TEXAS INSTRUMENTS
INCORPORATED
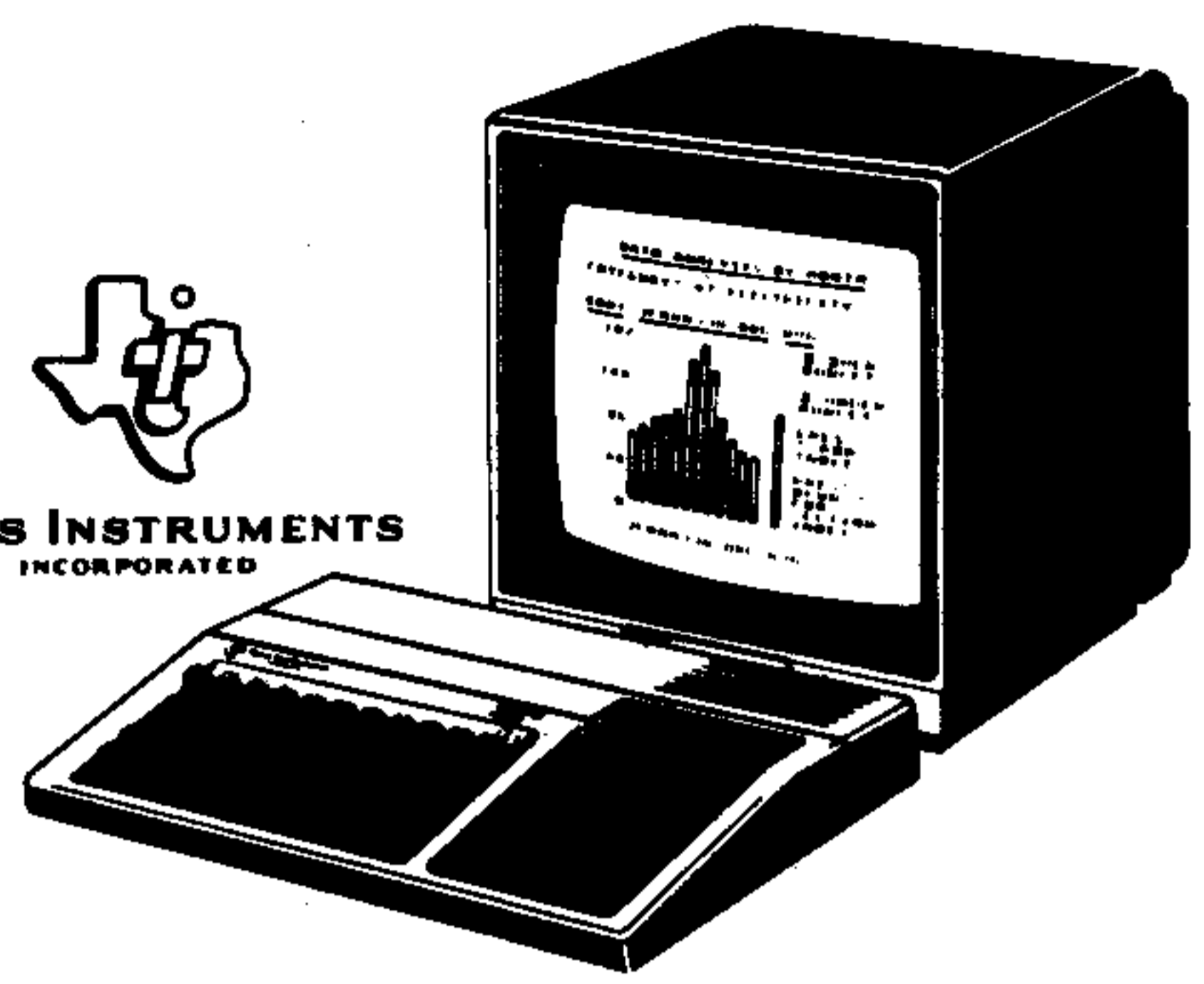
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99/4[A]

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SUBMITTING MATERIAL TO "UNOFFICIAL".

Contributions to UNOFFICIAL are very much welcome. We like to print a variety of programs which will be helpful, fun, educational and mind puzzling for other UNOFFICIAL readers.

Programs submitted must be on tape only. Disk programs can be handled, but they take more time to get to. We do not have time to 'key in' programs that are submitted on paper. All programs must be accompanied by a detailed instruction guide, and an editorial commentary for all other information that you feel is necessary. The more written the better. All correspondence must be typed, or hand printed.

We do pay for quality submissions, based on several criteria. Remuneration is small at the moment, but will increase as circulation does. Those wishing remuneration must so state when making submissions.

For more detailed information on making submissions, please send a SASE to Submission Information, UNOFFICIAL 99/4(A), P.O. Box 651, Clute, Texas 77531.

Good luck !!!!!!   ###

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EDITORIAL

This is the third edition of UNOFFICIAL, as you can see the format is a little different. A more formal front page has been created so you can avoid the boring stuff and get to what you want. Hopefully there will not be any more changes for a while, but you never know.

The main cover is the same as the last issue, but is a different colour. This is to help you tell the issues apart. We will continue to follow this practice until circulation permits us to commission another cover.

What is the aim of UNOFFICIAL ? Well we aim to aid the beginning programmer to get a better understanding of the art of programming in a way that is fun and interesting. We try to do this in Quickie programs and in the Computer Apprentices Workshop. The latter is a step by step plan to go through TI BASIC trying to let those who need help, get it. The Quickie programs came from a valued friend at my place of employment. He said that through short programs you can gain insight into the art of programming that you can not get through words alone. I must agree, and so we have Quickies.

But we try to not forget the programmer that is after some meat to get his teeth into. In this issue we start to foray into the territory of file and file handling. A juicy topic if ever there was one.

That covers one part of my editorial, The main part follows....

In late October, last year, I had the dubious opportunity of going to the Gulfcoast Computer Show and Applefest in Houston. The computer show part was a bit of a farce, but the Applefest was the real part of the deal. I wandered about in a disinterested way looking in what you can buy for the Apple, Pineapple, Franklin Ace, or what ever you want to call it. One of the items that caught my eye was THE WORD processor. THE WORD is a computerized version of the King James version of the Holy Bible.

I do not know about you, but being a Christian, I find this a fascinating opportunity to help me in my study of the Bible. The program has several excellent features that you ought to look into.

However, by looking at the list of computers that this program will run on, you will notice that the TI P.C. is not there. The main reason, in my opinion, is that the TI P.C. is still not that well known. But more importantly, the TI P.C. is not CP/M compatible.

CP/M is a disk operating system that is not claimed to be the best, but since IBM now uses it on their computer, it has now become "the" disk system.

Before IBM started to use CP/M, there was just a jungle of DOS (disk operating system) out there. This is one of the main reasons for the clever Japanese staying a little clear of the computer business. The Japanese are not noted for their software. But since the IBM P.C. came out with CP/M, the doors were opened and now the Japanese are moving in. CP/M was the key that opened the door.

Over at TI, they had decided to go with their own DOS and P-code. Yes P-code may well be the way of the future, but here, now, and for quite some time to come CP/M is the leader.

How can TI P.C. owners get around this slight problem. There is two ways. The first way is for TI to do some engineering and come out with a board that will plug into the expansion box, and everyone would be happy. Or let some third party do the developing and marketing of such a board.

The reason I am bringing up this lack of compatibility not only with CP/M, but with other computer gems is that we are missing out on many excellent programs. I do not mean to say that the programs available are not any good. But like the example of THE WORD processor, it will never be sold as TI DOS compatible.

Compatibility with the 'majority' will not hurt the TI P.C. but make it more attractive since it has many features that the others do not have.

###

COMPUTER
APPRENTICES
WORKSHOP

The order in which this column is written, is kind of important. The old adage "You can not run till you can walk" is what this is based on.

There must be a plan to all this computer stuff. Hopefully by following this column you can gain a decent understanding of the TI P.C. Of course you should use the TI teaching book that came with your computer, and even buy a book on BASIC.

In this issues column I hope to explore two items of the TI P.C. The first one is the Immediate Mode and, secondly, Numbers handling.

Before I get into the Immediate Mode, let me give you these notes.

1. The screen is 32 characters wide, but will only accept 28 characters on a typed line.

2. Any statement or command can have up to four (4) screen lines in length. If you go longer than four, the cursor will go to the next line but will not move from the start of the line. Do not waste your time typing but use a new numbered line.

3. keep the ALPHA LOCK key in the down position.

And now let us go into the Immediate mode.

The Immediate mode is a function of almost every home computer. However, I suspect that a great many computer users never use it. This is a pity as you can accomplish much in a short space of time in the Immediate mode.

A brief description of what this mode is and does is needed.

The Immediate mode allows the computer to execute your commands "immediately" as it were. If you type

A=99

and press ENTER, then the computer sets the variable name 'A' to have the value of 99. Your command is carried out when you press the ENTER key and not before. This allows you to edit the line as usual. Note that line numbering is not used. Line numbers are not needed in the Immediate mode.

This looks very interesting, but what can you do with it ? Well this mode comes into its own in two main areas. They are 1) experimentation and exploration. 2) problem solving, or trouble shooting.

I shall look at the two areas in the same order as stated above.

To experiment and explore is similar to learning something for the first time. This is the approach I shall use.

Suppose you want to become familiar with the mathematical properties of the TI P.C. You can try in this way. We all know what 2+2 is. But how do we do this in the Immediate mode.

PRINT 2+2 <ENTER>

Just print the the above line and press the ENTER key. The answer '4' is printed. Simple !! You or your children can now use the computer to check on any math problem quickly by using the Immediate mode. Try this..

PRINT 2^3 <ENTER>

The answer you will get is '8' (2 to the power of 3, or 2 cubed). Of course you can get adventurous and try...

PRINT 2^3*(99/33.001+.005) <ENTER>

This looks complex, but the computer can handle it with ease. You may be thinking how similar all this is to a hand calculator, and you are correct. But the major difference is that on a hand calculator you do not get to 'see' the formula, while the computer shows you what you typed in. This fact can be very useful if you are not shure if you entered the formula correctly. try this...

PRINT 3*2+2 <ENTER>

and...

PRINT 3*(2+2) <ENTER>

The first one gives an answer of 8 and the second one has an answer of 12. Do you understand why ?? I will discuss this later on in this article.

So far I have been talking about

Formulas that you have all the numbers for before you enter in the formula. Let us look at another aspect in this exploration of the Immediate mode.

```
A=12   <ENTER>
B=33.001   <ENTER>
C=10.09   <ENTER>
PRINT (-B+SQR(B^2-4*A*C))/2A
                        <ENTER>
```

Is the formula familiar to you ? But the main point is that I defined A,B,& C before using them, and did not use the word PRINT until I wanted to see the answer. This type of ability in the Immediate mode can give you a great deal of freedom to rapidly explore your ideas as fast as you can type them in.

Random numbers can be inspected in a similar way. Try this...

```
PRINT RND   <ENTER>
PRINT RND   <ENTER>
PRINT RND   <ENTER>
NEW         <ENTER>
PRINT RND   <ENTER>
PRINT RND   <ENTER>
PRINT RND   <ENTER>
```

Note how the same sequence of numbers appear on the screen. The random numbers are not truly random, they have the title of being pseudo-random. This means that the random numbers always appear in the same order. Just like I showed here, the same order. The way to make the random numbers random is to use the command RANDOMIZE.

To get random numbers a complex formula is used. In this formula is a seed. If you do not use the RANDOMIZE command the seed stays the same. But when you invoke the RANDOMIZE command, the seed is changed, and will change again when ever the RANDOMIZE command is executed.

As for the problem or trouble shooting aspects of the Immediate mode, they mainly come under the BREAK and UNBREAK command. Turn to page 17 and look at Quickie # 7. This program can eat you alive if you do not own a TI P.C. There is a big problem in the rounding off of numbers generated. By using the Immediate mode we can look

at this problem.

Type in the program, and after line 180 type in...

BREAK 130   <ENTER>

This sets a break point in the program. That means that you are telling the computer to stop running the program before performing the statement on the line you have specified in the BREAK command. When you RUN the program and a BREAK point is reached, the program stops running before the statement on that line is performed.

When this happens the message...

BREAKPOINT AT XXX

will appear. Where the 'XXX' is the line number you specified. Also you will see a flashing cursor that is waiting for you to enter a command so you can do what ever you want to do.

In this case we are after looking at 'C' and 'INT(C)'. Type in...

PRINT C,INT(C)

your answer will come on the next line and will be...

1.414213562   1

There is only a little gap between the two numbers, so do not get confused. To get out of the BREAK, type in CONTINUE or CON, and the program will carry on to the end. When you enter the statement BREAK 130 and do not put it on a numbered line, it is executed only once.

To get around this slight problem, type in to the same program...

125 BREAK 130

and now RUN the program. Every time the line 125 is executed, the program stops and allows you to look about inside the program by using the Immediate mode. In this case you only have four (4) variables to manipulate. Also you will notice that to continue the program, you have to keep typing in the word CONTINUE or CON. This can get very boring. This statement will be

executed 400 times. But there is another way we can view this short program, if we use our brains. Type in this after you have removed line 125.

135 BREAK 140

Notice how I have avoided the unnecessary repetition of the previous way of viewing at the program. In this way the BREAK will only come when ever I have a correct solution to the problem. When the program is stoped and control is passed to you, type in this...

PRINT A;B;C;INT(C)

and this...

PRINT C-INT(C)

The first PRINT command will give you the answer of...

3 4 5 5

the second...

0

The first one maybe obvious, but is the second ? I am asking the computer to calculate an answer to a formula and print it out at the 'same' time. This is one of the interesting features of the Immediate mode that is very much over looked. Along the same lines let us try something NEW. Type in...

X=3
Y=4
Z=SQR(X*X+Y*Y)
PRINT Z

The answer will be '5' if you typed it in correctly. Type in...

PRINT Z-INT(Z)

The answer will be '0' on the TI P.C. But on the ZX81 it will be...

1.8626452E-9

Does it make a difference ? Yes it does if you want to get all the right

answers between 1 and 20. On the ZX81, you will only get one answer using this program. To get them all you will have to modify line 130 to...

    130 IF C-INT(C)>0.000001 THEN 150

However the TI P.C. does not need modifying. This is one of the benefits of owning a great little computer !!!

I hope I have covered enough of the Immediate mode to let you go and explore it for yourself. One last note. If your program 'blows up' in your face, use the Immediate mode to do some digging around to see what went wrong or right, and you will find this function a most valuable tool in solving 'bugs' and errors.

I do not intend to write at great length about numbers and number handling. What I intend to do is give some pointers to better and smarter ways of handling numbers by stating rules and regulations that govern the use of number handling.

Let us begin by going through some examples:-

    1)   3+2*4=
    2)   5+2^3*7=
    3)   -4^2=
    4)   4^2^3=
    5)   5/2=
    6)   3*5/4*2=
    7)   1234^50=

I hope you have worked all the questions out and are happy with your answers. I suppose I had better give you the answers. If you did not find this easy, or are not too happy with your answer, this part to the Computer Apprentice Workshop is for you.

1)   The answer is eleven (11). How did the computer do it ? The majority of computers will do the multiplication first. This will give you a problem of 3+8=11. I hope you followed that.

2)   This one is tricky, and has an answer of sixty one (61). Again let us look at it closely.

First done is the exponential . 2^3=8 This leaves 5+8*7=? Next done is the power 8*7=56, and this gives a 5+56=61. By now I hope you are seeing

that there is a certain order to this math business.

3)   This is an easy one with the answer of -16. I hope you saw the unary minus sign. If you are asking what is a unary minus, it is the negative sign in front of the number that has no other number in front of the sign. A unary plus is treated the same way as the unary minus, but you multiply by a '+1' instead of a '-1'.

Look at this...

    A=-3
    B=88
    C=9.001
    X=A+B+C

or we can look at it as...

    X=-3+88+9.001

The computer sees the unary minus and substitutes a '-1*' for it which multiplies the number following with a '-1' value. Looking like...

    X=-1*3+88+9.001

or...

    X=-1*A+B+C

as we wrote earlier. Unary minus is a little seen animal, so be careful.

4)   Again another simple (?) one that has an answer of 4096. This is gotten from doing 4^2 first, followed by 16^3 next. In this case I worked from left to right, but not all computers work in the same way. In FORTRAN IV you would get an answer of 65536. Quite a but different from the TI P.C. answer. This larger number is gotten by doing 2^3 first, and then 4^8. I.E. from right to left. This may be seen as splitting hairs, and it is to a point. However, if your program needs quite a few formulas and calculations, there is nothing worse than getting wrong answers because you did not take time to understand how the computer dealt with your numbers.

5)   I hope everyone got an answer of 2.5 No points for guessing how it is done.

6)   This is a curious one, but if we do it the same way that the computer does we should get the answer of 7.5 .

Start at the left and work right and the correct answer should drop out.

   7)   This one does not work since it is trying to 'make' a number that is larger than the biggest number the TI P.C. can handle. You will get a message like this...

        WARNING:
        NUMBER TOO BIG
        9.99999 E+**

Why am I covering such tiny points in detail. I have found that a better understanding of the way the computer operates can result in a more efficient and quicker program. To put it another way:- The more you know, the better you can program, and the more efficient you will be.

   All mathematic expressions can be manipulated by the use of parentheses. By careful positioning of the curves you force the computer to compute what is inside first. This point is important in that you can control the order and flow of what happens inside an equation or expression.

   Parentheses need careful reviewing and I am not doing that at this time, since I would not do it justice.

   The basic rules for number handling are as follows:-
1.   All expressions within parentheses are evaluated first, according to the hierarchical rules
2.   Exponential (powers) is performed next in order from left to right.
3.   Unary (prefix) plus and minus are performed.
4.   Multiplication and division are performed from left to right.
5.   Addition and subtraction are then done in a left to right configuration.

   One last word about variables. First I had better define a variable. It is the name you assign a number, equation, or expression. In this case I will be dealing with numeric variables.

   In TI BASIC you can use up to fifteen (15) characters in length. That is one bunch of letters and not really worth the length. When I program I try to keep the length to four characters or less. The longer

the name gets the more typing I have to do. Typing is something I can do without, so I try and make life easy for myself. There are several rules governing variables, but by keeping my program variables simple I have never worried about them. These rules are there in the TI User's Reference Guide for you.

   The main point I want to bring out is the usefulness of having variables that have up to fifteen significant characters. Let me explain by an example. Type in...

        A=1
        AA=2
        AAA=3
        AAAA=4
        AAAAA=5
        AAAAAA=6
        AAAAAAA=7
        AAAAAAAA=8
        AAAAAAAAA=9
        AAAAAAAAAA=10

now print...

        PRINT A;AA;AAA;AAAA;AAAAA
        ;AAAAAA;AAAAAAA;AAAAAAAA;
        AAAAAAAAA;AAAAAAAAAA

and the answer would be 1-10. But if you did this on a Radio Shack Model II, the answer would be...

        1 10 10 10 10 10 10 10 10 10

What when wrong ? In Radio Shack BASIC only the first two characters are 'significant'. Even though you can have names that are longer, only the first two characters matter. You can get hurt badly if you did not know this, but not on the good TI P.C. !!
One last look...

        SU   SUM   SUPER

are all treated as the same variable in Radio Shack BASIC, not true for TI BASIC. Stick with TI and you should not go wrong.

   That is it for another issue, I have to go back to the books to see what is needed for the next issue. Have fun number crunching !   ###

PRESS AND PAPER REVIEW.

What type of book of magazine do you like to read ? For Christmas you may say "Christmas Carol", or "Wind in the Willows" if you were going to the countryside. But for studying your computer you may read "Byte" or "Creative Computing"

Of late there has been no new articles in the popular computing magazine fraternity about the TI P.C.

This lack of interest by the 'big' magazines, I hope, does not bother you since there is at least two publications aimed at the TI P.C.

On a recent trip to San Antonio, I found a magazine called "Compute !" that claims to be interested in helping the TI P.C. user, along with several other small computer users. However there was no article in it based on the 99/4(A). Here we have a magazine that is willing to pay money for a decent article, and no one willing to write them. To get the TI P.C. known in the world, we must be willing to put forth and do our best.

For more information on "Compute !" write to Compute! Magazine, P.O.Box 5406, Greensboro, NC 27403

If I were to say the word "Snobol" what do you think I am talking about ? One idea may be a Colorado version of a Valgal; a new type of cocktail; or even a New Years' eve dance on Lake Tahoe.

The answer is none of the above. It is a computer language similar to Cobol. All this is leading up to an article I read several months ago in March 1982 issue of the ACM Computing Surveys. The title is "A Comparison of the Programming Languages C and PASCAL" and was written by Alan R. Feuer and Narain H. Gehani.

Now I will be the first to admit that the ACM Computing Surveys is not the average Sunday evening reading matter, but it does have some eye opening articles as this one. I shall try to keep you up to date if any more gems appear.

Let me begin by saying that I assume that you know what PASCAL and C are. I have not the room or time to develop this angle in REVIEWS and VIEWS

but hope to develop the understanding of these languages, more so PASCAL, one day.

Let me quote the preamble to their work. "The languages C and PASCAL are growing in popularity, particularly among programmers of small computers. In this paper we summarize and compare the two languages covering their design philosophies, their handling of data types, the programming facilities they provide, the impact of these facilities on the quality of programs, and how useful the facilities are for programming in a variety of application domains."

As you can see, not the average computer article that you will find in a popular computing magazines.

The authors go through both languages and compare them very carefully in all points, giving the weak and strong points of both all the time. Type Philosophy is carefully covered in section 2.1 and I found my understanding of FORTRAN useful in understanding their point of view.

Section 3.1 has two programs, one in C and the other in PASCAL, both doing the same problem. The differences in code is large. All is explained by the authors in a compact and concise way. This paper does not waste words.

One comment I found interesting was, "The data types in the two languages reflect their different design goals. PASCAL attempts to hide the underlying machine by presenting the programmer with a higher level machine whose instructions are the PASCAL statements and whose objects are instances of the PASCAL data types. C, on the other hand, does little to hide the underlying machine. Instead, it tries to provide a convenient way of controlling the machine. Although its instruction level is usually higher that that of the hardware, its objects are similar to those of the hardware."

Feuer and Narain deal with the problems of pointers, storage allocation and deallocation with a careful hand. The authors also help you to see through Statements (section 3.4) so you can see how the two languages deal with them.

The Summary (section 5.) reviews

where the programs could be applied, based on their strong and weak points. But like the authors point out, decisions are based on more points than just the language alone.

This is and excellent paper, but only for those who understand computers very well. Basically speaking this paper is for the PASCAL user to he/she can understand more about this language and gain a greater insight into the workings of PASCAL. PASCAL and the P-system do have a place in the future of personal computer development, but it has not made general acceptance as has CPM.

For a copy of the article write to Director of Publications, ACM, 11 West 42nd Street, New York, NY 10036 and state you want a copy of ACM 0010-4892/82/0300-0073 $00.75 The money on the end is a fee for the article, but I am not shure if that covers postage. Write and they shall tell all.

The January issue of Popular Computing has several interesting items for the TI P.C. owner. I will summarize and comment on them. But if you want the 'real' thing, you better go and order that issue.

Again it is back to PASCAL and its forth coming possibilities. (This is on page 62 of the January issue.) The article, titled "The AP Comes to Computer Science" talks about the new advanced placing of high school juniors and seniors into universities who want to go into a computer science degree. However, the focus of such testing, the article says, will be on "...concepts of structured programming and the Pascal programming language."

You may be wondering what happened to BASIC. The language BASIC is basically a small computer's language and carries no weight in the business and advanced academic world. I do not mean to 'knock' BASIC, but you will not find the space shuttle using BASIC in its computers.

Getting back to the topic at hand. By making PASCAL the standard for advanced placing test in computer science, this decision makes the TI P.C. one of a very elite group of computers that can run PASCAL. This gives the TI P.C. a large edge over the multitudes of computers that do not have PASCAL. This edge is in the form of possible sales to schools and more PASCAL programs. I would also expect other computers picking up PASCAL as another language.

One last comment on why PASCAL and not BASIC. PASCAL is a 'structured' language; BASIC is not. It is a truth to say structures are a fact of life to the computer science person. UNOFFICIAL will be covering structures in a later issue.

In another TI P.C. publication, (I hate naming names) there was a recent article about the Smith-Corona TP-1 printer. If you thought it was a good article then you will rave over the article in the same January issue of Popular Computing. No, I have no money invested in Popular Computing. But it does have, from time to time, good basic information. The article is called "Low-Cost Daisy-Wheel Printers" by Ken Skier.

His evaluation of the TP-1 shows it to be a very good machine. He covers speed; ease of connecting your computer; serial and parallel connectors; and Smith-Corona's track record as a manufacture of printers. Skier points out that this record is unknown and so is the repair record. But we all have to start some where.

In a box was the heading "Warning: Daisy Wheels and ASCII" It says "At present no daisy wheels are available that will print the entire set of ASCII characters for either the Bytewriter or the Smith-Corona TP-1."

Putting it another way, your listings may not have all what you have on the screen. The characters you would most lightly not have are <, >, [, and]. No problem you may say, so long as you either write them in, or never use the characters.

A printer is a necessary addition for any serious programmer. Get all the facts before buying a printer.

In the same magazine a person wrote in asking about computers that can be used for foreign languages. Of course the TI P.C. had to be mentioned for its abilities. Read page six of the January issue for the full story.

Out in many shops and stores is the TI Speak & Spell. This has the famous E.T. personality helping children to phone home, or something to that effect.

Finally, you may well have seen advertisements for Plato from Control Data. Plato claims to help your children through math, physics, foreign languages, computer literacy and other 'things' which the ad does not elaborate on. To run these programs, you will need the expanded TI system. For more information you will have to do your own writing and then evaluation. Ads only get you interested, they do not guarantee a good product.

That is it for now, happy reading till next time 'from the press'.

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FILES FOR A PROGRAM.

This program is based on the program in the last issue of UNOFFICIAL. Even though the program, 'A Program to Drill Your Kids By' worked and did the job it was designed for, I was not totally happy with its versatility. Let me give you the story...

Mother is busy doing the washing, father is fixing the car, and the three children have their homework to do. The oldest wants to use the computer to do her geography homework, the middle child needs the computer for help in fractions drill, and the youngest will kill to get on the computer as he has a BIG test tomorrow.

What do you do ? Of course you could buy three TI P.C. but that is out of the question. Well how about being able to use the same program in three different ways. How is this possible ? You use files with the program in the last issue of UNOFFICIAL.

Let me recap the program "A Program to Drill Your Children By." In it the data was countries and capitols. But really all it was was two comment statements. What is wrong with using

two other statements ? say ...

"144/12= ?","12"
or...

"The first president of the United States was ?","George Washington"
or...

"What year was the Battle of Hastings ?","1066"

And so on. But how to be able to use the same program for all this type of work ?

The answer does not lie in the faithful DATA statements. They are too cumbersome, and lack the versatility that we are after. So we turn to files and see that here is a tool that can do the job at hand.

A file is a list of items that are stored in such a way as to be easily retrieved. You may have a 3"X 5" file system at home for addresses, boy or girl friends, or formulas for cakes. The same basic idea is used in computer files. That idea may be over simplifying it though.

I have written a short program that will allow you to create files for saving on tapes (a very small change will allow disk users to use this program). The idea is to be able to create files of two fields only, so you can run the program, in the last issue, with different questions.

Looking at this program you will notice that the data in the DATA statements are READ into an array. This does two things:-
1. You are wasting memory by having the same information in the DATA statements and in the array. Duplication is dumb; in this case.
2. The same function that the DATA statement does, can be done by a file OPEN command with little modification to the program.

But first we have to create a file. In this case the file looks like the DATA statements with the word DATA missing. I do not mean that literally, since I am using the INTERNAL format. (You can read about formats for files on page II-120 of the User's Reference Guide.) But in your minds eye, picture

the file as something like this:-

"UNITED STATES","WASHINGTON D.C."
FRANCE,PARIS
MEXICO,"MEXICO CITY"
CHINA,PEKING
AUSTRALIA,CANBERRA
RUSSIA,MOSCOW

and so on. But let us have a look at
the listing of the file making program
before talking about it

```
60 REM FILE MAKER
70 REM    BY
80 REM MARK LEYTON
90 REM
100 DIM Q$(100), A$(100)
110 CALL CLEAR
120 PRINT "        THE MENU"
130 PRINT "        --------"
140 PRINT
150 PRINT "    NO.        COM
MAND"
160 PRINT
170 PRINT "    1.        CREA
TE A FILE"
180 PRINT "    2.        LOAD
OLD FILE"
190 PRINT "    3.        ADD
TO OLD FILE"
200 PRINT "    4.        DELE
TE FROM OLD"
210 PRINT "              FILE
"
220 PRINT "    5.        SAVE
FILE"
230 PRINT "    6.        EXIT
PROGRAM"
240 PRINT
250 PRINT
260 PRINT
270 PRINT
280 INPUT "<ENTER> THE NUMBE
R YOU WANT ":D
290 CALL CLEAR
300 ON D GOTO 840,310,430,48
0,1020,1100
310 PRINT "TO GET YOUR OLD D
ATA FILE, FOLLOW INSTRUCTION
S."
320 A=0
330 OPEN #11:"CS1",SEQUENTIA
L,INTERNAL,INPUT,FIXED
340 FOR I=1 TO 100
350 INPUT #11:Q$(I),A$(I)
360 CALL SOUND(200,-7,3)
370 A=A+1
380 IF Q$(I)="END" THEN 400
390 NEXT I
400 CLOSE #11
410 GOTO 110
420 N=A
430 PRINT "PLEASE ENTER THE
QUESTION AND ANSWER WHEN ASK
ED."
440 PRINT "THIS DATA IS BEIN
G ADDED TO THE BOTTOM OF THE
FILE."
450 PRINT
460 PRINT
470 GOTO 880
480 PRINT
490 PRINT "          EDIT M
ENU."
500 PRINT "          ------
----"
510 PRINT
520 PRINT "    NO.        C
OMMAND"
530 PRINT
540 PRINT "    1.        LIS
T DATA"
550 PRINT "    2.        DEL
ETE DATA"
560 PRINT "    3.        RET
URN TO MENU"
570 PRINT
580 PRINT
590 PRINT
600 PRINT
610 PRINT
620 INPUT "<ENTER> THE NUMBE
R OF YOUR CHOICE ":E
630 CALL CLEAR
640 ON E GOTO 650,710,110
650 FOR I=1 TO (A-1)
660 PRINT I;"    ";Q$(I);"
";A$(I)
670 NEXT I
680 INPUT "PRESS <ENTER> FOR
THE EDIT MENU ":F$
690 CALL CLEAR
700 GOTO 480
710 INPUT "<ENTER> THE LOCAT
ION OF    THE DATA YOU WISH
DELETED ":G
720 PRINT
730 PRINT Q$(G);"  ";A$(G)
735 PRINT
740 PRINT "YOU WANT TO DELET
E THIS,    CORRECT (Y/N) "
750 INPUT W$
760 CALL CLEAR
770 IF W$="Y" THEN 780 ELSE
```

```
480
780 FOR K=G TO 99
790 Q$(K)=Q$(K+1)
800 A$(K)=A$(K+1)
810 NEXT K
820 A=A-1
830 GOTO 480
840 CALL CLEAR
850 PRINT "THIS SECTION ALLO
WS YOU TO INPUT DATA INTO A
FILE"
860 PRINT
870 N=1
880 FOR I=N TO 100
890 PRINT "ENTER THE QUESTIO
N"
900 PRINT
910 INPUT Q$(I)
920 CALL SOUND(100,-1,2)
930 PRINT
940 PRINT
950 PRINT "ENTER THE ANSWER"
960 INPUT A$(I)
970 CALL SOUND(100,-2,2)
980 CALL CLEAR
990 A=I
1000 IF Q$(I)="END" THEN 110
1010 NEXT I
1020 OPEN #10:CS1,SEQUENTIAL
,INTERNAL,OUTPUT,FIXED
1030 FOR J=1 TO 100
1040 PRINT #10:Q$(I),A$(I)
1050 CALL SOUND(100,-5,2)
1060 IF Q$(J)="END" THEN 108
0
1070 NEXT J
1080 CLOSE #10
1090 GOTO 110
1100 CALL CLEAR
1110 PRINT "END OF SESSION"
1120 PRINT
1130 PRINT
1140 END
```

As you con see, this program is menu driven. That is to say you just have to follow the instructions and you ought not to go wrong.

Let us go through the program, but remember that all the program does is to create a file for the program in the last issue. Additions or changes to this program will be covered later on in the article.

You start out with a menu listing six options. Number one is used only when creating a new file. other wise

you would use number two. This option allows you to load an old file upon which you can then work. Once you have "loaded in", from your tape, you can then use options three and four for working on the file.

By selecting option four you are then faced with the Edit Menu. This menu has three new options. Option one will list the data for your inspection. By so doing you can learn the location of each data entry. Option two allows you to delete a particular data entry by using the location number you learned in option one of the Edit Menu. Option three allows you to return to the main menu.

Back in the main menu, you have number five. This option allows you to save any alterations you have done. All commands are for a tape saving system. If you do not want to save the changes, or just want to get out of this program, use number six to exit.

Let me go through a sample run of this program in words.

I am assuming that you have not created a file yet, so enter the number one from the main menu.

THIS SECTION ALLOWS YOU TO
INPUT DATA INTO A FILE.

ENTER THE QUESTION

This is what would appear on the screen. At this point you would enter the question; remember to put quote marks round it if it is more than a one word question. Then...

ENTER THE ANSWER

You will enter the answer to the question at this point. Again remember the quote marks if they are needed. The screen will clear and ...

ENTER THE QUESTION

will reappear. When you are finished entering in questions and their answers you may be interested in getting out of this loop. You do so by entering 'END' for the question, and 'END' for the answer. This will return you to the main menu.

Assuming that you want to save the program enter the number five. By saving the program you are using the computer's built in commands. follow all the instructions that come on the screen and you should not go wrong. Do not forget to use the checking of data option. This can save problems later. Once the program is saved, and the saving can take some time, you are then returned to the main menu once again

The loading of an old data file is very similar to that of saving a file in that the computer's own commands are used. Loading takes time. Once the file is loaded you can add to, or delete from the file loaded. Commands are easy to follow.

The file, once created, is two fields wide and can have up to 255 characters in each. I have kept the questions and answers simple enough so it is fun to use, since the answer has to be right in spelling, the order of words, and in punctuation. Which is not an easy thing to do if the answer is 256 characters long !!

I hope I have covered enough for you to get writing files. adaptations will be covered later. But we had better cover the modifications needed for last issues program so it will accept file data.

Line 130 has not been altered so you know where I am in the old program.

```
130 PRINT "<ENTER> YOUR NAME
PLEASE"
140 INPUT NA$
150 CALL CLEAR
160 PRINT "TO LOAD DATA, FOL
LOW        DIRECTIONS."
170 PRINT
180 Y=0
190 OPEN #11:"CS1",SEQUENTIA
L,INTERNAL,INPUT,FIXED
200 FOR I=1 TO 100
210 INPUT #11:T$(I),U$(I)
220 IF T$(I)="END" THEN 250
230 Y=Y+1
240 NEXT I
250 CLOSE #11
260 CALL CLEAR
270 PRINT "    HELLO ";NA$
```

Line 270 is the same as the old line 250, and now I hope you can see where you are in the old program. You have all you need to run the drill program using data files.

That is it for the program, but not all that you can do if you modify this program. At the moment you are creating only two fields, this can be expanded up to any number, so long as you have all the supporting parts of the program so altered. This gives you flexibility and versatility.

Say you wanted to keep track of your cheque books (one for you and one for your wife, or husband) and know how you are doing. By entering date, cheque number, to whom it was given, and amount into a file you have all the facts at hand to enter this file into a program that can keep track of your money.

However, if you were to write such a program you are almost into a data base system. I hope I have not worried you by that phrase. You are a small step away from entering a whole new ball game in data base programming. One that is exciting, challenging and rewarding.

A data base is, simply stated, a program that can manipulate data that is stored in one or more files. Since you now know what a file is and how to create them you are almost there. Of course a data base system is not the sort of program you can write in a week or two. By careful planing and development you could have a very comprehensive data base system covering house budget, your children's school progress and grades, time management and many more things and areas.

But what do you do with a data base system ? You can search through files, correlate data, see trends, find problem areas and generally give you an 'edge'. It sounds kind of strange, but it can be true. Having that extra 'something' can be the difference.

Maybe a far cry from the humble beginning of Questions and Answers but is it ? I do not think so. A data base system is available if you have the time and interest. You are only held back by your own doubts.

###

A DIRECTORY FOR YOUR TAPE

One of the first things a new TI P.C. owner finds out is that when you turn off the computer, you lose all that was in it. I mean programs of course. Now if you are using the plug-in modules there is no problem. You can with ease get the program back. But what about your own programs ?

With out a tape recorder you are limited in what you can do. Your creativity is stopped.

A tape recorder is a medium upon which programs and data files can be stored. Just as an LP or the radio is recorded so is your program. The only difference is the volume and tone (if you have a tone control) at which you record. The music or speech is recorded so you can hear it again. For the recorded program, you really do not care how it sounds, so long as the computer likes and understands the recording.

The best way of understanding how a tape system works is by looking at an example. To save a program to a tape, you type in...

SAVE SC1

The word 'SAVE' is a protected word and is only used in SAVing programs. The 'CS1' tells the computer that the program is going out via line 'CS1'. Remember that you have two lines. 'CS1' is the line with three leads. The other is 'CS2'.

At this time the system prints several messages that you must follow. They are simple and straight forward. This is all covered in your User's Guide book that you got when you bought the TI P.C.

Now if we look carefully at what you have done, you have saved a program on a tape at a place on the tape which you chose by some means or other. Also the program has no name. No name and a random location does not make for an efficient system !!

Let us have a look at how the Radio Shack Color Computer would do the same job.

Again we are going to save a

a run of the mill program. Assuming that you have the compatible cassette recorder all hooked up you press the PLAY and RECORD buttons at the same time until they lock. The tape will not roll because the computer has control of the AUX jack. Type in...

CSAVE "NUMBERS"

Upon entering this the recorder will start working. Upon completion of saving the program the message...

OK

will appear. Now loading a program is not quite the same as the TI P.C. Using the name of the program as NUMBERS, you press the PLAY button on the recorder and then enter...

CLOAD "NUMBERS"

Now the program NUMBERS is in fact the fourth program in on my cassette. But do not worry. On the screen is...

S

Which means that the computer is searching for your program. When it comes across a program the computer prints...

F APPLE

Which is the name of the first program on my cassette. Then...

F HOME

Will replace the first Find. And so on until...

F NUMBERS

When this program is loaded, the message...

OK

Will appear letting me know the program has been loaded and the recorder has been turned off by the computer and I have the release the PLAY button.

I hope that by showing you how the

Radio Shack Color Computer works that you can understand more about the TI P.C.

But that is not all that the Color Computer can do for you. It has a function called SKIPF.

Press the PLAY button on your recorder and enter...

SKIPF "NUMBERS"

Remember that the program named NUMBERS is the last program on your tape. The computer will let you know when it has found the program named NUMBERS and when it reaches the end of that program the recorder will stop and the message...

OK

Will be shown. Not a bad way of finding the end of a tape !!

The Sinclair ZX81 has similar features to those of the Radio Shack. To save a program you would first have to give the program a name. This name is given as follows.

```
10 REM "CHARACTERISTICS"
20 I=1
   the rest of the program.
```

To save the program type...

SAVE "CHARACTERISTICS"

Press the PLAY and RECORD buttons and let the tape roll and then press the ENTER key. The screen of your TV goes sort of mad. Black and white stripes, noise, and more patterns appear to let you know that you are saving a program. You know if the SAVE has been good if the screen returns to normal and the message...

0/0

Is in the bottom left hand corner.

Loading a program is easy and similar to that of the Radio Shack Color Computer, and YES you can search by name on the ZX81

I hope you are seeing that the TI P.C. has not the best tape system in the world. But we do have a checking function that allows you to see if the program has been loaded properly. But even that function is not a fantastic as it first looks.

Let us get back to the topic of an index or system that we can quickly use to see what is on the tape without a lot of bother.

The very first program on my tapes is a small program that I keep up to date all the time. In it I enter the name of the program, type of language it is written in, (in BASIC, machine language, FORTRAN, etc) and the location on the tape it is.

Name and type is easy to understand, but location is not. When ever I rewind the tape I set my counter back to '000' Every rewind shows that the tape counter is not an exceeding accurate thing. I do not mean to say that the error is large, no, but you need to be aware of the small error and know how to handle it.

If the program is at location '100' I would go to 98 and stop. This gives me a space of tape that will cover all errors in the tape counter. Almost an over kill in tape space, but tape is cheep compared to my time entering in a program. Also after the program is saved I let the recorder roll on for a few counts so as to destroy any old copy of the program. I do not use the recorder control that the TI P.C. has because I can see problems over the hill. Also my system (of doing it all by hand) has never failed me yet and I am happy with it.

Then why does TI have such a poor tape system. In my opinion it comes down to money and the design 'force' to push you to the TI disk system. . My recorder is not a TI brand, nor are my tapes. That is, my money is not going to TI. The TI P.C. is far more able to handle disks than tapes. To get the disk system you need an expansion box, disk drive, control card, etc. That cash goes to TI and makes a nice profit.

I am not against disks, in fact I feel that they are far better than tapes. But, I suspect that the majority of users will never buy a disk system and so we had better look after them and let them know what they have

bought and what to do with it.

Finally the program for your tapes.

```
100 REM     INDEX #001
110 REM     MEMOREX TAPE SIDE
#1
120 CALL CLEAR
130 PRINT " DATA TAPE #001"
140 PRINT
150 PRINT "    * = MACHINE CO
DE"
160 PRINT "    > = TI BASIC"
170 PRINT "   $> = TI EXTENDE
D BASIC"
180 PRINT "    ] = OTHER"
190 PRINT
200 PRINT " COUNTER      PROG
RAM"
210 PRINT " 000          IN
DEX"
220 PRINT " 010          (>) MA
TH"
230 PRINT " 030          (>) QU
IZ"
240 STOP
250 END
```

Line 100 is for when I develop a 'master' index, and so I shall need to know what number the index I am looking for is at. Line 110 tells me that the tape is a Memorex tape and I am on side #1. Line 130 is the start of what is printed. Lines 160-180 are a sort of code to let me know what the language the program is in. Line 200 is the actual listing of programs and locations on the tape. I have shown only three programs but to add more just insert a new line.

Since the TI P.C. does not have a name searching facility this index is the next best thing. So long as you keep it up to date there really is nothing that should go wrong. Also by remembering that the tape counting system is not the best in the world, you should have many hours of programming, saving programs and finding them again without problem.

I hope I have helped you to understand more about tapes and the art of using them.

###

QUICKIES

Once again it is back to the faithful Quickies. I hope you managed to work and understand the Quickies in the last issue.

QUICKIE # 7

Last time it was prime numbers, now it is into right angle triangles. Now you remember all about these, right ? Again we have to go back to the Greeks of old and to Pythagoras. He said that the sum of the squares on the other two sides is equal to the square on the hypotenuse. That is...

The equation we all know is

$$A^2 = B^2 + C^2$$

The program is as follows.

```
100 REM PYTHAGOREAN TRIPLES
110 FOR B=1 TO 20
120 FOR C=B TO 20
130 A=SQR(B^2+C^2)
140 IF C<>INT(C) THEN 160
150 PRINT B:C:A
160 NEXT C
170 NEXT B
180 STOP
```

Line 130 could have been written this way...

```
130 A=SQR(B*B+C*C)
```

The only difference between the two answers is in how the answers were arrived at. The way in the program uses logarithms, while the other way uses addition. (B*B= B+B+B+B+B...)
Also we could change line 140 to..

140 IF C-INT(C)=0 THEN 160

or...

140 IF C-INT(C)>0.000001 THEN 160

There would be no difference in the out come. Again the TI P.C. is slower than either the ZX81 or Radio Shack Color Computer. But, and this is a big but, the TI P.C. pulled out all the answers that there is without any 'extra' programming. TI P.C. pulls it off again.

QUICKIE # 8

This Quickie is more in the way of a useful tip on how to get a number printed to a given degree of accuracy. To put it another way the TI P.C. stores numbers like this "... values are maintained internally in seven radix-100 digits. This means that the numbers will have 13 or 14 decimal digits depending on the value of the number." Quoting from the User's Guide that comes with the computer. But most of the time I am not interested in the numbers past two or three decimal points. But the TI P.C. will still print them out for you. This program will illustrate how to get the accuracy you want. Type in...

```
100 CALL CLEAR
110 PRINT "<ENTER> YOUR NUMB
ER"::
120 INPUT A
130 PRINT A:(INT((A*10)+0.5)
/10):(INT((A*100)+0.5)/100):
(INT((A*1000)+0.5)/1000)
140 PRINT (INT((A*10000)+0.5
)/10000):(INT((A*100000)+0.5
)/100000)::
150 INPUT "TRY AGAIN ? (Y/N)
":B$
160 IF B$="Y" THEN 100
170 END
```

Type in the number...

1.23456789

When you are asked to input a number. The result will show you the same number but to different degrees of accuracy. The most logical use of such an idea is in the printing of money. Here you are only interested in two decimal places, but need the round up or down of the next figure. This routine takes care of that for you. The answers will be...

1.23456789

1.2
1.23
1.235
1.2346
1.23457

Of course if you have EXTENDED BASIC you have this type of ability built in, but think of the majority who do not. It is for them that this is written.

QUICKIE # 9

Do you play Backgammon ? Well if you do then you know all about using the two dice. Dice and games using dice are basically games of chance. The chance being the roll of the dice; unless the dice are fixed and that topic is outside this Quickie.

The roll of the dice is basically a random choosing of two numbers (if you are using two dice) between one and six. There is no way that you can predict the numbers, yes you can always hope but that is all you can do.

Be that as it may, here is a Quickie that will roll the dice for you letting you know the values of the dice (if you chose more than one dice) and the total of the dice. You also have the players numbered so that you know whose roll it is. Enter the following then we shall talk some more about this program...

```
100 CALL CLEAR
110 RANDOMIZE
120 PRINT "HOW MANY PLAYERS
```

```
ARE THERE ?"
130 INPUT A
140 PRINT ::HOW MANY DICE AR
E YOU GOING TO USE ?"
150 INPUT B
160 FOR J=1 TO A
170 CALL CLEAR
180 PRINT "PLAYER #";J
190 D=0
200 FOR I=1 TO B
210 F=INT(RND*6)+1
220 D=D+F
230 PRINT F;
240 NEXT I
250 PRINT :D
260 PRINT ::::"PRESS <ENTER>"
270 INPUT E$
280 IF E$="" THEN 290 ELSE 3
10
290 NEXT J
300 GOTO 160
310 END
```

The first question you need to
answer is HOW MANY PLAYERS ARE THERE ?
Enter the number. This number will be
used to tell you whose turn it is and
what he rolled.

Next question is HOW MANY DICE ARE
YOU GOING TO USE ? I hope this
question does not fool you. This
program works well if you are using the
same number of players and dice all the
time. I love playing the game of Risk.
In it you are after conquering the
world. The game is a dice game but
this program, or any program will be
hard pressed to match the complexity of
the permutations and combinations of
the dice throwing. Yes you could write
a program, but it would be big and,
more importantly, slow on a personal
computer. I.E. rolling the dice would
be faster than the program.

There are no other questions
asked, all you have to do is press the
ENTER key and the next player and his
roll will be shown. To end the program
enter anything before pressing the
ENTER key.

This quickie is simple and
illustrates the use of the RANDOMIZE
and RND functions. I hope you enjoy
using it and not losing your dice.

THE COMPUTER ORACLE
OF DELPHI.

Did you ever see the movie
"Arthur" ? Remember how tough it was
Arthur to realize he was in love ?
Do you remember how you were when you
fell in love for the very first time ?
Has your son or daughter seen acting
'strange' lately ? Come and ask the
Oracle about it and find all truth.

This program will show if you or
some one you know is in love. Answer
the questions truthfully and an answer
will drop out. Answers to this dilemma
are among the toughest to answer. But
the Computer Oracle has never failed to
give an answer yet.

Enough of this reading, and let's
get down to the serious business of
seeing what your teenage son and/or
daughter has been up to...

```
90 CALL CLEAR
100 RANDOMIZE
110 Z=0
120 INPUT "HAVE YOU BEEN DAT
ING LESS THAN TWO WEEKS (Y/N
)":A$
130 GOSUB 1000
140 INPUT "DO YOU GET EXCITE
D WHEN YOU THINK OF THIS PER
SON (Y/N)":A$
150 GOSUB 1000
160 INPUT "DOES THIS PERSON
MAKE YOU FEEL HAPPY (Y/N)":A
$
170 GOSUB 1000
180 INPUT "HAVE YOU BOUGHT S
EVERAL GIFTS FOR THIS PERSO
N (Y/N)":A$
190 GOSUB 1000
200 INPUT "DO YOU FEEL THAT
THIS LOVE WILL LAST FOR EVER
(Y/N)":A$
210 GOSUB 1000
220 INPUT "DO YOU SPEND HOUR
S A DAY TALKING TO THIS PERS
ON (Y/N)":A$
230 GOSUB 1000
240 INPUT "DO YOU WANT TO BE
WITH THIS PERSON ALL THE TI
ME (Y/N)":A$
250 GOSUB 1000
```

```
260 INPUT "DO YOU PUT ON YOU
R BEST CLOTHES WHEN YOU ARE
GOING OUT (Y/N)":A$
270 GOSUB 1000
280 INPUT "HAVE YOU WRITTEN
POETRY ABOUT THIS PERSON (Y
/N)":A$
290 GOSUB 1000
300 INPUT "ARE YOU READY TO
DEFEND THIS PERSON IN ANY WA
Y (Y/N)":A$
310 GOSUB 1000
320 INPUT "DO YOU WORSHIP TH
E GROUND THAT THIS PERSON WA
LKS UPON (Y/N)":A$
330 GOSUB 1000
340 CALL CLEAR
350 PRINT :::"WAIT A MINUTE
FOR THE RESULT OF THIS QUEST
IONNAIRE. "
360 IF Z>10 THEN GOSUB 2000
370 IF Z>8 THEN GOSUB 3000
380 IF Z>6 THEN GOSUB 4000
390 GOSUB 5000
1000 IF A$="Y" THEN 1010 ELS
E 1020
1010 Z=Z+1
1020 RETURN
2000 Q=INT(RND*3)+1
2010 ON Q GOTO 2020,2040,206
0
2020 PRINT "THIS MAY BE THE
ONE FOR YOU, DO YOU AGREE ?"
2030 END
2040 PRINT "YOU MUST BE IN A
BAD CONDITION, GO TAKE A COL
D SHOWER !!!"
2050 END
2060 PRINT "GO WATCH 'ARTHUR
' AND 'ENDLESS LOVE' BEFORE
GOING ON WITH THIS DAY !!"
2070 END
3000 Q=INT(RND*3)+1
3010 ON Q GOTO 3020,3040,306
0
3020 PRINT "YOU ARE NOT QUIT
E IN TOO FAR TO GET OUT."
3030 END
3040 PRINT "GETTING COLD FEE
T ?? "
3050 END
3060 PRINT "THIS ONE NEEDS S
OME MORE WORK, GO TO IT !!"
3070 END
4000 Q=INT(RND*3)+1
```

```
4010 ON Q GOTO 4020,4040,406
0
4020 PRINT "YOU ARE DREAMING
AWAY..."
4030 END
4040 PRINT "HOW LONG HAVE YO
U BEEN LOOKING AT THIS PERSO
N ??"
4050 END
4060 PRINT "GO TRY SOMEONE E
LSE."
4070 END
5000 Q=INT(RND*3)+1
5010 ON Q GOTO 5020,5040,506
0
5020 PRINT "YOU NEED NEW GLA
SSES BADLY !!!!"
5030 END
5040 PRINT "YOU NEED TO CLEA
N YOUR GLASSES BADLY !!!"
5050 END
5060 PRINT "YOU NEED TO SHOO
T YOUR GLASSES NOW !!!"
5070 END
```

As you well know the 'Computer' Oracle never tells it to you in a clear way, and this program is no exception. The Oracle is known through out the ages as a place of a double edged answer. Do not expect anything more here. Just have fun typing it in and answering the questions.

The Oracle is not responsible if your house is burned down (as in Endless love) or if you find a shoplifter in action (as in Arthur).

The answers you get may or may not be to your liking but I hope you can see how the use of GOSUB is necessary to avoid the constant repetition of addition in the 'Z=Z+1' line. Is there another way to do it ? I am shure there is, but is it as effective. I f you can remember back to those heady days when you were dating and chasing someone else, try and alter the program to suit your days of dating, and then try it on your children, and see if it is any good. If you do not have any kids, use your parents.

That is it till next time when the Computer Oracle of Delphi will answer, or show you how to answer, a modern day problem using the TI P.C.   ###

REVIEWS AND VIEWS

RATING TABLE
Five stars(*****) Excellent
four stars(****) Above Average
Three stars(***) Average
Two stars(**) Almost OK
One star(*) Not Worth It

In this issue I shall two reasonable priced items from the TI stable of goods. The first is Teach Yourself Basic (PHT 6007) and costs from $24.00 to $29.95 The cheaper of the two prices is usually the price you would pay if you ordered it by mail order, and the other is the price at a TI shop.

The Teach Yourself Basic (TYB from now on) I used is the cassette version. You can get it as a module, but the tape does offer one big advantage over the module, besides the price.

The first thing I noticed is that the instruction booklet that you get with the two cassettes is not very useful. The only page I found of any use was the directory to the programs on the tapes.

There are ten programs, five on each tape and backups on the back, that will take you through the basics of programming the TI P.C.

Each program is professionally written and use excellent examples in all cases. The methodology is good, but it is geared for someone who is interested and has the ability to comprehend what is being presented to him/her.

The use of graphics, split screens, flashing words all add up to a well done package.

Now if you have the tape and have mastered the ten lessons, you also have the actual programs to learn from. What do I mean ? All the lessons are written in TI BASIC and by listing the program to a printer you now can learn more about the lessons than you ever dreamed of. By seeing how the lessons are written and following the writers logic, the beginning programmer can gain a great deal of knowledge.

The copying and dissecting other peoples programs is a major way of gaining the tools to become a better programmer. Just remember, do not copy for monetary gain.

RATING *****

The other TI product that I have for a review is Video Graphs (PHM 3005) and sells between $16.00 and $19.95 again depending on where you go.

What this module does is kind of hard to describe, even though I have been playing with it. The only thing that I am shure of is that it illustrates the graphics capabilities in a very good light. Yes the TI P.C. does handle graphics and does it well. I doubt if the early TI P.C. programmer will be doing a great deal with the graphics capability just yet, but this module claims to be of assistance when you are ready.

Video Graphs comes with a key overlay. This overlay, with the module I have, is only good for the TI 99/4 and not the 99/4A model. I wonder if TI has an overlay for the 99/4A. So what I did was to lay the overlay on top of the computer and finger pick my way about the colours and directions.

There are three main parts to the module, 1) For Patterns, 2) For Pictures, and 3) To Load a Picture You Have Saved. Each one can be broken down even further.

Patterns are broken into 1) Pulsing Lights, 2) Cross Hatch, 3) Random Walk, and 4) Cycle Thru All.

Pictures are broken into 1)Color Life, 2) Mosaic, 3) Building Blocks, and 4) Sketch Pad.

The Picture section has some of the more interesting items that you can look at. There is Oscillators, Shuttle, Aircraft, R-Pentomino, and Seeding.

The module is interesting and has features to keep you busy quite a while. But only if you are willing to spend the time. Also do not expect anything more than a lot of pictures, shapes and colours with this module. But Video Graphs does have a strange claim to fame. It is a cheep module and it counts toward your speech synthesizer.
###

RATING ***

IN CLOSING...

In the last issue of UNOFFICIAL I stated that there were no advertisements, but there were. One ad was from UNOFFICIAL which I tend not to count since it was a sort of 'by us, for us' type ad. The other was a full blown advertisement by a large company from up north. The ad came after all the words had been said and put to 'bed' but not before the copies had been made. So I was caught in the middle of a dilemma; to print or not to print. I felt it better to print with the error and give the reader the opportunity to see what you can buy and at what price than to wait until this issue. I realized that many people may write in and point out the errors of my ways, but I am willing to take that. But I do hope that you will bear with UNOFFICIAL as it goes through some teething pains in its growing course.

The other item I want to add something to is the article A Directory For Your Tape. At the end of the article I talked about the expansion box and what you need to have a disk system. If you turn to the ad that we have and we shall see just what you need.

First you have to have the expansion box (approx $180.00); a disk control card (approx $180.00); expansion system disk drive (approx $285.00); and to run your big programs, you will need the memory expansion card (32K RAM) (approx $215.00)

That is a total of -depending where you buy- $645.00 without the extra memory, and $860.00 with the memory expansion card.

So you can see why I say that the majority will never get a disk system especially at this time when the job and money situation is not too good.

In time UNOFFICIAL will explore the disk system of the TI P.C., but at the moment I am holding off writing about it.

At this time of the year I would like to wish every one a HAPPY EASTER and do not eat too many eggs !!!!