disk Utilities, etc.

Desktop Manager main menu, shown overriding a spreadsheet.

Running in the background, the Desktop Manager places all of the desk accessory utilities you ever wanted . . . Appointment Calendar . . . Notepad . . . Calculator . . . Disk Utilities . . . Macros . . . Graphics . . . Games . . . and more, into each program you own, just like they were part of it. Instantly available from /// E-Z Pieces, VisiCalc, AppleWriter, BPI, and all other programs, the Desktop Manager will clear your desk pronto.

What is "Running in the background?" It is simply a program that, unlike most, "hides" from you. You are never aware of its presence, but when you need it, it is "Johnny on the spot," ready to serve you at the touch of a key. Selector /// is another example of a background program.

While word processing, have you ever needed to multiply two numbers? Perturbed because you have a few thousand dollars worth of computer equipment at your fingertips and still can't multiply two figures when you want to? Or, you're entering data in a spreadsheet and can't find either a scratchpad or a pen to jot down a note. While you're digging under piles of paperwork, you probably mutter something unprintable under your breath.

Perhaps you're entering text in a word processor document and decide it's time to do your first file save, but you can't remember if the file name you want to use already exists. Too bad the word processor has no provision to catalog a disk. Similarly, you may need to save a file and discover that you don't have a disk with enough room left on it. You have

plenty of blank, unformatted disks. If you exit the program to use the System Utilities to format a disk, all of your work will be lost.

Does this describe your situation? How about clearing your desk of that old-fashioned calculator, the pens and paper, your appointment calendar and increase your productivity? The Desktop Manager from ON THREE will do these things and a great deal more. From within any program, a keypress will override your current application and display a window into the Desktop Manager. At this point you have the entire facilities of the Desktop Manager at your beck and call. You can pause whatever you are presently doing, and select any of the following modules:

The screenshot shows a NotePad window with a memo and a database. The NotePad main help menu is overlaid on the right side, listing various commands like 'Add Another Note', 'Backs Up to Previous Note', etc.

NotePad main help menu, superimposed on a NotePad memo and a database.

The screenshot shows a NotePad window with a memo and a database. The NotePad secondary help menu is overlaid on the right side, listing various commands like 'Add Another Note', 'Backs Up to Previous Note', etc.

NotePad secondary help menu, superimposed on a NotePad memo and a database.

The Note Pad: A powerful and easy to use word processor. It lets you jot down notes for quick reference while you are entering data or for later viewing. No need to type in a file name, The Notepad does it for you, **automatically**. Multiple pages per note, plus the sophisticated features of word-wrap, automatic repagination, copying and more gives you the power of a word processor—available in an instant—from whatever program you are using. Instant on-line help screens (a feature of all Desktop Manager modules) make The Notepad easier to use than many word processors.

The Appointment Calendar:

A time scheduling productivity tool that allows you to set multiple appointments for any day through December 31st, 1999. These "Appointment Events" automatically notify you of your next appointment. From within any program, no matter what you are doing, the Appointment Calendar will pop up on your screen and display your next appointment. The day and week at a glance features show the appointments for a single day or an entire week. It also provides an easy way to set your system clock. Full help screens compliment this handy and easy to use perpetual calendar.

The screenshot shows the Appointment Calendar primary display. It includes a calendar grid for the month of May 1986, with appointments listed for various dates. The interface is simple and easy to use.

Appointment Calendar primary display.

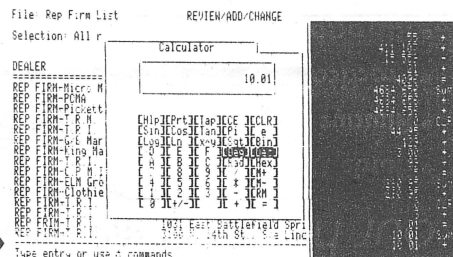
The screenshot shows the Appointment Calendar event display. It displays a specific appointment event, showing the date, time, and details of the appointment. The interface is clear and informative.

Appointment Calendar event, showing an appointment that has just come due.

The Calculator:

An extremely powerful electronic workhorse. Full 16-digit accuracy and multiple functions like: SIN, COS, TAN, LOG's, natural LOG's, x to a power, square roots and more. In addition to the basic add, subtract multiply and divide, The Calculator features e, pi, degrees and radians, memory, base conversions from decimal to hex or binary and back again, a simulated scrolling paper tape, hardcopy printing and of course, on-line help screens.

The Calculator, with paper tape showing last calculations.→



The basic **Desktop Manager** comes complete with all the above features and more! For the first time, **Desktop Manager** lets you use a mouse from within any program, even those not designed for a mouse. You will be able to use the mouse to move the cursor and the mouse button doubles as the ESCAPE or RETURN key. The **Desktop Manager** also offers the ClipBoard for information transfer. With the ClipBoard, you can transfer information from one screen or program to another. Say you are using the Calculator to do some calculations and want to transfer the result into your word processor. You can simply cut from the calculator and paste it into your program. Likewise, you can move an entire section of text from your program to the notepad or vice-versa.

In addition, if you are running with Selector /// or Catalyst, you can also transfer directly from one application to another. After you have used the

ClipBoard to transfer some information, you can return to your previous application by simply pressing Escape, and the cursor will even be exactly where you left it.

With our no-nonsense installation program, a few simple keypresses will quickly install the **Desktop Manager** on all of your application programs. No need to use the System Configuration Program, Desktop Manager does it all for you, and automatically! All **Desktop Manager** Modules have movable windows that can be placed anywhere on the screen that they will fit.

The complete package includes all of the features described above and a 110 page User's Guide that shows clearly how to use each function of the various **Desktop Manager** modules. Priced at only \$129 plus \$6 shipping, the **Desktop Manager** is the best thing to happen to the Apple /// in a long, long time.

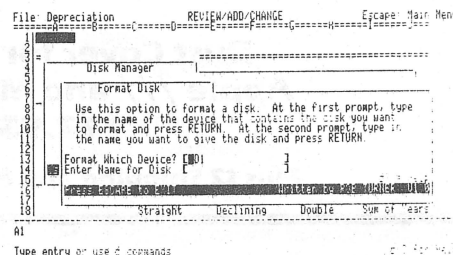
Disk Manager:™

Provides the most frequently used features of the Apple /// System Utilities program. Formatting disks, listing, copying, deleting and renaming files and more are all available, at the touch of a button. Never again will you have to lose data when you need to exit a program to format a blank disk. On-line help screens and standard **Desktop Manager** "Ease of use" makes the \$44.95 (and \$3 shipping) price a steal.

Optional Desktop Manager Modules Available Now!



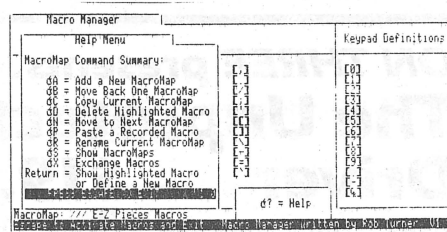
Main menu of the Disk Manager



"Format a Disk" option of the Disk Manager

Macro Manager:™

Allows you to define a single keypress as a series of keystrokes to be played back at your command. Our innovative Record Macro mode lets you record a series of keystrokes—over 2000, if you want—right while you type them in response to prompts, etc., in an applications program. After you have finished choosing from your applications menu, you can go right back to the Macro Manager and assign the previously recorded keystrokes to a single macro definition. Up to 50 different definitions can be assigned to a single macro set. Each set of macros is called a MacroMap™ and over 200 different MacroMaps, which can be modified with additions and deletions, etc., can be selected from an easy to use menu. The Macro Manager allows you to copy macros from one key to another and to exchange or re-assign macro keystrokes. All of this and more for only \$44.95 plus \$3 shipping.



The Macro Manager's help menu, displayed over a MacroMap™

ASCII Chart:

Lists, in an easy to understand table, the decimal and hexadecimal values for all ASCII characters. A second screen features a keypress table that shows exactly which keys to press for different ASCII codes. The keypress table can be a lifesaver when you need to know what commands to send to a printer, or to an applications program, to enable different printing modes such as bold, italic, compressed print, etc. Only \$9.95 plus \$3 shipping. As an extra bonus, the source code is included on the disk.

Mr. SandMan:

A fast-moving, multi-level, full-color arcade game that you can play at any time. As a **Desktop Manager** background module, whenever you need a break from the tedium of entering data into your present application, you can instantly "take five" to team Mr. SandMan up with the wandering WOZ and eat up those nasty JOBs in this challenging and amusing game. For only \$29.95 and \$3 shipping, you will receive both the **Desktop Manager** and stand-alone versions. The stand-alone version allows you to play Mr.SandMan even if you don't have the **Desktop Manager**.

Coming Soon to a Desktop Near You!

Grafix Manager:™

Allows you to send graphics images to your printer from within any program. You can combine text and graphics images on the same piece of paper. You can insert a picture in the middle of your word processing document. Features automatic rotation, and image enlarging and/or shrinking. Medical image processing techniques allow scaling changes without loss of clarity in the image. Supports Apple DMP-ImageWriter, Epson, IDS, OkiData, Pkaso, Pkaso/U and many more. Available about July.

The **Desktop Manager** requires an Apple /// with 256K or 512K of memory and an external disk drive of any type or capacity. The Appointment Event feature requires an **ON THREE O'Clock** on Apple Clock or compatible Apple /// clock chip. The **Desktop Manager** uses between 32 and 40K of memory.

Desktop Manager	\$129.00
	plus \$6 s/h
Disk Manager	\$44.95
	plus \$3 s/h
Macro Manager	\$44.95
	plus \$3 s/h
ASCII Chart	\$ 9.95
	plus \$3 s/h
Mr. Sandman	\$29.95
	plus \$3 s/h

How many dollars have you invested in your Apple ///?

Answer this questionnaire and find out how to extend your computer's life:

- Do you vacuum your office or home less than twice a day? ☐ YES ☐ NO
- Are there smokers in your office or household? ☐ YES ☐ NO
- Are there children in your household? ☐ YES ☐ NO
- Is the computer located in a family room or other high traffic area? ☐ YES ☐ NO

If you answered "yes" to one or more of the above questions, then you need to protect your investment with an **ON THREE** Dust Cover.

**Dust Cover for Apple /// and
Monitor ///
\$11.95**

**Dust Cover for Profile,
Apple /// and Monitor ///
\$12.95**

Plus \$2 Shipping and Handling each

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Ventura, CA 93006

Send me _____ Apple /// dust covers

Send me _____ Apple ///-Profile dust covers

Name _____

Address _____

City _____

State _____ Zip _____ Phone _____

☐ enclosed \$ _____

☐ M/C ☐ Visa ☐ AE*

number _____ exp. date _____

Signature _____

*3% surcharge on American Express. California residents add 6% sales tax.

ON THREE presents... The Unprotect Driver **\$19.95** plus \$2 s/h

ON THREE has not changed its position regarding duplicating copyrighted programs for profit or to give away, but since many Apple /// software products are no longer supported, owners of AppleWriter ///, VisiCalc, and VisiCalc Advanced Version are facing the problem of what to do when a diskette "crashes." After much consideration we decided to proceed with a product to solve that problem. *The Unprotect Driver* will allow you to make back up floppies of the above programs. For the first time, you can put your master disk in a safe place and boot on the duplicate.

Economically priced at only \$19.95 plus \$2.00 shipping and handling, the *Unprotect Driver* comes with full documentation and will work with *Selector ///* so you will no longer require a "key" diskette. The *Unprotect Driver* is sold for legitimate *Archival* purposes only. **ON THREE does not condone** and will not condone duplicating a disk for any other purpose.

Draw ON ///™

from ON THREE

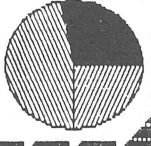
**The most versatile Apple ///
graphics tool ever designed!**

\$179 ... plus \$5 shipping and handling

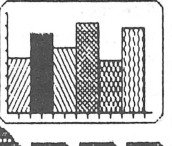
- Spruce up dull graphs
- Create new fonts, drawings
- Cut and paste
- Shrink, rotate, invert images
- Print graphics screens to most popular printers

Draw ON /// Has Mastery Over Illusions!!

Create delicious pies!



Customize your charts



What would you like your Draw ON /// to do? Professional-quality diagrams, organization charts, floorplans, complex illustrations and original artwork are all possible! You can now do CAD on your Apple /// with Draw ON ///!

ON Pascal ///

dennis r. cohen

This column is going to begin with a request and an associated explanation.

When I started this series, I included a request in the first column for feedback as to what sort of articles would be of interest so that I could plan the future direction of the project. Thus far, I have received exactly two responses to that plea. The first one was from a reader in Montreal and involves an advanced application area that will be addressed further down the road (when the groundwork has been laid) or in a separate article.

The second response came from our editor, Val Golding, and is the subject of this month's column. I can only assume that no one really cares what I write about in this column (or possibly even whether I write it) if I get no feedback as to what I am doing right or wrong. If you have questions, send them in and I will attempt to answer them. If you have ideas as to the direction this series should take, please let me know; otherwise, I may have a tendency to ramble.

Mr. Golding asks, "What are the advantages/disadvantages of 'Structured Programming' and how does using Pascal benefit me?"

Structured programming is a way of implementing a systematic design. Aha, a new buzz-phrase introduced. Most people contrive solutions to difficult problems by formulating patterns so that they can recognize similarities and distinguish differences. These patterns form the basis for solving the next problem and we continue to refine our pattern recognition. The formulation of these patterns is called abstraction. In computing, the abstractions are the structure of data and the flow of information and control.

Other (older) computer languages such as BASIC and FORTRAN lack the features to directly represent these concepts.

The lack of dynamic memory management forces the programmer to recycle storage for various purposes (perhaps by reusing variable names); Pascal avoids that via NEW and DISPOSE.

The lack of data structures which could consist of different types of elements forces the programmer to maintain "parallel arrays" or to manually decode a single array. Pascal answers this with the RECORD. "C" (another programming language) uses struct.

The paucity of sophisticated control statements forces the programmer to submit to the linearity of memory and use GOTO to get there and back again.

While all of these objections can be worked around, they produce a book-keeping overhead which is not part of the original problem and merely get in the way of a clean understanding and implementation of the problem's solution.

Control Flow

The concept of program flow is answered in Pascal via the utilization of straightforward constructs. Conditional execution is controlled by the following constructs:

```
IF <condition> THEN <statement1>
{ELSE <statement2>;}
```

and

```
CASE <identifier> OF
  <value1>: <statement1>;
  ...
  <valuen>: <statementn>;
{OTHERWISE <default>;}
END;
```

NB: Anything that appears in angle brackets is an abstraction for actual code. Anything that appears in braces is optional.

Another major control structure is the loop. There are essentially four types of loops and Pascal supplies three of them. (Modula-2 and Apple /// Pascal version 1.2 or later provide all four.) These loops are as follow:

Execute a series of statements until a condition is satisfied. Note that this loop is always executed at least once.

```
REPEAT
  <statement1>
  ...
  <statementn>
UNTIL <expression>;
```

Execute a series of statements only while an expression is satisfied. Note that this loop will not even be executed once if the expression is already false.

```
WHILE <expression> DO BEGIN
  <statement1>
  ...
  <statementn>
END;
```

Execute a series of statements a precise and predetermined number of times.

Note that if it is a decreasing series, we would use the word DOWNT0 in place of TO in the following example.

```
FOR <loopvariable> := <startvalue>
TO <finalvalue> DO BEGIN
  <statement1>
  ...
  <statementn>
END;
```

The fourth construct is referred to as the "loop and a half" in computer science literature.

```

WHILE <condition1> DO BEGIN
  <statement1>
  ...
  <statementn>
  IF <condition2> THEN LEAVE;
  <statementn+1>
  ...
  <statementm>
END;

```

It is important to note that all of these constructs are implemented in the end as GOTOs (actually as JMP instructions on the ///), because that is what the low-level machine understands; however, using the constructs above parallels the way we think about a problem. Remember, it may be a computer that executes a program, but it is people who have to debug and maintain it. The more information you can extract from simply reading a listing, the easier it will be to isolate areas of erratic behavior. The constructs listed above all represent distinct control patterns that are modelled after the way we think about control flow, the GOTO merely interrupts the control flow.

Data Representation

BASIC provides you with integers, reals, and characters, but once you step beyond mathematical computations and string manipulations, you are on your own. Suppose you were writing a program that performed some accounting operation. There are taxable income, non-taxable income, deductible expenses, and non-deductible expenses to be considered. In Pascal, you would declare a transaction type which could take on any of these values as follows:

```

TYPE
  Transaction = (taxIncome, nontaxIncome,
    deductExpense, nodeductExp);

```

and could then declare variables of type Transaction. In BASIC, the usual way to do this is to make some arbitrary value assignment to each of these possibilities and then keep track of them yourself. A Pascal compiler will map each of the possible values onto successive integers starting with 0 and take care of all the bookkeeping for you. The end result is the same, Pascal just makes it easier for you to concentrate on the

problem at hand while not interfering in the way the computer performs.

Suppose further that each transaction is associated with a party, an amount, and a date. A multidimensional array is only useful when all the data is of the same type. In BASIC there are essentially two ways to solve this problem. We can keep parallel arrays of data (and this can quickly become quite complicated) or we can keep one large array and perform complicated (and expensive) packing, unpacking, and conversion operations. In Pascal we simply declare a record and let the compiler take care of the busywork. It would look like the following:

```

TYPE
  TransRecord =
    RECORD
      party: String;
      trans: Transaction;
      amount: Integer;
      when: Date;
    END;

```

Obviously, we would have had to define what a date was earlier (it would usually be another RECORD).

This progression from problem to solution will involve various stages. The progression is referred to as "stepwise refinement" and is the foundation of top-down design and implementation (also referred to as structured programming). Conceptually, I think that it is clear that we should endeavor to divorce the algorithmic solution to a problem from the machine-dependent instantiation of the solution, particularly when teaching programming.

While this is of utmost benefit to the student, the professional (and casual) programmer also benefits by using a language like Pascal. In other languages, the programmer will need to carry the refinement of his abstraction to a lower level because he will have to define, adhere to, and document the structures which are already a part of Pascal. Why should the programmer have to do this in every program instead of letting the language (and compiler) take care of it once and for all?

Dynamic Data Storage

Pascal is what is referred to as a "block-structured language." This means that each PROCEDURE or FUNCTION is its own little mini-program which can have its own local variables. This encourages you to declare variables which are only going to be needed within a procedure locally, thus allowing the reservation and release of storage on an as-needed basis.

In BASIC, when you don't know how many elements an array is going to have, you end up allocating a huge block of memory so as to handle the "worst case." This is highly abusive of a possibly scarce resource. In Pascal, you declare a data type and a pointer to it, then allocate and deallocate (with NEW and DISPOSE) as necessary. This allows you to represent objects such as lists in a natural manner and only use as much space as is necessary.

Conclusion

Pascal is not a panacea; no language is. Structured programming does not change the way in which the computer executes an algorithm. Structured programming does relieve you of a lot of overhead that obfuscates the solution which you are presenting to solve a problem. Pascal provides the structured programming constructs that are missing from older languages such as FORTRAN, COBOL, and BASIC, thereby making it easier for you to formulate and implement your solution.

It is possible to write good BASIC, but it is far more work to write good BASIC than bad BASIC (bad BASIC is unclear, spaghetti code). It is possible to write poor Pascal, but it is far easier to write good Pascal than either poor Pascal or good BASIC. The computer is a tool which we use to make our lives easier and structured programming and languages such as Pascal make the tool easier to use.

If you are interested in an excellent presentation on structured programming using a Pascal-like language, I recommend "Systematic Programming: An Introduction" by Niklaus Wirth (the creator of Pascal, Modula, and Modula-2) and published by Prentice-Hall.



AppleWriter Forever

sharon webb

Stop looking at that IBM. You don't need it.

"Maybe not," you say, "but it sure would be nice if my word processor had a few of those new options..."

If you own AppleWriter ///, it can. AppleWriter's versatile WPL language, combined with its powerful glossary functions, can give you a state of the art word processor that can jump through hoops and land on its feet.

In this series of articles, you'll learn how to run automatic calendars and telephone lists, create a weekly reminder and Roll-O-Dex, save files to multiple drives with two keystrokes, write and save automatic memos, see files on screen the way they will be printed, and lots more. If you have a ram disk—ON THREE's version, or Titan's /// plus // card—so much the better.

To start, let's begin building a WPL Program Library. We'll tackle the glossary later.

First, initialize a disk. (I'll wait here while you do.) This new data disk will hold all the programs and glossaries that we'll be creating. It's not necessary for you to learn WPL in order to benefit. You can simply type and save the programs. But, if you're already familiar with the language, or if you want to learn more about WPL, I'll try to explain the cogs and wheels.

WPL can automate unproductive, time-consuming chores, and it can make life a lot easier. For example: what if you change your business address? Or what if the telephone company, in its infinite wisdom, gives you a new phone number? Now, you're stuck with hundreds of files to update. And if you're a novelist, like I am, what happens when you decide to change a character's name half-way through a book? Sure, you can make these changes manually, but who needs that kind of grief?

WPL.AUTOREPLACE can do it for you. It searches a whole disk's worth of files and changes them automatically while you have coffee.

Take a look now at listing 1:

Notice the first occurrence of "PPR" in the program. It's followed by a back-slash. The backslash is a control character which clears the screen. Each time you see one in a WPL program, enter it by typing this: PPR [Ctrl-V] [Ctrl-] [Ctrl-V] [RETURN]. Don't put any spaces between letters or control characters.

WPL expects labels to begin at the left margin, so don't indent the words START, FILE, and QUIT. The rest of the lines must be indented by at least one space so that AppleWriter will recognize them as commands.

When you've finished typing in the program, save it to the new disk with the file name WPL.AUTOREPLACE.

In order to test WPL.AUTOREPLACE, first clear memory. Then type in and save some dummy files on your WPL disk. I'm partial to "Now is the time for all good men..." Save the file to the name TEST, then save it again with the name TEST2, then, TEST3.

Set your prefix to the drive your disk is in, and then run WPL.AUTOREPLACE. In a later article, we'll create glossary entries to do these things automatically, but for now, set the prefix by pressing [Ctrl-O] H and entering the appropriate drive number. Then, type [Ctrl-P] DO WPL.AUTOREPLACE.

The program will prompt "Enter the string to be found:"

Type: men [RETURN]

At the second prompt, type: Martians [RETURN]

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```

START  NY
      PNB
      PPR\
      PPR $$$ AUTOMATIC STRING REPLACEMENT $$$
      PPR
      PPR (Files to be altered must be unlocked)
      PPR
      PIN Enter the string to be found: =$B
      PPR
      PIN Enter the replacement string: =$C
      PPR
      PPR
      PPR (Press RETURN to end)
      PPR
      PIN Enter name of first file to be searched: =$A
      PPR
      PCS!$A!!
      PBD QUIT
FILE  E
      D
      F<< NY>
      Y?
      F<< L $A>
      Y?
      F<< F/$B/$C/A>
      Y?
      F<< S $A>
      Y?
      F<< Y >
      Y?
      F<< B>
      Y?
      PIN Enter name of next file to be searched: =$A
      PPR
      PCS!$A!!
      PBD QUIT
      PBD FILE
QUIT  F<< NY>
      Y?
      F<< PPR>
      Y?
      F<< PIN End of Auto Replace. (Press RETURN) >
      Y?
      S .D1/REPLACE
      Y
      NY
      PBD .D1/REPLACE

```

```
PND
PPR\
PPR      *** DISK KEY ***
PPR
PPR      Program will lock or unlock every file in a disk's main catalog.
PPR
PPR      PLACE DISK IN DRIVE 1
PPR
PPR      Press 1 to lock      Press 2 to unlock      Press 0 to quit
PIN =$A
PCS/$A/0/
PGO QUIT
PCS/$A/1/
PAS OC=$A
PCS/$A/2/
PAS OD=$A
PPR
PPR
PPR      .....WORKING.....
QA.D10
P
P
B
F(?????????????????????)=(?????????????????????)<a
B
F(>)<<
Y
B
F(>)?????????????<><A
B
F<?????????????<<
Y
B
F<=><><A
B
F<><> > $A.d1/<A
B
F<< $A.d1/<Y
Y?
B
E
B
F<<> > OD.d1/temp<Y
QUIT
POT
```

When asked for the "first file to be searched," type: TEST [RETURN]

The next file is, of course TEST2, followed by TEST3. After you've entered these three filenames, press RETURN at the next prompt and your automatic global search will begin.

Did it work? Check your dummy files and see for yourself.


And now, for a word of caution: WPLA.UOTOREPLACE can occasionally be too efficient. For example, if you change "May" to "October" without inserting a space after each word, you might find "Mayberry" Street mysteriously changed in all your files to "Octoberberry."

Did you notice the warning in WPL.AUTOREPLACE? The one that cautioned "files to be altered must be unlocked." It's a pain to lock or unlock a disk's worth of files manually. The alternative is to boot **SYSTEM UTILITIES**.

At least, that used to be the alternative. But now, DISK.KEY can lock or unlock all the files in your main directory automatically:

First, DISK.KEY clears memory and asks whether it should lock or unlock the files in drive 1. Then, the program loads the catalog into memory (OA.D1#). The next fourteen

lines strip the catalog of all but its file names. DISK.KEY can now use this list to create a WPL program called "temp." It does this by indenting the list (so that WPL will recognize it as a program) and inserting the variable \$A which instructs "temp" to lock or unlock the files. Then, DISK.KEY sends the cursor to the end of the program, turns the direction arrow, finds "nothing," and inserts directions to unlock and delete "temp." DISK.KEY then saves "temp" and runs it.

Next time, we'll begin to customize your glossary and add the command to run `DISK.KEY` with two keystrokes. 

Three Questions (and a few answers):

One, Two, /// Forum

Managing Graphics

Dear Sir,

I hope someone can help with a problem. I am trying to write a screen dump program in Pascal, to dump the graphics screen to the printer. This seems to work, but takes about 15 minutes to interrogate the screen. I notice that Gsave dumps to the disk much faster, and if I can decode the Gsave format I may be able to speed things up. Anyone know the format?

Another approach I may be able to use is to go direct to the Graphics Buffer, if I could find the appropriate memory addresses.

Any information would be welcome.

G. J. Leech
Toronto, Canada

Any screen dump program written in a high level language like BASIC or Pascal is going to take a l-o-n-g time to dump; there is no way around it. The graphics buffer is in Bank zero, with the X-byte set to \$8F. A better approach would be to pick up a copy of Mel Astrahan's brand new Grafix Manager which should be available shortly. It is capable of running as a standalone or as a Desktop Manager module.

Managing Color Graphics

Dear Mrs. Schanz,

I have an ImageWriter II which has seven colors, but I'm not able to print my Draw ON pictures in color with this printer.

I'm interested in updating my Apple ///s with 65C816's. Will they work?

Can the Xebec 9730 be used by two Apple ///s at the same time and can you also tell me if it can be partitioned as 12/12/10 Mb or 14/14/6 Mb, etc.

I can't update my Multiplan V. 1.11 to 512 Kb, it won't boot. Can you help me?

Jacques Trache
St. Pol Sur Ternoise, France

The ImageWriter II has, as you say, color capability, but at the present time there are no Apple /// programs to permit this. Watch for Color Grafix Manager to be released by us in the near future. It will do the job for you.

As far as we can determine, the 65C816 will not operate correctly in an Apple ///. However, the 65C802, which has the same instruction set, will. You should be aware, however, that just replacing the 6502 with a 65C802 will serve no real purpose, since no Apple /// programs have yet been written to take advantage of the speed and power of the new chip.

The Xebec 9730 can be partitioned only as 16/16/2 Mb. We are not aware of any "networking" system to allow the use of multiple Apple ///s with the Xebec.

Multiplan 1.11 is one of the few programs that we have not so far been able to run under the 512 Upgrade. The earlier version, 1.0, operates correctly.

Time to Recalculate

Dear Sir or Madame,

Our present systems need some upgrading. We find on large spreadsheet applications it takes some time to recalculate. Is there some type of recalculation chip to make it recalculate faster? If so, could you please give us a part number and price. Also we would like part numbers and prices on an expansion card and clock chip.

Garry Caruana
Mississauga, Canada

You didn't say which spreadsheet you are using, which limits our reply to generalities. Most spreadsheets, however, have a command that turns off recalculation as each data item is being entered. When data entry has been completed, then a single command, usually an exclamation point (!), will recalculate the entire spreadsheet.

Your question offers us the opportunity to remind our readers that when they write with queries to be sure and include all pertinent information such as software and hardware that may aid us in evaluating the problem and responding with the most accurate information available.

Our 512K memory expansion is not a card, but an easily installed circuit board which comes with complete and easy to follow installation directions. Initially the price is \$449 plus \$10 shipping, but when we receive your old 256K board in exchange we will rebate \$50 cash or \$60 credit, making your final cost as low as \$389. The ON THREE O'Clock is priced at \$49.95 plus \$3 shipping. When installed, your file saves will be automatically time-stamped.

Foreign Aid

Dear Bob,

I write you to say I would enjoy helping Apple /// users from every country. I am experienced in all ON THREE products plus the following:

Business Basic
CP/M
Catalyst
3 E-Z Pieces
Emulation
Telecommunications
Graphics
ProFile
Spreadsheets
Omnis 3
Financial
Word Processors

I can speak English by phone, but I prefer to receive letters.

Arnaud Trache
2.Rue des carmes
62130 St. Pol Sur Ternoise
France
21 41 36 04

Thanks for volunteering. As you requested, we have published your full address. We would also be happy to add your name to our "hot line" listing, but since that listing uses telephone numbers only, please let us know if you would like your name listed.

512K Limitations

Gentlemen,

I am a happy owner of two Apple ///s, one for business and the other at home, and a happy reader of your magazine. I have two questions for you. I have a Titan Apple /// plus II card, the old version that just emulates an Apple II plus 64K. Do you think it's possible to upgrade this card for an emulation of the Apple ///e. It is impossible to get an answer to this in France.

I also hope the 512K Upgrade causes no problems with my main software, namely:

AppleWriter ///
Multiplan
3 E-Z Pieces
Omnis 2 and 3
Business Graphics and Copygraph ///
Business Basic, Pascal and Fortran
System Utilities and Backup ///

Congratulations for the quality of your magazine and long life at ON THREE.

Guy Charlier
Macon, France

We're sorry to report that the old Titan card is not upgradable. The Titan /// plus ///e is actually two cards, and uses two slots in the Apple ///. Perhaps you might be able to sell your old board to someone.

Regarding the 512K Upgrade, of the software you listed, all will run correctly on a 512K machine, but Business Graphics, Copygraph /// and Backup /// will not recognize nor use the additional memory. ON THREE furnishes software with each 512K Upgrade that, in addition to a new RAMdisk, updates all of the appropriate applications programs such as AppleWriter /// to make use of the added memory.

Advanced Visi*G@ +\$> etc.

Dear Val:

Does anyone know where I can get new or used legitimate copies of Advanced VisiCalc? I have followed several sources of new copies to a dead end and the current copyright owner refuses to sell new ones. My company has strict standards of avoiding copyright infringement, even in the case where Lotus Development, the current owner, refuses to sell new packages. Therefore, copied disks, disks without documentation or disks that have been "Catalyzed" won't do. We are willing to pay well for this software, up to the original \$250 price for a new set still in its sealed package, somewhat less for a used set that has dog-eared disks and documentation. We need several copies, so I'd be interested in hearing from individuals or a dealer with some stock left. It's tough with a program that's out of publication, but we like it and want compatibility since we have several ///s.

How can I tell if my subscription is running out, now that you are in regular publication?

T. A. Muller
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New!

You have stumbled on one of the apparently unresolvable problems surrounding the discontinuance of the Apple /// by Apple Computer, Inc. We applaud the policy of your company but ponder where, in our particular circumstances, the line lays. Is it in the greed of Lotus that they care less for sales of a product which, with a marginal profit margin, would expose themselves to competition from their own products, such as for the PC, or what.

Be that as it may, your only recourse, as we see it, is through the publication of this letter or perhaps the subsequent publication of a de-classified ad in our pages that you may reach a resolution. We would also be open to reader responses as to what policy a company, with obviously high standards such as yours should pursue. Do we cut off our nose to spite our face, or...

Your plea also brings forth our justification for publishing our Uncopyprotect Driver. We concur wholeheartedly with the need to protect the interests of software manufacturers. But what happens when some of them decide we (the Apple /// users) are not worth their time and effort? What then? Do we go on blithely upholding our high standards, or do we follow our instincts and secure the rights of our customers and readers. This is a question we would like to see you present to the policy-making element of your company.

With respect to your subscription, you will receive shortly (or have already received) a notice of expiration. In the very near future, subscribers will be able to ascertain from their address labels when their subscription will expire. We hope to be able to offer this information in the next issue.

Sensible Question

Dear Sirs:

I have a question and an appeal for help. First does any reader of *ON THREE* have a copy of Sensible Software's Medical Dictionary for Apple Speller ///? Miss Tuszynski of Sensible's technical support department writes me that they have discontinued all /// products. I desperately need the dictionary, and if some kind soul would duplicate their copy I would be glad to pay the original price for the product. This would not be piracy, since the manufacturer no longer supplies the program.

My question concerns the use of my printers. I write novels and other long pieces of prose. When AppleWriter prints the text on my Smith-Corona TP-1 or my Epson MX-80, using fan-fold paper, it adds a blank line at the bottom of every page. Pretty soon the text has been pushed down off the top of the page and spills over the fold onto the succeeding page.

The manual for the Epson actually discusses this problem, but their solution is to add to a BASIC program which the manual writer assumes you are using to control the printer. There must be a way to avoid this using the [P] ? specifications in AppleWriter. Can someone help me?

I have tried to call several of the people listed as word processor experts on the "Call Three" page, but these guys all have very efficient secretaries who first determine that you are calling for help with your Apple /// and then tell you that Mr. Jones is in conference for the afternoon, or that he is out of the office until next week. After many fruitless calls I have given up on the help line.

John Eric Holmes, M.D.
Box 1050
Dolores, CO 81323

Right off the bat, we hope someone can help you with the Sensible medical dictionary, but of more importance (to us) is the ethical point you have raised, a point of view we would like to hear from our Forum readers on. As Apple /// users we are certain to face more and more often as suppliers dump their Apple /// support and/or product lines in favor of more remunerative operations. In fact, has anyone tried to purchase a copy of Advanced VisiCalc lately?

Your letter indicated your willingness to pay the original price for the dictionary you need. This is commendable and indeed desirable, but to whom? Certainly whoever might be kind enough to supply a copy should be compensated for any out of pocket costs. Should Sensible receive anything since they have in effect abandoned the product? Or perhaps the author(s) deserve a royalty? Whatever the case, we'd like to hear our reader's viewpoints and suggestions.

By coincidence, we ran into the same problem with AppleWriter. Happily the solution is simple, since AppleWriter allows you to specify the number of lines per page (normally 66). Press [Ctrl-P]? to display the Print/Program Commands and set "P1" to 66 or one less than the current value. Also see the AppleWriter manual, pp 55-61.

We'd like to believe that when you tried to contact some of our consultants you just happened to pick the wrong time. Those individuals we list have all volunteered to be placed in the magazine and we don't think they would do so if they really didn't have the time or desire to help. A couple, who have sold their ///'s for other machines have requested that we omit their listing and we have done so. If any other readers have had a similar experience, we'd appreciate hearing about it.

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Like Clockwork

Dear ON THREE Staff

I recently purchased your Desktop Manager and would like to say I really like it. A couple of questions, though. First, I can't seem to make the *ON THREE O'Clock* work as before; (Control-Shift-keypad-0) no longer activates the clock in the upper right hand corner. Is this function eliminated with the Desktop Manager? Are you planning macros soon and if so will an automatic dialer be included? These are two things I could use and would like information on upcoming upgrades.

James Fair
Citrus Hts., CA

The time display in the upper right corner of the screen was a feature of the ON TIME driver which is no longer required (and in fact may be detrimental) with the Desktop Manager. For a time display you need to access the Appointment Calendar from your current application. There is, however, one alternative: If you re-install the ON TIME driver, you can get your time display as before, but appointment events from the Calendar will no longer automatically remind you as they come due. Either way, you will have to live with one or the other. The reason this is so is because of the way in which the Apple /// handles interrupts and since an appointment event and a clock/screen update are both considered as interrupts, a programmer must assign priority to one of the two.

Long before this appears in print the Macro Manager™ will have been released. We love it and use it daily and think you'll love it too. There is no specific auto-dialer within the Macro Manager but our future plans include an autodialer that will work with or without a modem.

Hurrah for ON THREE!

ON THREE is America's leading Apple /// support group and independent producer of quality software and hardware products, and ON THREE magazine, America's leading Apple /// magazine is the official publication of ON THREE.

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Unprotecting for Sider

Dear people,

The few problems I ran into installing *Selector ///* were cheerfully solved over the telephone by some friendly and knowledgeable staffer whose name I have lost. Thank you for that! Now I hope your *Unprotect Driver* will take care of my *VisiCalc*. I have been unable to produce a bootable, unprotected copy with EDD3, even after fiddling extensively with drive speeds. I dislike the thought of turning my *VisiCalc* system diskette into the *Selector* boot diskette with no usable backup for that one file.


Now for more serious stuff. First, *AppleWriter ///*. I was able to de-protect the system floppy with EDD3, so I didn't have to put anything on the boot diskette. Then I used the 512K update software and installed it on my *Sider10—Selector ///*. Now when I reach for the *Print/Program* menu, the screen doesn't clear. The first and last several lines of the menu are omitted. This is not fatal because a second call for the menu clears the screen and displays the entire menu. Is there a fix for this?

Is there a way (not revealed in the *Standard Device Drivers Manual*) of transmitting a [Ctrl-5] to the *Console Driver* to turn the video off? I would like to be able to do this from a program that spends several minutes fiddling with bits in a large printer graphics buffer in order to speed up the process.

Lastly, *Backup ///*. After reading about the way in which it dies ungracefully on a verify failure, I thought I would try to write a backup utility in Pascal and Assembly. This will force me to learn Assembly and something about the addressing modes of the ///. My approach will be to read blocks sequentially from the *Sider10* and write them out onto floppies. Each floppy will have one header block and 279 data blocks. The header block will contain a date/time and sequence number. Verification will be optional. If someone else has already done this, it will save me time.

Harry J. Coffey, Ph.D.
Parkersburg, WV

The Unprotect Driver will take care of VisiCalc just fine; all you need to do is follow the instructions in the manual. For the benefit of other readers, it may be well to add at this point that our Unprotect Driver works ONLY on VisiCalc, Advanced VisiCalc and AppleWriter ///. At such time as it becomes impossible to obtain legitimate backup copies of other protected programs, they may be added to the Unprotect Driver. With respect to AppleWriter, in order for it to work correctly with the combination of Selector and a hard disk, it is necessary to start over, using your original AppleWriter disk. First, copy AppleWriter's SOS.INTERP file to your Sider, then add the Unprotect Driver to your Selector boot disk. That's all there is to it.

We would welcome an alternative to *Backup ///* and might possibly consider marketing it if it was comprehensive enough to satisfy the needs of those users who backup on various different media such as A-143, *UniDisk* and other formats. This means a menu choice would be required and any read/write operation would need to be structured on the basis of the capacity of the output media. A single block read/write operation would be rather slow, and since *SOS* allows you to read and write in 64K chunks, that is what we would recommend. The principal reason *Backup ///* fails and subsequently aborts on a bad verify is because it has no provision to maintain pointers to the last block read and the next block to write, a simple problem to overcome if one is starting from scratch. You should also probably consider the use of a "dummy" directory on each backup floppy or other media which would help in the recovery process. 

Graphically Speaking

melvin a. astrahan, ph.d.

In previous articles I have discussed the way in which the graphics memory of the Apple /// is organized. In this article I will introduce techniques which access that memory for the purpose of high speed animation. By "animation" I mean the ability to draw, erase, move, and redraw an object more rapidly than the eye can respond.

The Eyes Have It

When the phosphor screen of our computer's video monitor is bombarded by an electron beam, the phosphor glows and a visual image is produced. When the electron beam is removed, it takes a certain amount of time for the glow to fade away. You can test this by pressing CONTROL 5 on the numeric keypad, thereby shutting off the video interrupt. The speed at which the image fades depends upon the phosphor used in the monitor. Green-screen Apple Monitor ///s use a relatively long persistence phosphor, and thus seem to fade away slowly. Color monitors fade away very quickly. (That is why using the video interlace feature of the Apple /// plus works with a monitor ///, but flickers annoyingly with a color monitor.)

The human visual system responds to visible light in a manner analogous to the way the screen phosphor responds to the electron beam. When the visual system is stimulated by an image and then that image is removed, it takes a certain amount of time for the stimulus created by that image to fade away.

I hope that it is common enough knowledge by now that "movies" and "television" are produced by sequentially displaying still pictures or "frames" rapidly enough so that each new picture is displayed before the stimulus to the eye of the previous picture has faded away. If the individual pictures are not displayed

rapidly enough, the "animation" appears to flicker. The rate at which the pictures are displayed is often expressed as "frames per second." In the USA, television (and Apple /// video) operates at 60 fields, or 30 frames per second (two fields are interlaced to produce a frame). In Europe, video is transmitted at 25 frames per second. Theatrical films are recorded and displayed at 24 frames per second.

Smoothly appearing video animation generally requires a rate greater than 10 frames per second, the precise number depending on the phosphor of the screen in addition to the physical characteristics of the eye. This means that if an image is to be smoothly moved around on the screen without apparent flicker, it must be drawn, erased, and redrawn in less than one-tenth of a second. If five objects in an image are to be moved in what appears to be simultaneous motion, all five must be moved in less than one-tenth of a second, or in .02 seconds each. This places some serious constraints on the techniques used to program animated objects.

Several articles have appeared over the years describing the use of the Apple ///s ability to download character sets to do animation. The marvelous 16-color "running horses"

demonstration is a classic example of such a technique. The horse demo is performed in the 40 by 24 color text mode. The main advantage of such character based animation is that it requires only 1920 bytes to describe the entire screen. To draw an entire 16-color graphics screen requires 15,360 bytes. Thus, to scroll a text screen, it requires an absolute minimum of 1920 load and 1920 store instructions, exactly eight times less than the same operation on a graphics screen. A factor of eight can make a big difference in achieving that .02 seconds mark.

Character-based animation is clever, and for certain applications works very well, but because of the limit of 128 characters it is very difficult to maintain complex animated objects *and* text on the screen at the same time. One or the other will suffer. The purpose of this series of articles is to introduce the techniques required for graphics-based animation in which there are far fewer limitations.

Things are Looking Up

An excellent book describing beginning animation techniques for the Apple II is *Apple Graphics & Arcade Game Design* by Jeffrey Stanton. A lot of the basic material in that book also applies to the Apple

```

POSBFR .EQU    OE0
LOBFR  .EQU    OE2
HIDFR  .EQU    OE4
ORFBFR .EQU    OE6

.MACRO  ADD16
CLC
LDA     Z1
ADC     Z2
STA     Z3
LDA     Z1+1
ADC     Z2+1
STA     Z3+1
.ENDM

```

;zero page enhanced indirect addressing
;registers

;two byte (16 bit integer) addition macro

Poke a Dots

In order to meet the speed requirements for smooth animation, especially for large objects, it is generally necessary to program in assembly language and to manipulate the graphics memory directly. The .GRAFIX driver is powerful, but the price of that power is a tremendous internal overhead which makes it too slow for animation of all but the smallest of objects.

The most fundamental operation in accessing the graphics memory is to turn a particular pixel either on or off. Drawing objects one pixel at a time is slow, but is often required for objects such as pointing cursors, diagonal lines, and so on. Arcade type animation generally requires drawing seven pixels (one video byte) at a time with a corresponding speed enhancement.

The example shown is a fundamental assembly language subroutine to invert the state of a single pixel in the 560 by 192 monochrome graphics mode. I chose to begin with a routine to invert a pixel since the same routine can be used to both draw an object, and then “erase” it by simply drawing it again in exactly the same place. The routine is fundamentally equivalent to the .GRAFIX driver control code 25 command to PLOT POINT (X,Y) when the transfer mode is set to 2.

You must be familiar with enhanced indirect (X-byte) addressing techniques before you attempt to implement this routine. All numeric values in the program itself are in hex. In the comments, hex values are preceded by the dollar sign (\$), whereas for the sake of clarity, values without the \$ prefix are expressed in decimal.

The routine requires several large look-up tables. The table labeled YTABLLO is an array of the least significant (or “low”) byte of the starting or “base” address for each of the 192 scan lines. The table YTABLHI contains the most significant (or “high”) byte of the address. Since vertical screen values are legal only in the range 0..191, any element of this array may be accessed by the normal 6502 “absolute indexed by X (or Y)” instructions (where X and Y here refer to the 6502 index registers).

[illegible]

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The array XTABLO is a look-up table of the byte offset from the scan line base address within an 8K graphics memory segment for each of the 560 possible horizontal pixel coordinates. The array XTABLHI indicates which 8K segment the particular pixel is in, and the array XPOSLO indicates at which bit position within the byte the particular pixel is located. POSBFR, LOBFR, and HIBFR are 16-bit zero page pseudo-registers used for indirect post-indexed with Y addressing. They are used to access the XTABLO, XTABLHI, and XPOSLO arrays. GRFBFR is a zero page pseudo-register for enhanced indirect addressing post-indexed with Y into the graphics bank. The GBFR variable is used to select graphics buffer 1 (GBFR = \$00) or buffer 2 (GBFR = \$40).



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ON THREE Presents ...

Sandman

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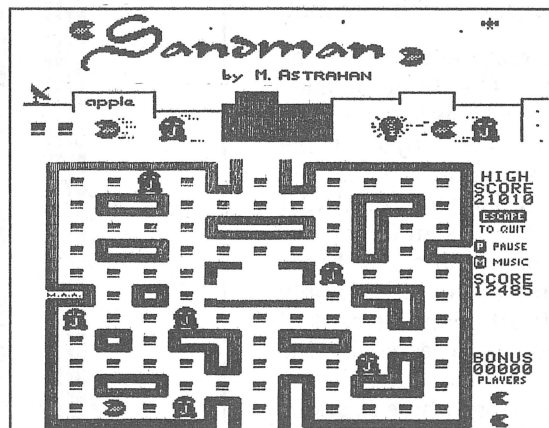
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- Use with joystick, keyboard or mouse
- Can be run as a Desktop Manager background module

The objective of SANDMAN is to score as many points as possible. Salvage all of the Apple /// parts discarded throughout the halls of Apple's labyrinthian research lab to receive points. WARNING! The lab is haunted by the ghosts of JOBS... if they catch you, you're done for!

Your only weapon against the JOBS is to find the WOZ who wanders about the lab peeking in on various projects. For a short time following a meeting of SANDMAN and WOZ the JOBS turn blue and may be exorcised if you can catch them.

"—Brilliant, colorful and fast moving, Sandman will provide hours of fun."





Its purpose is to provide users with useful free programs that may be downloaded, hints and tips relating to the Apple ///, information about new *ON THREE* product releases and updates, user mail boxes, and a general forum for discussion of anything relating to the Apple ///. Many of the programs available for download, along with lots of support—particularly during installation—were provided by Ed Gooding, sysop of ///'s Company BBS at (804) 747-8752.

Enjoy!



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Call Three: Hot Line/Apple /// User Groups

If you would like to get together with other Apple /// owners and exchange ideas, a user group is for you. Below is a listing of all Apple /// user groups known to us. If you have recently formed a group or know of one we have not listed here, please contact *ON THREE* and let us know so that they may be included. There is no charge for this service.

California
Sacramento Apple /// User Group
1433 Elsdon Circle, Carmichael, CA 95608
(916) 482-6660

Orange County Apple /// User Group
22501 Eloise Ave., El Toro, CA 92630
(714) 951-1231

Los Angeles-South Bay
Apple /// Users Group
P.O. Box 432, Redondo Beach, CA 90277
(213) 316-7738

Apple /// Users of Northern California
220 Redwood Highway #184
Mill Valley, CA 94941

International Apple Core Apple /// S.I.G.
908 George Street, Santa Clara, CA 95054
(408) 727-7652

Canada
Apples British Columbia Computer Society
Apple /// S.I.G.
P.O. Box 80569, Burnaby
BC Canada V5H3X9

Canadian Apple /// Users Group
80 Antibes Dr. Suite 2805
Willowdale, Ontario, Canada M2S 3N5
(416) 665-3622

Colorado
Colorado Apple Three User Group
P.O. Box 3155, Englewood, CO 80112

Connecticut
Apple /// Society of
Southern Connecticut
34 Burr School Rd.
Westport, CT 06880
(203) 226-4198

Florida
Sarasota Apple /// User Group
c/o Computer Centre
909 S. Tamiami Trail,
Nokomis, FL 33555
(813) 484-0421

Georgia
Atlanta /// Society
385 Saddle Lake Drive, Roswell, GA 30076
(404) 992-3130

Illinois
Third Apple Users c/o Lavona Rann
1113 Wheaton Oaks Dr., Wheaton IL 60187

Kansas
Kansas City Apple /// User Group
5533 Granada, Roeland Park, KS 66205
(913) 262-3355

Maine
So. Maine Apple Users Group
Casco St., Freeport ME 04033
(207) 865-4761, X 2249

Maryland
Apple /// SIG Chairman
Washington Apple Pi
8227 Woodmont Ave. #201
Bethesda, MD 20814 (301) 654-8060

Minnesota
Minnesota Apple Corp Users Group
P.O. Box 796, Hopkins, MN 55343

New Jersey
North Jersey Apple /// Users Group
c/o Roger T. Richardson
P.O. Box 251, Allamuchy, NJ 07820
(201) 852-7710

North Carolina
North Carolina Apple /// User Group
2609 North Duke St. #103
Durham, NC 27704

Ohio
Cincinnati Apple /// User Group
5242 Horizonvue Drive,
Cincinnati, OH 45239
(513) 542-7146

Apple Dayton - Apple /// S.I.G.
P.O. Box 1666, Fairborn, OH 45324-7666
(513) 879-5895

Oregon
Portland Apple /// Users Group
1001 SW 5th Av. #200
Portland OR 97204
(503) 645-6789

Overseas
Apple THREE Group International
c/o Maj. H. Joseph Dobrowski
P.O. Box 913, Langley AFB, VA 23665

Apple /// Users Belgium/Netherlands
c/o H. Van der Straeten, Vestinglaan 49
2580 Sint-Katelijne-Waver, Belgium
(015) 205328

Apple User Group Europe e.V.
Box 11 01 69 D-4200, Oberhausen 11,
West Germany 0049-6195-7 3917

Apple /// User Group Netherlands
c/o J. Woretschoffer, Ganzlerikweerd 22,
NL-6229 TG Maastricht, The Netherlands
(043) 611704

British Apple Systems User Group (BASUG)
Apple /// S.I.G., P.O. Box 174,
Watford Herts, England WD2 6NF
0727 73390/72728

Le Club Apple
43 Avenue de la Grande-Armee
75116 Paris, France

Texas
Apple Corps of Dallas Apple /// SIG
P.O. Box 5537, Richardson, TX 75080

River City Apple Corps /// S.I.G.
Box 13349, Austin, TX 78711
(512) 454-9962

Houston Area Apple Users Group
(Apple /// Division)
P.O. Box 610150, Houston, TX 77063
(713) 480-5690 or 974-5153

Virginia
Charlottesville Apple /// User Group
216 Turkey Ridge Rd., Charlottesville
VA 22901 (804) 642-5655

Greater Tidewater Apple /// User Group
Route 2, Box 216, Hayes, VA 23072
(804) 642-5655 or 898-3500, ext. 2671

The *Call Three: Hot Line* is a service whereby Apple /// users with problems can call an area number to get assistance. The individuals answering the phones are fellow Apple /// users who have volunteered to help others over some of the rough spots. They are not compensated for this service, therefore we owe them a resounding "three cheers."

We would like to expand this service even further, so if you are familiar enough with your machine to be able to aid others and answer questions, please write us, stating your areas of expertise and availability in terms of days and hours. Certainly you can bask in the knowledge that you have been able to help a fellow Apple /// user.

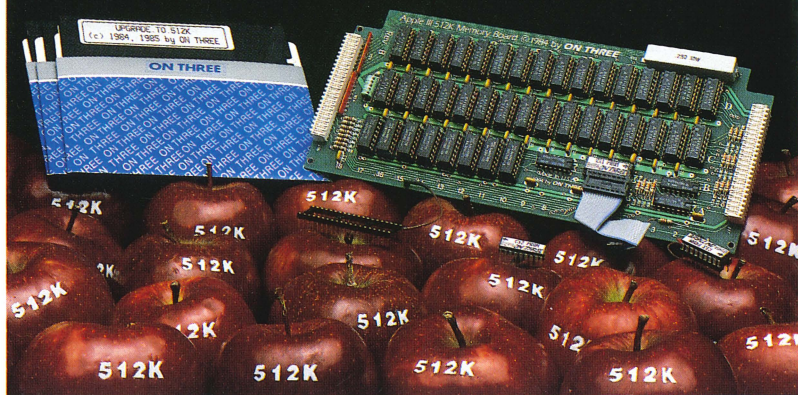
For those of you who have questions, feel free to call our consultants listed below. **Please** observe however, the calling hours shown and before placing a call, double check the time zone so that you don't inadvertently wake someone up! There are no other restrictions on using the service other than as stated above. Again, **please** remember these people are volunteers, and if we receive information indicating that calling hours are not being observed, we will have no choice but to remove the consultant from the listing or, worse, discontinue the service.

The following is an alphabetical listing of subjects and abbreviations used in the "subjects" column of the consultants listing.

Subject	code	Subject	code
Accounting	AC	Graphics	GR
Agriculture	AG	Micro-Sci	MI
Assembly	AL	Modems	MD
Lang.		Modula-2	MU
Business	BB	Pascal	PA
Basic			
Catalyst	CT	ProFile	PR
Cobol	CO	Quark	QU
CP/M	CP	SOS	SO
Data Base	DB	Spread-sheets	SS
Education	ED	Telecom.	TC
Financial	FI	Word Proc.	WP
Fortran	FO	Emulation	AE
General	GE	/// E-Z	EP
		Pieces	

Name	Area	Telephone	Days	Hours	Zone	Subjects
Coville Woodburn	NH	(603) 863-5590	M,Tu,Th,F	7-8pm	Eastern	CT, QU
Ken Johnson	MA	(413) 253-2298	Su-Sa	6-9pm	Eastern	BB, PA, MD, WP, MI
Don Loosli	MI	(313) 626-3848	M-F	9am-5pm	Eastern	GE, WP, SS, DB
Harry T. Hanson, Ph.D.	NJ	(201) 467-0712	M-F	6-9pm	Eastern	GE, PA, BB, CT
Edward N. Gooding, Sr.	VA	(804) 747-8751	Su-Sa	6-9pm	Eastern	CO, SS, PR, MD, CT
Jeff Fritz	WV	(606) 353-9493	M-Sa	8-11pm	Eastern	BB, DB, GE, MI, SS, TC, EP
Al Johnston	FL	(904) 739-1600	M-F	9am-6pm	Eastern	GE
Paul Sanchez	FL	(305) 266-5965	Su-Sa	10am-4pm	Eastern	SS, PR, CT
R.B. Thompson	NC	(919) 787-1703	Su-Sa	10am-10pm	Eastern	BB, DB, GE, SS, WP
J. Donald Glenn	NE	(402) 291-9177	Su-Th	7-10am	Central	GE
Jim Ferencak	IL	(312) 599-7505	M-F	10am-5pm	Central	GE, EP, DB
Neil Quellhorst	IL	(217) 434-8727	Su-Sa	7-9pm	Central	AL, BB, GR, PA, SO, TC
Terri Wiles	CO	(303) 850-7472	Su-Sa	10am-6pm	Mountain	PA
William Prince	OR	(503) 254-6465	M-F	9am-4pm	Pacific	GR, TC, Corvus
Karl La Rue	WA	(509) 582-6459	F-Su	6-10pm	Pacific	MD, GE, EP, WP, TC, SS, CP
Pat Holwagner	CA	(415) 433-2323	M-F	10am-6pm	Pacific	GE, SS, WP, CT, DB, SU, AE, EP
M. Kent Hockabout	CA	(415) 865-8579	M-F	9am-10pm	Pacific	DB, GE, GR, MI, MD, QU, SO, SS, TC, WP, AE, EP
Vincent F. Latona	CA	(818) 703-0330	M-F	9am-5pm	Pacific	GE, WP, BB, SS, AE
Wayne Hale	CA	(619) 450-3856	M-F	7-11am	Pacific	BB, GR, CT
Dennis R. Cohen	CA	(818) 956-8559	Su, M-F, Sa	10am-10pm 7-9pm 12n-6pm	Pacific	GE, PA, MU, WP, DB, SO
Kelly C. McGrew	WA	(206) 943-8533	Su-M, Th-Sa	7-9pm	Pacific	DB, GR, SS, PR, MD, CT
H. Van der Straeten	Belgium	(015) 205328	Su-Sa	7-10pm	—	BB, CT, DB, GE, PA, PR, SS

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The *ON THREE 512K Memory Upgrade* is simple to install by following the directions in the installation manual. Even better, it does not use any of your precious expansion slots and works with all SOS programs. If you ever run out of memory once you have your 512K upgrade in place, you may need a minicomputer!

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or *Catalyst*. Certain programs take up a lot of memory and sometimes there is not enough to go around. And if you think the hard disk is fast, wait till you try the *RAMDisk* that comes free with the 512K upgrade. It'll amaze you with its speed. If you were used to making notes, etc. while your drive was working, you can forget it.

You see, with the limitations of a 256K system, programs like *Selector III* and *Catalyst*, in conjunction with special purpose utilities like *ONTIME* or the *Calendar Pak* will run on only minimal *Selector* or *Catalyst* systems. This means no spooling and a lot of dynamic driver loading. Who needs problems like this? Now you can run, for example, *Draw ON* with *Catalyst* and see your pictures being printed on the printer while you have already started word processing with *AppleWriter III* or *Word Juggler*.

Read the checklist in the box below to see all the freebies that come with the *ON THREE 512K Memory Upgrade*.

* The full purchase price is \$449 plus \$10 shipping and handling. (And plus 6% Calif. sales tax for residents.) After installing the *ON THREE 512K Memory Upgrade*, you can return your old 256K board to us for a \$50 rebate.

If you have an older 128K machine, the cost is a flat \$449 (plus shipping) and no rebate. Installation must be performed by *ON THREE* or a dealer.

ON THREE also will install any upgrade for you at just \$50. We offer same day turnaround on 256 to 512K upgrades. Call for more information.

The *512K Memory Upgrade* is the single most exciting thing to happen to the Apple *///* in a long, long time. Using state-of-the-art 256K memory chips, the board is very simple to install and even easier to use. The *512K Memory Upgrade* will NOT take up an expansion slot as it is a simple board swap-out. Just keep on using your existing programs—you don't have to change them! *VisiCalc*, *Advanced VisiCalc*, */// E-Z Pieces*, *Apple Writer*, *Business Basic*, *Pascal*, *Catalyst*, *Selector III* and many other programs will automatically have about 450K of memory to work with.

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At no extra charge, *ON THREE's 512K Memory Upgrade* includes:

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- ✓ A copy of the *Confidence Memory Program*... tests all memory and ensures your *512K Memory board* is working correctly.
- ✓ *ON THREE's full 90-day warranty*.
- and of course, an *Apple III 512K memory board with state-of-the-art 256K memory chips*.

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■ Draw ON /// can spruce up dull graphs with its many typefaces or by creating fancy borders and textured images.

■ Draw ON /// comes complete with easy to follow menus, a durable spiral-bound instruc-

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■ Draw ON /// is compatible with all monochrome monitors as well as NTSC (standard) and RGB (hi-res) color monitors

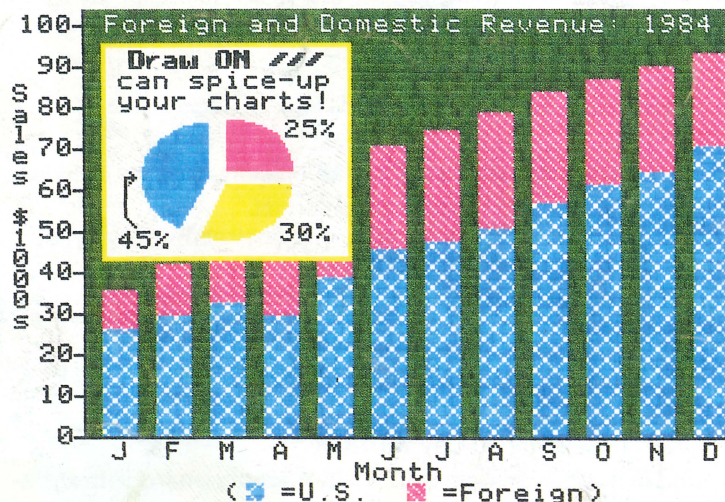
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The most versatile Apple /// graphics tool ever designed!

What? A computer graphics program that is powerful and easy to use, has the resources of a complete graphics art studio, creates professional-quality charts and diagrams, complex illustrations and original artwork, letterheads, slides and tables for presentation? Don't you believe it! . . . **unless you're talking about Draw ON ///™, from ON THREE!**

Draw ON /// transforms your Apple /// into a drafting table, easel and sketch pad, all rolled into one, like MacPaint with color. Computer Aided Design (CAD) applications such as circuit layouts and flowcharts are child's play for Draw ON ///.

Draw ON /// comes with a wide selection of text fonts and objects which can be supplemented with those of your own design. Mix and match with drawings and charts, using Draw ON ///'s powerful cut and paste facility. You can use Draw ON ///'s many fonts to label your own drawings as well as those in other applications, and you can pick up objects, expand, shrink, rotate, invert, and texture.



Draw ON /// requires 256K minimum memory

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- Apple DMP
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- IDS Prism, Color Prism*
- NEC
- Okidata
- . . . and others

*required to print color drawings

Specify printer and interface when ordering