

NEWS

Vol 2

North Texas IBM Personal Computer Users Group

No. 12

Special Interest Programs

Programmers

Recently-announced IBM products were the focus of the meeting of the Programmer's Special Interest Group in November. These include two advanced versions of the PC and the PCjr entry in the home computer market.

The new PC's have been reported as an attempt to improve IBM's position in the automated office market. The XT-370 can be linked to an IBM System 370 host computer and runs its own version of the VM-CMS operating system. Program development is the main purpose of this system, and language downloading from the mainframe will be provided on a license basis. 2084 delivery is being quoted. An XT to XT-370 upgrade kit is available. It consists of 3 expansion boards and software.

The 3270 Personal Computer is an entirely new machine. It can be linked with mainframes including the 4300 and 308x series. It provides several "windows" on the display to concurrent processes being run on the same or multiple host computers, and has all-points-addressable graphics capability.

The PCjr home computer has been reported as the last link in the chain of compatible desktop computers and an important step in "the cutting edge of an IBM effort to get the biggest share of what analysts expect will be a \$90 billion market for microcomputers by 1992." Group observations on the jr noted the 2 plug-in slots, no provision for an 8087 numeric data processor chip, and a feature for plug-in cartridges. Version 2.1 of the PC-DOS operating system has also been announced. It is reportedly the functional equivalent of 2.0, and runs the jr, PC, and XT.

Topic and program suggestions for the next meeting are invited. Call group chairman Neil Bennett at 238-7650.

Dick Gall

A g e n d a

The general order of business will be:

1. Club Business
2. Presentation:
Slide show on PCjr by an IBM Rep from Boca Raton
3. Vendor Announcements
Club Professional Members
4. Specialty Group Agendas for Next Hour (Each SIG Chairman makes 1-minute announcement)

Chris

E l e c t i o n s

A nominating committee was appointed by the Board of Directors at the November meeting. Members of the committee are: Charles Awalt (Chairman), Neil Bennett and Bill Hood. Nominees are as follows:

For President-Elect:
Chris Morgan

For Director at Large (3):
Ken Land
Neil Bennett
Will Janoschka

Elections will take place at the January meeting. Additional details will be available at the December meeting.

Next Meeting December 10, 1983

Jesuit College Preparatory School
12345 Inwood Road, Dallas, Texas
(See map on page 9)

9:30 to 12:00



North Texas PC NEWS

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Deadlines:

All material for publication in PC NEWS (articles and ads) must be received by the NEWS staff no later than the fourth Friday of the month prior to publication.

North Texas IBM Personal Computer Users Group

A non-profit, independent group, not associated with IBM Corporation. The Group meets on the second Saturday of each month. See page 1 for meeting time and place.

Officials:

President	Alan Elliott	(214) 941-8475
Program Chairman	Chris Morgan	(214) 446-0484
Treasurer	Bill Hood	(214) 350-9784
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Beginners	Mike Durbin	(214) 271-8779
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Disk of the Month	Will Janoschka	(214) 231-6449
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BASIC Applications	(open)	
Comm & Networking	(open)	

Telephone (during business hours)	(214) 361-0304
Bulletin Board SYSOP: Mark Collard	(214) 223-0983
(24 hrs, download & upload, messages, 300/1200)	

Dues: Professional Membership - \$36.00 year
Regular Membership - \$24.00 year
Student membership - \$12.00 year

Payable in January. Dues are prorated for balance of year when applicant joins after January. Mail dues to: Treasurer, NT IBM PC UG, 10400 N. Central Expwy #210, Dallas, TX 75231

SIG Notes:

BASIC Applications and Communications & Networking Groups are looking for leaders. If you're interested in heading up one of these SIGs, contact Alan Elliott for details.

Complimentary Memberships

To show our appreciation to those of you who put pencil to paper (or finger to wordprocessor as the case may be) and write articles for publication in the newsletter, here is some good news...

We will offer complimentary memberships to those of you who submit original articles for publication in PC NEWS. Ground rules for this program are given below.

The complimentary memberships are not to be considered as payment for the articles (we couldn't begin to pay you what you're worth...), rather, we look on it as a "thank you" from the membership for taking the time to share your knowledge with the Group.

The program will begin immediately. Results will be evaluated at the end of the 1984 membership year to decide whether to continue the program through 1985.

GROUND RULES

Subject Matter. Articles may cover any aspect of the IBM Personal Computer (or work-alike) world. Main criteria is that they be of interest to members of our group. Some typical subjects include: Hands-on review or personal experience with new software, hardware or techniques... Peripheral interconnection problems and solutions... How-to articles on furniture, diskette storage, printer paper control... A standard "tree" structure for the average hard disk user... etc, etc

Number and Length of Articles Required. Four or more articles during one membership year. Each article must be a minimum of 400 words.

Format. Standard one-column width is 56 characters; two column max is 120 characters. All copy to be in ASCII format on disk or transmitted by modem. (Sorry, no double sided disks at this time - I'm still operating single sided...) DOS 1.0 or 2.0.

Notify Treasurer. In January, eligible members will provide a listing of their published articles to the treasurer in lieu of cash for next year's dues.

If this stimulates your imagination to such an extent that you think of more articles than you can possibly write during one membership year, send us a list and we'll post it in the NEWS and allow someone else to do their bit!

John



Disk of the Month

by Will Janoschka and Dick Gall

PC-WRITE WORD PROCESSOR AND TEXT EDITOR

PC-WRITE is destined to become the PC-TALK of the word processor world. It stands up with the expensive, big-name programs in features. But since it's written specifically for the PC, it operates much faster. And it makes excellent use of the PC's function keys and other special features.

The cursor display indicates the mode of operation. A standard cursor is the regular overwrite mode. The "push text" mode is toggled on by pressing the scroll lock key, which makes the cursor noticeably fatter. Caps Lock splits it into an upper and a lower part, and Num Lock makes the top part fatter. The lower cursor fills half

Dallas Computer Show

North Texas IBM PC Users Group was well represented at the Dallas Computer Show held at Market Hall last month. There were enough volunteers to keep the booth going Thursday through Sunday. The members sold 106 Disks of the Month and signed up 12 new members. To recognize the volunteers and say thanks, they are listed below:

Walter Carter	Jim Parker
Dick Gall	Eric Parsons
Will Janoschka	Bob Post
Dotty Keep	Ken Scott
Bruce Lutz	Frank Stotts
David McGehee	Dirk Tollenaar

Bill Hood

the character position while a shift key is depressed, and the entire position while the Ctrl key is down.

The 98-page documentation file even includes a 4-page index. The "About Computers" section will help those new to computers get started with the program. Seven pages of tutorial with exercises will enable the novices to start bootstrapping themselves into the word processing world. The on-line help screen (available at any time by pressing F1) will enable experienced word processor program users to put aside the documentation after a couple hours' experimentation with the features.

A list of the major features is included in the introduction to the documentation:

- Insert, replace, and delete text anywhere you want.
- Search for a piece of text and replace it with other text.
- Move and copy blocks of text from one place to another.
- Set margins and tabs, reformat and justify paragraphs
- Print text in pages with headers and footers.
- Split screen mode permits editing two files at once.
- Search and replace using "wild card" match characters
- Transpose, change case, and bookmark keys.
- Any Control key can be set to be any other key.

Communication buffs who need their polished prose and verse output in ASCII will be pleased to know that justified output is generated in the standard language. Also, the escape character can be entered directly into text as can printer control characters.

Text creating and editing chores are performed using the ED program. Printing is done with PR, which provides a wide range of options including alternate left- and right-hand printing of headers, etc. Both of the programs are quite compact, considering their extensive features. ED.EXE is 27,010 bytes and PR.EXE is 8,832

Season's Greetings

Disk of the Month



(continued)

bytes long. The programs load completely for operation, and ED handles document files up to about 64 Kbytes in length.

Color customization is available in connection with the ruler line that is used to set up margins, tab stops, and paragraph indents. The cursor can be driven directly to any line, and justification and word wrap can be toggled on and off as needed. Reformatting to fit changed margins is performed quickly on a paragraph-by-paragraph basis.

Bob Wallace, the author of PC-WRITE, worked on MS-Pascal at Microsoft from 1979 to 1983, when he joined Quicksoft, which is distributing PC-WRITE under what it calls the commission shareware concept. With this method software can be freely copied and shared. You can register your copy for a fee, then receive a commission each time another user registers with your number. That user gets a new registration number and the same commission rights. Registration for PC-WRITE costs \$75 and provides additional services, such as copies of the

program source files, telephone support, a printed manual, and a free copy of the next updated version.

This article is being written by a long-time WordStar fan after one hour's skimming of the documentation and experimenting with the features. While extensive, the documentation needs a complete summary chart organizing all functions and the keys for implementing them. This would be sufficient documentation for experienced word processor program users to hit the keyboard running for most functions.

The on-line help screen is being included to illustrate some of the large variety of functions available. Blocks of the help screen are highlighted by reverse video when displayed to designate the related key groups. m

DISK DETAILS . . .

Price: \$5.00. Available at the general membership meeting. Media: DSDD 5" diskettes formatted single-sided. Public domain software only, standard full disclaimers. Sales are made before and after the general membership meeting only. Call disk of the month chairman Will Janoschka at 231-6449 to submit material and programs for future Disk of the Month issues. Most back issues are available.

Modifier keys: ^ Ctrl, * Shift, @ Alt.	+Fn: Means Fn with Ctrl or Shift or Alt.
F1. Show this help; exit, save, read	+F1. Exit, save, read (no help shown)
F2. Edit ruler line, split/join window	+F2. Read ruler line from file
F3. Copy marked, to file if marking	+F3. Insert file at cursor
F4. Move, to hold if marking (cut)	+F4. Insert hold at cursor (un-cut)
F5. Clear all marking	+F5. Marking through next word
F6. Switch between marking and marked	+F6. Marking through current line
F7. Reformat paragraph from cursor	+F7. Turn justification on or off
F8. Change case, of letter or marked	+F8. Center line or marked, in margins
F9. Set find and replace text	+F9. See and change cursor line number
F10 Replace found text	+F10 Un-replace, or Replace to end
Find/replace matches: F5 alpha/number, F6 all other, F7 anything, F8 line bound.	
Tab..... tab forward	Ins..... space in, push *Ins..... redo Ins's, down
*Tab..... tab backward	Del..... del char right *Del..... redo Del's, down
Esc..... insert an esc	^Esc..... cut word right *Esc..... transpose right
Bksp.... del char left	^Bksp.... cut word left *Bksp.... transpose left
Enter... new line insert	^Enter... cut to end line *Enter... new line, align
NS arrow up/down line	^Grey*... redraw screen *NS arrow top/bottom edge
EW arrow left/right char	^EW arrow left/right word *EW arrow left/right margin
Hom End. col one/end line	^Hom^End. save/goto place *Hom^End. beg line/end col
PgU PgD. scroll one line	^PgU^PgD. prev/next parag *PgU^PgD. scroll window
ScrLock. Push/Over mode	Grey+.. find next/back *Grey+.. start/end text
Keypad 5 Ctrl next key	Grey*... Shift next key *Grey*... print screen

Online HELP Screen for PC-WRITE (December Disk of the Month).



Programming Topics

Just when is the baby expected?

The personal computer industry is responsible for a lot of firsts. It is certainly the first time that IBM has formally announced a product so far in advance of its expected delivery date. And with such fanfare! Their releases number nine Hardware Announcements and five Software Announcements by my count. This article will attempt to cover those announcements, in preparation for the folks from Boca Raton, who are scheduled for an appearance at our next meeting.

Now just where is PCjr now? I wouldn't bank high on touching one at the meeting; that hasn't been the experience of other groups. Computer store company representatives have been known to travel afar for IBM product briefings, and have come back without laying a hand on one. This sets up a marvelous journalistic opportunity. Consider. The silence has been broken on a product which literally everybody has been talking about for months, with a total of 31 pages of announcements, and a few hi-gloss pamphlets. The announcements are, well, sort of pseudo-technical, bordering on flamboyant in places. They give you a feeling for what the product is going to be like, but are certainly lacking the detailed specifics. Now since few people can lay their hands on PCjr or DOS 2.1, the endless stream of pseudo-truths can continue to flow.

How About 720 Megabytes?

Received a letter from a company called SCITEQ the other day wondering if there is a market for extended (and I mean really extended) mass storage for the IBM PC. They're making a survey to see if PC users needing more data storage would consider \$20K to \$35K for 360 to 720 MEGABYTES of data. That's actual addressable space, after overhead. Fast too! Data streams at better than 1.8 MB/second after location, which averages only 18 milliseconds.

If any of you think such a boost in PC data storage is desirable at this price (or even if you think it undesirable) please let me know. I plan to send SCITEQ a reply with a consensus of opinion, so if you know of any firm applications for such a system, that would be an added plus. Corner me at the meeting or call me. (817)275-4109.

John

Why did IBM make the announcement? All of the announcements are dated November, 1983. If you don't have your product on the store shelves by this time, it's just not going to make it by Christmas. If the product is formally announced, the uproar may be enough to make many postpone that computer buy decision until next year, insuring a "Merry Christmas", IBM style, for its many competitors in the crowded home marketplace.

Each individual announcement will be summarized below. If you want to know about PCjr, get these announcements and you will probably know as much as almost everyone else at this point. Expect to know more after the meeting.

Hardware Announcements

HA-18: 6p.

IBM PCjr System Unit/Keyboard:

Lots more software in the 64KB ROM such as menu driven diagnostic routines, a cassette operating system, disk boot loader, keyboard adventure, the usual power-on self test, character set for graphics mode, cassette BASIC interpreter, and I/O drivers.

But, there's also that keyboard! It's battery powered with an infrared transmitter which allows the keyboard to go cordless up to 20 ft. That technology brings a few questions to my mind. What happens when the dog, or some other opaque object comes between you and the computer? Or you rest the keyboard on your lap, outside of direct view of the desktop? The practicality of this approach is about to be proven.

The bad news is the widely shunned chiclet keyboard. This is that calculator style keyboard that has already been proven on the marketplace to be absolutely disastrous, marked by the tombstones beginning to pervade in the crowded home computer marketplace. If anybody can get the public to accept the chiclet keyboard, it will probably be IBM, and I have my doubts as to whether even they can. On the other hand, I can't think of a more apparent product differentiation point than the chiclet keyboard and the controversial keyboard of the IBM-PC. Several keys are also missing, a total of 62 keys as opposed to the 83 on the IBM-PC.

There are two cartridge slots for portable, ROM based software. What IBM intends to do with these initially is detailed in various software announcements. There are quite a few differences in the way cartridges are distributed and advertized. Relationships with third party software developers are likely to go through some changes too.

▷

Programming Topics

(continued)

**Baby (continued)**

A lite pen interface is highlighted, but no product offered with the announcement.

The Cartridge BASIC speaks of supporting a hardware palette. Perhaps this is similar to the one offered on the TI professional computer. It can be used to create some stunning motion effects.

IBM PCjr Keyboard Cord:

For use in multi-jr environments, and when infrared is not practical. Not interchangeable with the IBM-PC keyboard.

IBM PCjr Diskette Drive:

Half-high units, 360KB 9 sectors/track.

IBM PCjr Adapter Cable for Cassette:

They are apparently not ignoring the cassette possibilities on this machine. Cassette BASIC is resident in ROM and a cassette operating system . . . CASSOS?

IBM-PCjr Carrying Case:

Bundles PCjr into a 19 lb. package. All you have to find is a TV set. Less printer of course.

HA-19: 1 p.

IBM PCjr Adapter Cable for IBM Color Display: Full support to the IBM Color Display.

IBM PCjr Connector for TV:

Apparently, IBM is addressing the color graphics capabilities of their machine. Perhaps they will offer acceptable RF-Modulation, they sure didn't on their PC.

HA-20: 2 p.**IBM PC Compact Printer Model 5181:**

It's a thermal (funny paper) printer. Easy connection to the IBM graphics printer through another attachment if you're so inclined. There is no indication that any sort of dot graphics capability is supported by this printer.

I have heard IBM will start offering a color printer that will connect to the PCjr, but that is not mentioned in these announcements.

IBM PCjr Adapter Cable for Serial Devices:

For connecting to the rest of the world of printing and various other sundry devices.

HA-21: 1 p.**IBM PCjr Internal Modem:**

An on-board modem that's supposed to be at least

similar in protocol to the Hayes Smartmodem. Just plug your modular phone jack into the back of the computer. What? No 1200 BAUD, just 300 and 110.

HA-22: 1 p.**IBM PCjr 64KB Memory and Display Expansion:**

They have packaged their higher resolution video and their memory expansion onto one board for a total of 128KB with the 64KB coming with the system. They do not offer a connector for additional memory expansion beyond this. A somewhat major product distinction.

HA-23: 1 p.**IBM PCjr Joystick: 1 p.**

Apparently it's OK to play games on this machine. Many of the games in this November offering list offer optional joystick support.

HA-24: 1 p.**IBM PCjr Cordless Keyboard Overlays:**

One thing that went with the 21 fewer keys on the keyboard were the function keys. The idea is to lay a keyboard mapping between the chiclets for non-alphanumeric control situations. Software may have to find new ways of indicating how it responds to a particular key, a keystroke mapping to several situations.

HA-25: 1 p.**IBM PCjr Parallel Printer Attachment:**

Parallel port for talking to the IBM graphic printer, or equivalent.

Software Announcements

Every computer in today's market needs an established base of software, to provide yet another reason for using the computer. IBM's situation is, perhaps a little different in that the operating system base may be the only thing they can hope to firmly establish. PC-DOS 2.10 is the sole operating system mentioned, but I suspect there will be many, many more.

DOS 2.10 runs on the IBM-PC, the PC-XT, or the PCjr. This insures a high degree of software portability, a very commendable effort. You only have to worry about devices and constraints that appear on only one system. Thus, I don't really view PCjr as a development system. It seems more likely that your big ticket software will be developed on the IBM-PC and downloaded with a small runtime support package although the C compilers and other development products will begin to appear for the PCjr.

The software announcements are much more lengthy, with more flamboyant language and lots of buzzwords.

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Programming Topics

(continued)



Baby (continued)

SA-33: 4 p.
IBM Personal Computer Disk Operating System (DOS),
Version 2.10:

This is DOS 2.00 with a few of the bugs fixed, and extensive documentation changes. They have taken the 2.00 manual and divided it into three. The first two (user's guide and reference) you obtain when you purchase the product. The third, a technical reference, is purchased separately.

By the way, this is being handled as a separate product, and not considered an upgrade from 2.00. In other words, get your checkbooks ready all you 2.00 owners, you get to buy yet another DOS. DOS release 2.10 is the only operating system supported by IBM for the PCjr according to this announcement. I suspect you may want to add the words "at this time" to that statement.

IBM Personal Computer Disk Operating System Technical Reference:

This is the third manual, and is purchased separately from DOS 2.10. It contains the detailed information that came with the 2.00 manual.

SA-34: 4 p.
IBM PCjr Basic (with Cartridge):

Here comes yet another BASIC. First we have the cassette BASIC which is in ROM and comes with the PCjr system unit. Should you buy DOS 2.10, you get Disk BASIC, and Advanced BASIC with the deal. Cartridge BASIC gives you yet another way to spend your money. The announcement calls it a superset of Cassette BASIC and a superset of Advanced BASIC. Cartridge BASIC supports control of the hardware palette graphics and music (three voice sound). It supports the DOS structured directories. It has the ability to load and run a BASIC program contained in the second cartridge slot. Many of the games being offered list Cartridge BASIC as a prerequisite.



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HARDWARE

	Retail Price	Wildcat Price
STB 64K Super R 10	419.00	315.00
Smartmodem 1200B	599.00	499.00
Set of 64K Chips	95.00	55.00
CDC 320K Drive	585.00	285.00
FX-80 Printer	699.00	580.00
Microsoft Mouse	195.00	160.00
Kraft Joystick	69.95	52.00
Princeton Graphics RGB Monitor	589.00	522.00

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SUPPLIES



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Verbatim DS DD (Box of 10)	40.00
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FX-80 Dust Cover	9.95
IBM Dust Cover Set	15.00

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GAMES

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UTILITIES

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Norton Utilities	80.00	68.00
Copy II PC	40.00	30.00



COMMUNICATIONS

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FCM	124.95	93.71
PFS Write	140.00	105.00
Multiplan	275.00	200.00
Pyxel Visuals	98.00	79.95
Financier	195.00	156.00
TK Solver	299.00	224.25
The Accountant	199.00	169.15

Price and availability subject to change without notice.



Wildcat Computing, Inc.
1830 Avenue K
Plano, Texas 75074
(214) 424-3582

WILDCAT COMPUTING, INC.

Programming Topics



(continued)

Baby (continued)

Cartridge BASIC is 6KB in length, DOS 2.10 is 24KB, the same size as 2.00. When both are being used in a 64KB PCjr, there is only 18KB user memory remaining because there is an additional video buffer that consumes another 16KB.

BASIC Made Easy for the IBM PCjr:

This is a manual that is supposed to serve as an introduction to Cartridge BASIC. The announcement suggests that children under 12 may need help from an adult.

SA-35: 3 p.
ScubaVenture:

A color arcade game. Comes on a cartridge. Has one or two player mode, joystick or keyboard control.

Mouser:

A color arcade game. Sounds like a maze game from the description. Comes on a cartridge, joystick or keyboard control. Multiple levels of difficulty.

Mine Shaft:

Another Cartridge game with keyboard or joystick control.

IBM Personal Computer Animation Creation:

This appears to be a character oriented program that allows you to create animated sequences by drawing, copying, and editing pictures. Allows for the rapid fire display of the sequence and storage of pictures on disk. No cartridge needed, but you do need DOS.

Crossfire:

An arcade style cartridge game. Keyboard or joystick control with three levels of difficulty.

SA-36: 4 p.

Juggles' Butterfly:

Three game programs targeted for young children to help teach reading and math skills. This is a disk based game that comes with DOS shipped on the diskette. Cartridge BASIC is required. Also comes with a keyboard overlay. Also runs on the IBM-PC, or PC-XT.

Turtle Power:

LOGO turtle graphics with sound. Comes with a full screen editor and on-line help. A disk based program which also runs on the IBM-PC, or PC-XT. Although it doesn't say you can get hard copy graphics output, it lists the IBM Graphics Printer as an optional prerequisite.

LOGO: Programming With Turtle Graphics

A spiral bound manual providing an introduction to turtle graphics (turtle power).

Bumble Games:

Six game programs designed for children from four to ten years old. Helps to build basic math skills and concepts such as greater than and less than. Comes on diskette with DOS shipped on the disk. Cartridge BASIC required for the PCjr, it also runs on the IBM-PC or PC-XT.

Bumble Plot:

Five game programs teaching graphics skills to children from eight to thirteen years old. Disk based with DOS shipped on the disk. Cartridge BASIC required for the PCjr, it also runs on the IBM-PC or PC-XT.

Adventures in Math:

One or two person game for improving basic math skills. Problem difficulty automatically adjusted to skill of individual players. Top scores are saved by the program. Disk based, comes with DOS. Cartridge BASIC required for PCjr. Also runs on IBM-PC or PC-XT.

Monster Math:

Entertainment/educational product. Disk based, comes with DOS. Cartridge BASIC required for PCjr. Also runs on IBM-PC or PC-XT.

SA-37: 3 p.

HomeWord:

A word processor designed for the computer novice. It is a full screen editor with advanced features that make it into a full function word processor. Utilizes picture menus with options to bypass the menus. Not quite a "what you see is what you get" editor, but it does show what the printed page will look like with a tiny on-screen display of the printed document. It does not say whether this product will run on the IBM-PC or PC-XT.

Personal Communications Manager:

Used for telephone communications with information services. Allows you to store signon sequences, access information, signoff at a preprogrammed time without requiring human assistance. Allows sending and receipt of any DOS based file. Supports an electronic mail feature. Supports the PCjr internal modem, Hayes-Smartmodem, or Microcom Modem, 300 - 1200 BAUD. Will run on IBM-PC or PC-XT.

Home Budget, jr:

A reduced function version of the Home Budget Program available for the IBM-PC. Cartridge BASIC required for the PCjr, also runs on the IBM-PC or PC-XT. This is not distributed with DOS, it is listed as a separate prerequisite.

In conclusion, a great deal is still a unknown about the PCjr. We have until first quarter, 1984 to speculate before the product becomes available on the store shelves and thus the public. IBM is doing the product a good service with the user group presentations.

Tom Prickett





Programming Topics

(continued)

DEVELOPING YOUR OWN SOFTWARE

Many people who purchase personal computers have been working at a particular trade for a number of years and are proficient at it. Learning new procedures within that trade is relatively easy because one can make associations between the new and old terminology and methods. Generally it is not as easy to acquire the knowledge necessary to effectively program a computer as it is to learn a new task related to one's work environment. Do not get frustrated when it seems difficult to understand. After all, learning a new skill takes time and this new skill may prove valuable later on. Developing custom software successfully can be accomplished easily provided some general guidelines are used to help the process. The following article briefly describes some of the steps that should be used in developing computer programs.

Analysis:

A good understanding of the goals of the program is essential for success. Many times the programmer will assume that he understands the situation and will begin programming prior to a complete analysis. Think back to the elementary school teacher that insisted on an outline prior to writing a paper. An outline approach helps organize the analysis. For example, to develop a

program to calculate interest the analysis phase would include identifying the formula, the input to the program, and the format of that input. Also, what should happen if invalid data is entered or if after it is entered, you change your mind and wish to re-enter the data? How should the results be displayed or should they be printed? Is there any additional information that would be convenient if it was displayed along with the results?

The analysis phase of the project includes asking the right questions and getting correct answers. Thinking through the problem and writing down the outline will cause one to identify exceptions that must be accounted for. Many times the completion of the analysis phase is a review of the analysis with another person or group. Naturally, this depends upon the magnitude of the problem. The next step in the development process is the detailed design of the program.

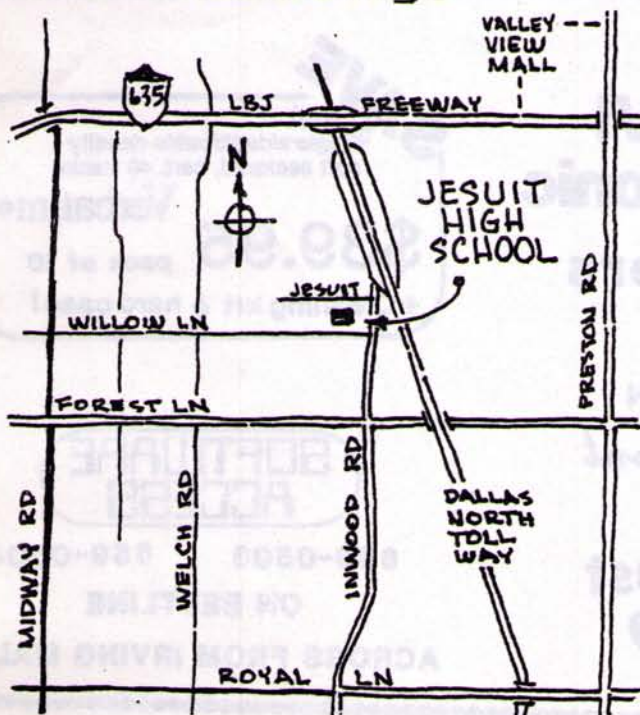
Detail Design:

A program is made up of Input, Process and Output. Think of the program as a person sitting at a desk with an in basket and an out basket. The person is to take the top piece of paper out of the in basket, act on it in some manner and then place it in the out basket. A program to calculate interest works in the same fashion. Input will be the interest rate, time period and principle. Process will be to calculate the payment schedule and output will be printing the payment schedule. Almost all programs can be reduced to the elementary form of input, process and output. Furthermore, designing a program in this manner will demonstrate that the analysis phase was successful and give the programmer the opportunity to resolve any deficiencies in the design prior to coding the program. At the completion of the design phase, it is best to review the program with another person or a small group. The group can help identify programming tips that save time, resources and insure success. This review is called a walk-through and is intended to be an informal discussion.

Program Walk-throughs:

The walk-through is for the programmer's benefit as well as the reviewer's edification. The programmer should explain the program in sufficient detail such that the reviewers can identify any erroneous logic. The result of a successful walk-through is a program that when coded will work correctly the first time. Additionally, the programmer may get suggestions on how to simplify the program thereby reducing the effort to create the program. From the reviewer's standpoint, the walk-through offers the opportunity to see how a program is developed and to learn new programming techniques.

Next Meeting:



Programming Topics (continued)

Software (continued)

Generally, 3-8 people in a walk-through will generate the "best" results. The PC club is an excellent place to solicit help on technical issues involved in the program.

Coding and Testing:

With the design complete, it is now time to begin coding the program. Follow the design that has taken place up to this point. It will insure success. Testing should begin and continue through the coding of the program. It is easiest to test a small piece of code. Once that performs satisfactorily, the next section of code can be developed. By testing the code in segments, potential problems can be identified and corrected without major re-writes of the program. This phase is also a test of the walk-through team. If they did a good job, the program should work correctly the first time.

Documentation:

Unfortunately documentation usually takes low billing in program development. Even in this article, it

is one of the last items discussed. Actually the documentation really began back in the analysis phase (hope you didn't throw that good outline away). The notes from the analysis and design phases are excellent program documentation. Also, any complex or "tricky" routines used in the program should be documented in the program comments section.

Backup and Recovery:

Backup and recovery is mentioned in this article for two reasons: 1. So documentation wouldn't be lost. 2. It is important to consider. If the program writes to a file, how and when should backups be made? Also, make sure to backup the program as it goes through the coding stages. Re-entering code is not fun so plan ahead. Backups are inexpensive and "darn well worth it".

While it seems that there are a lot of steps to developing a program, those same steps are used daily in most all problem solving. It is a tried and proven process and will insure success. There are numerous books written on each of the steps outlined in this article. If further information is needed, contact your local library, book store or me. I will be glad to work with you.

Joe Kriam

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