



Data Processing
Division

Date: August 12, 1981

Product Announcement

The IBM Personal Computer

Today IBM is announcing the IBM Personal Computer. This low cost system provides computing capability in a small package: system unit with keyboard, diskette drives, monochrome display, and an 80 cps printer. Application software is available for stand-alone operation and, with the BASIC programming language, users may write their own programs. The asynchronous communications capability will provide access to host systems and other information sources.

It is IBM's intent to provide a subset of full 3270 emulation capability on the IBM Personal Computer.

The system is composed of separate units:

- **System Unit:** A high-performance microprocessor with 40K bytes of read-only memory (ROM) and up to 256K bytes of random access memory for user programs. All memory is parity checked. The following are standard on each System Unit:
 - An enhanced version of the Microsoft BASIC 80 Interpreter (contained in ROM).
 - A speaker which can be programmed to produce tones.
 - Attachment for a customer-supplied cassette recorder for loading and saving programs and data.
 - An 83-key keyboard.

The following options are available:

- Installation of up to two IBM 5¼ Inch-160KB Diskette Drives inside the System Unit.
- Asynchronous (start-stop) ASCII communications.
- Attachment of the IBM Monochrome Display, and/or a customer-supplied color or black and white monitor or TV, using optional adapters. Attachment of a TV requires a customer-supplied RF modulator.
- Attachment of the IBM 80 CPS Matrix Printer using an optional adapter.

- Monochrome display with 25 lines of 80 characters
- 80 cps bidirectional matrix printer

The optional IBM Personal Computer Diskette Software (DOS Diskette) provides:

- Support for the 5¼ Inch-160KB Diskette Drives
- Extension to the BASIC Interpreter for diskette operations and enhancements to the display graphics, speaker, light pen, and joystick support
- Diskette utilities including copying, naming, and displaying files
- Support for the Pascal compiler

Optional application software:

- Asynchronous Communications Support - support for operation as a TTY* ASR 33/35 terminal and for the exchange of program and data files with the host system
- VisiCalc** - powerful calculator/spread sheet functions for the business professional
- EasyWriter*** - an easy-to-use, functionally rich word processor
- The Accounting System by Peachtree Software, Inc. - business software including packages for general ledger, accounts receivable and accounts payable
- Microsoft Adventure - an educational game

* Trademark of Teletype Corp.

** Trademark of Personal Software Inc.

*** Trademark of Information Unlimited Software Inc.

Standard System Unit/Keyboard configurations

Two standard configurations are offered to meet the requirements of a majority of customers. The customer must select a video output adapter option for the System Unit and provide the appropriate video output device. Other customer-installable options are also available. The System Unit configurations and the customer-installable

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options are shown in Figure 1 attached and described below.

Configuration 1: Includes the System Unit/Keyboard, 40KB of ROM, 48KB of user memory, programmable speaker, cassette attachment jack, 5¼ Inch Diskette Drive Adapter, one 5¼ Inch-160KB Diskette Drive and an Asynchronous Communications Adapter.

Configuration 2: Same as Configuration 1 but with 64KB of user memory and two 5¼ Inch-160KB Diskette Drives.

Note: For System Unit Configurations 1 and 2 shipped prior to January 1982, the Asynchronous Communications Adapter must be installed in one of the System Unit's five system expansion slots. For System Unit Configuration 2, the customer must install a 16KB Memory Expansion Kit on the System Unit's system board to bring the memory to 64KB and also install the second diskette drive in the System Unit. After January 1982, these installations will be completed prior to shipment.

Each configuration uses two of the five system expansion slots in the System Unit, one for the 5¼ Inch Diskette Drive Adapter and one for the Asynchronous Communications Adapter.

One of the three remaining system expansion slots must be used for an adapter to support a video output device. The customer must order and install an adapter and either a display, monitor, or TV as follows:

- The IBM Monochrome Display requires an IBM Monochrome Display and Printer Adapter.
- A customer-supplied color or black and white monitor or TV requires the IBM Color/Graphics Monitor Adapter. If a TV is used, the customer must also provide an RF modulator.

The two remaining system expansion slots may be used to support customer-installable options:

- The IBM 80 CPS Matrix Printer requires either the IBM Monochrome Display and Printer Adapter (which may already be installed to support the IBM Monochrome Display) or the IBM Printer Adapter.
- 32KB or 64KB memory expansions (if installed on a Configuration 1, a 16KB memory expansion, which does not require a system expansion slot, is required to fully populate the system expansion board to 64KB).

Note: The maximum memory which may be installed on a standard configuration after a video adapter option is installed is 192KB (64KB on the system expansion board and two 64KB Memory Expansion Options in the system expansion slots).

- The Game Control Adapter supports customer-supplied paddles or joysticks for video game interaction.

A second 5¼ Inch-160KB Diskette Drive may be installed on Configuration 1 and will utilize the already installed 5¼ Inch Diskette Drive Adapter.

The minimum configuration consists of Configuration 1 with a video output device and appropriate adapter. To write to or read from the diskette drive, the IBM Personal Computer Diskette Software (DOS Diskette), which includes the Disk and Advanced levels of the BASIC interpreter, is required. Each unit is shipped with

an unpack/inventory checklist and installation instructions. A DOS reference manual and binder are shipped with the DOS Diskette. The BASIC reference manual, included with the System Unit, describes the Disk and Advanced levels.

Terms and conditions: A customer can order one time, via a Supplement to the Agreement for Purchase of IBM Machines, up to five systems for a pilot, or more under the Volume Purchase Amendment to the Agreement for Purchase of IBM Machines. All pilot systems will be shipped at the same time. The customer will be charged the unit price for these pilot systems. The customer will have four months from shipment of the pilot systems to sign a Volume Purchase Amendment for any additional quantity. If the customer elects to do this, the pilot system quantity will be included in the additional quantities to determine the volume purchase price reduction percent to be applied to the additional quantities, but no reduction shall apply to the pilot system quantity.

The Volume Purchase Amendment Exhibit (IBM Personal Computer - No. 3222-0) will be available from the IBM Data Processing Division National Marketing Center.

The following is an overview of the provisions of the Exhibit to the Volume Purchase Amendment for the IBM Personal Computer:

- Contract period: 12 months from the Commencement Date
- Price protection Upper Limit Percent: 0%
- Order changes - minimum notice period: Two months
- Settlement charges: \$10 to \$50 depending on category*

Volume purchase price reduction table*

Quantity of Eligible Machines for Each Category	Volume Purchase Price Reduction Percent
1 - 19	0%
20 - 49	5%
50 - 149	10%
150 or more	15%

- * See Exhibit for categories and restrictions.

IBM Program License Agreement

Programs offered by IBM for the IBM Personal Computer will be available under this new agreement, which licenses the customer to:

- Use the program in the U.S. and Puerto Rico
- Use the program on a single machine
- Copy and modify the program, except when "copy protected"
- Transfer the program and license to another party who agrees to accept the terms and conditions of this agreement

Programs are provided "as is" without warranty. IBM only warrants the diskette(s) on which the program is furnished to be free from defects in materials and workmanship for three months from date of delivery.

The agreement is packaged and shipped with each program and is visible to the customer before the diskette package is opened. The customer is advised that opening

the diskette package indicates acceptance of these terms and conditions. No signature is required.

50 - 149	10%
150 or more	15%

IBM Personal Computer Licensed Program Volume Licensing Agreement

This new agreement provides terms and conditions for volume licensing of programs comparable to those of the VPA for machines. The terms and conditions of the IBM Program License Agreement, which is packaged and shipped with each IBM Personal Computer licensed program, will apply to the programs offered under the Volume Licensing Agreement.

Customers who commit to quantity orders of individual programs during the contract period will pay a one-time charge per copy of the licensed program less the applicable volume discount.

The following is an overview of the provisions of the Volume Licensing Agreement:

Contract period: 12 months from the time the agreement is accepted by IBM.

Scheduling: IBM and the customer will agree upon a delivery schedule.

Settlement charges: Apply for each copy of a licensed program ordered but for which delivery was refused by the customer during the contract period. The charges are defined in the Exhibit to the Volume Licensing Agreement.

Order changes: The customer may, upon two months' written notice, request a revised Planned Shipment Schedule, provided that in each case the requested shipment dates are within the contract period.

Additional quantities: A Supplement for Additional Quantities is used to order additional quantities for programs listed in the Volume Licensing Agreement. Such additional quantities, if available for shipment within that period, will be eligible for any applicable related volume price discount. However, the one-time charge and terms and conditions for such additional quantities shall be those of IBM's applicable Exhibit then generally in effect at the time the Supplement is signed by IBM.

If, when combined with quantities of the same licensed programs ordered for delivery within the contract period, a higher level price reduction is attained as a result of such additional quantities, that price reduction shall only apply to licensed programs shipped after the date a signed Supplement is received by IBM, provided the Supplement is signed by IBM.

Price protection: During the twelve month contract period, IBM may not increase the price for those programs listed on the Agreement.

Adjustment to charges: If the customer refuses delivery for the contracted quantity within the scheduling period, the prices for programs already invoiced will be adjusted, if required, to reflect the appropriate one-time charge.

The volume licensing discount schedule for each licensed program is:

Quantity Schedule	Volume Discount in Percent
1 - 19	0%
20 - 49	5%

Technical assistance: A newly-formed Personal Computer Assistance Center will provide telephone assistance to DPD customers installing IBM-marketed software for the IBM Personal Computer for a period of three months after the Date of Installation of each system. In addition, customers who have signed a VPA may designate a coordinator at one location who may call the center. Assistance for this coordinator will be available during the VPA period and for three months after the Date of Installation of the last system shipped under the VPA. If it appears that a problem is related to a code defect in the software, the center will document the problem and submit it to the Information Systems Division (ISD).

Additional details on the Personal Computer Assistance Center will be available at first-customer shipment.

Warranty and maintenance service

Warranty period: Three months.

Warranty service: Warranty service for the IBM Personal Computer may be obtained by delivering the malfunctioning machine (Monochrome Display, Matrix Printer) or machine element (System Unit, Keyboard) to an IBM Product/Service Center, an IBM Customer Service Division (CSD) designated Service Location, or to an authorized IBM Personal Computer dealer. The machine and machine elements will be referred to as units. The IBM Product/Service Centers and CSD Service Locations will be referred to as service locations. Warranty service is also available by mailing the malfunctioning unit to the IBM National Support Center, Greencastle, Indiana. Proof of purchase (e.g. invoice) from IBM or an authorized IBM Personal Computer dealer is required to obtain warranty service.

Warranty service by IBM is the repair of the System Unit and the replacement of the Monochrome Display, the Matrix Printer, or Keyboard. The replacement unit will be a similarly configured unit in good working order. The malfunctioning unit will become the property of IBM.

Customers desiring warranty service from IBM must call the toll-free number for the National Support Center and provide information including the results of the problem determination Diagnostic Aid program, machine serial number and location, and whether the malfunctioning unit will be carried to a service location or mailed to the National Support Center.

Units taken to a service location will be picked up by the customer. For units mailed to the National Support Center, the customer must pay shipping charges to the National Support Center and insure or assume risk of loss or damage in transit. IBM will pay these charges for return shipment to the customer's location. It is IBM's objective to repair the customer's System Unit in one or two days. If the repair is performed at the National Support Center, shipping time should be added to the repair time. If the malfunctioning unit is the Monochrome Display, the Matrix Printer, or the Keyboard, it is IBM's objective to have a replacement unit available at a service location within 24 hours of notification to IBM. If the customer ships the malfunctioning unit to the National Support Center, it is IBM's objective to ship a replacement unit within 24 hours of receipt.

If a customer requests warranty service on a unit IBM would ordinarily elect to replace instead of repair, the

customer may choose to have the unit repaired at the National Support Center, instead of exchanged, at an additional charge. It is IBM's objective to repair the malfunctioning unit in one or two days. Shipping time should be added to the repair time.

Maintenance service: Maintenance service is offered by IBM and is available under the terms and conditions of the IBM Personal Computer Service Agreement, Warranty Extension Option and Annual Option. The Warranty Extension Option is available only if selected prior to or during the warranty period. The agreement commencement date is concurrent with the start of warranty and continues for twelve months. At the end of the twelve months, the service agreement will be renewed automatically under the Annual Option which is described later. Written notice of any applicable price changes will be provided prior to renewal. Customers not wishing to renew must withdraw their machines from the agreement.

The Warranty Extension Option provides for IBM-arranged pickup of the malfunctioning unit and replacement with a similarly-configured unit in good working order at a location designated by the customer. Pickup and delivery is available if the unit is located within a designated service area, nominally within a 30-mile radius of a service location. Service continues to be available by carry-in to a service location or mail-in to the National Support Center. IBM's objective is to have a replacement unit available at a service location, for pickup or for delivery to the customer if within the designated service area, within 24 hours of notification to IBM. If the customer ships the malfunctioning unit to the National Support Center, it is IBM's objective to ship a replacement unit within 24 hours of receipt of the unit.

The Annual Option may be selected during the warranty period and, if accepted by IBM, the commencement date will be the day after the end of warranty. If this agreement is selected after the end of the warranty period, IBM must inspect the machine at the National Support Center. There is a charge for this inspection. If repairs are required to qualify for this agreement, IBM will provide an estimate and, upon the customer's authorization, the work will be performed. The customer will be billed at the time and material rates in effect at that time.

The service provided by the Annual Option is the same as that provided by the Warranty Extension Option. The term of this option is twelve months and it is automatically renewed annually. Written notice of any applicable price changes will be provided prior to renewal. Customers not wishing to renew must remove their machines from the agreement.

Under both options, the customer may choose to have a unit repaired, rather than replaced, at the National Support Center. In that case, it is IBM's objective to repair the malfunctioning unit in one or two days. Shipping time should be added to the repair time.

The following customer responsibilities apply during warranty and under the Service Agreements:

- Identifying the malfunctioning unit through problem determination using the Diagnostic Aid program.
- Notifying IBM, through the National Support Center toll-free number, of the malfunctioning unit and providing all required information, including results of the Diagnostic Aid program, machine serial number and location.

- Preparing the malfunctioning unit for shipment in the original or equivalent container. IBM will provide shipping containers for purchase by the customer.
- Removing all non-IBM devices or features prior to delivery to IBM.
- Accepting, unpacking, and checkout of the replacement (or repaired) units.

The National Support Center will be accessible via a toll-free number to receive notification of hardware problems and to assist the customer in isolating a problem to a specific unit. The Center will obtain certain customer information, provide advice on equipment disposition related to the customer's agreement, assist in isolation of the malfunctioning unit, and coordinate pickup and delivery when required.

Agreements are not transferrable in the event of the loss or sale of a unit. Agreements are purchased for a period of 12 months, payable through a one-time annual charge at time of purchase. This charge is not refundable.

The following IBM service locations are planned for 1981:

- **Product/Service Centers**
 - Baltimore, MD
 - San Francisco, CA
 - Philadelphia, PA
- **Other Service Locations**
 - Los Angeles, CA
 - Seattle, WA
 - Houston, TX
 - Dallas, TX
 - Boston, MA
 - New York, NY
 - Chicago, IL
 - Detroit, MI
 - Washington, DC
- **National Support Center**
 - Greencastle, IN

Time and materials service: Time and materials service is only available via mail-in to the National Support Center, Greencastle, IN. Labor, service parts, and all transportation costs are billable to the customer. The customer's responsibilities are to perform problem determination using the Diagnostic Aid program, telephone the National Support Center, remove all non-IBM devices and features, insure or assume risk of loss or damage in transit to Greencastle, and accept, unpack, and check out the repaired unit.

Self service: In addition to the CSD service offerings, the customer may purchase Advanced Service Aids which will enable the customer to isolate a problem to an under-the-cover field replaceable unit (FRU). Personnel using this diagnostic package must have completed the service training requirements for the IBM Personal Computer. If the customer has the technical ability to follow written service procedures, the customer will be able to perform many of the necessary repairs.

Testing allowance: None.

Educational allowance: Qualifying educational institutions will be eligible to receive the standard educational allowance which will be available only for

orders of VPA quantity. The standard educational allowance will be applied when it is greater than the volume purchase price reduction percentage. The educational allowance will not be applied to the pilot system quantity included in the VPA quantity.

Customer setup: The IBM Personal Computer is a customer setup (CSU) machine. The allowance for setup is one day. Detailed setup instructions are included with each machine.

Customer responsibilities: The customer is responsible for unpacking the system components, attaching them correctly, and running the diagnostic program.

Customers using DOS Diskette and any software which requires the use of diskettes are responsible for producing back-up copies of the original diskettes, when copying is permitted, and according to the terms and conditions of the IBM Program License Agreement.

Data security: The IBM Personal Computer is subject to the controls of its environment. Customer management is responsible for the selection, implementation and adequacy for the intended application of these controls.

Delivery: First-customer shipment is planned for October 1981

For more information on the IBM Personal Computer contact your IBM marketing representative, or call the IBM Data Processing Division National Marketing Center. You may use the following toll-free numbers:

In New York State - (800) 942-1918

In Continental United States, but
outside of New York State - (800) 431-2670

In Alaska, Hawaii, and Puerto Rico
(call collect) - (914) 696-6840

Or write to the IBM Corporation, Data Processing Division, Department 86R, 1133 Westchester Avenue, White Plains, NY, 10604.

Prices

	Type	Model	Item Number	Purchase	Annual Maintenance Charge	Warranty Extension Option	Annual Option
<i>Standard configurations*</i>							
Configuration 1	5150	813		\$2,385	\$160.50		\$204.00
Configuration 2	5150	824		3,045	215.50		274.00

* See section on Standard System Unit/Keyboard Configurations for description

Options

IBM Monochrome Display	5151	001		345	52.50		66.50
IBM 80 CPS Matrix Printer	5152	001		755	141.00		179.00
Keyboard			1501100	270	*		*
IBM Monochrome Display and Printer Adapter			1504900	335	15.50		20.00
Color/Graphics Monitor Adapter			1504910	300	32.50		41.00
Printer Adapter			1505200	150	1.50		2.00
16KB Memory Expansion Kit			1501001	90	6.00		8.00
32KB Memory Expansion Option			1501011	325	32.00		40.50
64KB Memory Expansion Option			1501012	540	96.00		122.00
5 1/4 Inch Diskette Drive Adapter			1503780	220	5.00		6.00
5 1/4 Inch-160KB Diskette Drive			1503800	570	49.00		62.00
Asynchronous Communications Adapter			1502074	150	6.50		8.00
Game Control Adapter			1501300	55	1.00		1.50
Printer Cable			1525612	55	**		**

Accessories

Printer Stand			1525614	55	N/A		N/A
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Shipping containers (ordering information and prices will be available at first-customer shipment)

* Included in System Unit maintenance charge.

** Included in Printer maintenance charge.

System software	Item Number	One-time Charge
IBM Personal Computer Diskette Software (DOS Diskette)	6024001	\$ 40
IBM Personal Computer PASCAL Compiler	6024010	300

Application software

Asynchronous Communications Support	6024032	40
VisiCalc	6024004	200
EasyWriter	6024005	175
General Ledger by Peachtree Software, Inc.	6024008	595
Accounts Receivable by Peachtree Software, Inc.	6024009	595
Accounts Payable by Peachtree Software, Inc.	6024007	595
Microsoft Adventure	6024006	30
Advanced Diagnostics Package	6025077	155

Supplies: The following supplies will be available from IBM:

- 5-1/4" diskettes
- 9-1/2" x 11" single ply, 20 lb., blank, white paper with 1 1/2" tear-off carrier strips.

See your IBM Information Records Division representative for additional information.

IBM Personal Computer - Detailed description

System Unit/Keyboard

The System Unit is the heart of the IBM Personal Computer. The System Unit with its companion keyboard is rugged, easy-to-use, and controls a variety of input/output devices. Each System Unit comes with at least 16KB (16,384 bytes) of memory for user programs. Based on the high performance Intel 8088 Microprocessor, each System Unit includes in the 40KB ROM an enhanced version of the popular Microsoft BASIC-80 Interpreter and a jack for attachment of a user-supplied cassette recorder for loading or saving programs and data. A programmable speaker which can produce tones is also standard. The System Unit can be further expanded through options that are customer-installed in five system expansion slots (one of which is used for a display or monitor adapter).

Memory may be incremented from 16KB to 64KB on the system board of the System Unit and then up to a System Unit total of 256KB. While each System Unit has a jack for the attachment of a cassette recorder, one or two diskette drives may be easily added for rapid access to programs and data.

→ *Highlights of the System Unit include:*

- Intel 8088 Microprocessor
- 4.77 MHz clock speed
- Up to 256KB random access memory
- 250ns memory access time
- 410ns cycle time
- Parity checking
- 63.5 watt power supply; cooling fan
- Approximate dimensions: 410mm (16") depth, 500mm (20") length, 142mm (6") height
- Approximate weight: 9.5kg. (21 lbs) (without diskette drives)

An enhanced version of the Microsoft BASIC-80 Interpreter (cassette level) is standard in the ROM of each System Unit.

Highlights of the BASIC-80 Interpreter include:

- Select 40 or 80 character display lines
- Full screen editor for easy program creation and modification
- Up to 16 foreground and 8 background colors (with appropriate monitor adapter)
- Automatic line numbering
- 40-character variable names (all characters significant)
- Multiple statements per program line
- 250 characters per program line
- Comments on program lines
- Up to 17-digit numeric precision
- Supports sequential cassette files
- Error trapping
- Addressable workspace up to 60KB
- Integer/real/string variables
- Single and double precision floating point numbers

The Keyboard is attached to the System Unit with a six foot coiled cable, permitting adaptation to a variety of work environments. The 83-key keyboard, with an adjustable typing angle, offers commonly-used data and word processing functions in a design that combines the familiar typewriter and calculator pad layouts. All non-control keys are typamatic (repeating). Ten program-supported function keys (total of 40 possible functions using keyboard shift keys) are standard. Special symbols, such as those used to draw lines, may be accessed with a combination of keys. Depending on the application program, from ten to forty special function keys may be supported. Other keys, like those used to print the current screen contents, correct a typing error, or "scroll" a long document, are clearly labeled. Access to all 256 characters (ASCII and special) is provided by use of the ALT key.

The approximate dimensions of the keyboard are: 200mm (8") depth, 500mm (20") length, 57mm (2.5") height. The approximate weight is 2.8 kg (6 lbs).

The IBM 80 CPS Matrix Printer may be attached for hard-copy output.

For video output, the user has a choice of connecting, with proper adapters, a high-quality IBM Monochrome Display, a color or black and white monitor, or, through a customer-supplied RF modulator attachment, a color or black and white TV set. Computer-generated video output may vary from a simple 40 x 25 character alphabetic display, to 80 character-per-line "text" applications, to high-resolution graphics.

The Keyboard and customer-supplied cassette recorder are plugged directly into the System Unit. The displays and printer are connected via optional adapters installed inside the System Unit.

When turned on, the System Unit automatically runs a power-on self test to verify system readiness. If the validation is successfully completed, the BASIC ROM Interpreter (cassette level) is made ready and identified on the display screen. The user may now enter a program from the keyboard or load it from a cassette recorder. If a failure is found, an identifying number will appear on the screen.

If a diskette drive is installed, the System Unit automatically loads from the diskette in drive "A." This is typically the Disk Operating System (DOS) or an application program. The DOS may in turn invoke the Disk or Advanced levels of BASIC, followed then by the manual or automatic execution of one or more BASIC programs.

The IBM Personal Computer requires a video display device for display output. A cassette recorder or a diskette drive is required for program or data storage. The IBM Personal Computer is powered by a standard 110 Volt, 60 Hz power source.

IBM Monochrome Display

The IBM Monochrome Display is a high-resolution device with an 11½" diagonal, green phosphor screen. The screen area provides for 25 rows of 80 characters. Characters are 7 x 9 dots in a 9 x 14 dot box. Both upper and lower case letters can be displayed. The character attributes provide underline, blinking, high intensity, reverse image, and non-display. In addition to the normal alphameric characters, a large number of special characters are provided. A set of line graphic characters is supported for simple display drawings.

The IBM Monochrome Display is supplied with signal and power cables. The signal cable is plugged into the IBM Monochrome Display and Printer Adapter which is inserted into the second System Expansion Slot on the left as viewed from the front of the System Unit. The power cable is plugged into the System Unit.

The approximate display dimensions are 350mm (14") depth, 380mm (15") length, 280mm (11") height.

The weight is approximately 7.9kg. (17 pounds).

IBM 80 CPS Matrix Printer

The printer is an 80-character-per-second bidirectional matrix printer which uses pin-feed, continuous form (4 inch to 10 inch width), multi-part paper. Under program control, the pitch can be selected for 40, 66, 80, or 132-character lines. Both horizontal and vertical tabs are supported. Twelve character styles are available.

Several features of the printer make it especially easy to use. When first turned on, it runs a self test. A bell sounds when it is out of paper. Paper is simple to load and adjust. The ribbon cartridge can be quickly changed, and the print head is a low-cost item that can be replaced by the user.

The printer responds to a variety of commands from the System Unit to control page spacing, select the desired character style, or skip to a specified row or column.

The printer requires a signal cable for connection to either the IBM Monochrome Display and Printer Adapter or the IBM Printer Adapter. A 6-foot signal cable may be purchased from IBM. The printer comes with a 6-foot power cable and requires a 120 volt, 60 Hz source.

The approximate printer dimensions are 400mm (16") length, 370mm (15") deep, and 110mm (4.5") height. It weighs approximately 5.9kg. (13 pounds).

Options

The following options can be added to the System Unit. An asterisk (*) identifies the options which use one of the five system expansion slots.

IBM Monochrome Display and Printer Adapter (1504900)*

An adapter which provides for attachment of both the IBM Monochrome Display and the IBM 80 CPS Matrix Printer. The adapter provides cable connectors for attachment of the printer and the display at the rear of the System Unit. The adapter should be plugged into the second system expansion slot on the left as viewed from the front of the System Unit.

Color/Graphics Monitor Adapter (1504910)*

Provides for the attachment of a television frequency display to the IBM Personal Computer. Either a "direct-drive RGB" signal or a "composite" video signal can be selected. The display can be a monitor or, through a customer-supplied RF modulator, a standard TV set. Either a color or black and white monitor or TV can be attached. Sixteen foreground and 8 background colors are supported in text (character) mode. This attachment also provides support for four-color medium resolution graphics (320 dots horizontal, 200 dots vertical) and black and white high-resolution graphics (640 dots horizontal, 200 vertical). 256 characters are available in "text" mode, 128 in medium or high resolution graphics. The adapter provides 16KB of built-in memory to store multiple display screen contents and supports a customer-supplied light pen. The adapter should be plugged into the second system expansion slot on the left as viewed from the front of the System Unit.

Printer Adapter (1505200)*

Provides for attachment of the IBM 80 CPS Matrix Printer. This option is used when the Color/Graphics Monitor Adapter is selected instead of the IBM Monochrome Display and Printer Adapter.

16KB Memory Expansion Kits (1501001)

Up to 64KB of memory can be plugged into the system board. This memory is available in 16KB increments and must be used to provide the first 64KB of memory.

32KB Memory Expansion Option (1501011)*

Used to increase the memory beyond the 64KB on the system board by installing one or more of these options. Each option provides an additional 32KB of memory. The system board must first contain 64KB of memory before this option can be used. Each option requires a system expansion slot.

64KB Memory Expansion Option (1501012)*

Used to increase the memory beyond the 64KB on the system board by installing one or more of these options. Each option provides an additional 64KB of memory. The system board must first contain 64KB of memory before this option can be used. Each option requires a system expansion slot.

5¼ Inch Diskette Drive Adapter (1503780)*

Allows up to two 5¼ Inch-160KB Diskette Drives to be installed inside the System Unit.

5¼ Inch-160KB Diskette Drive (1503800)

This user-installable drive allows the IBM Personal Computer to read, write, and store data on 5¼" diskettes. Storage capacity is approximately 160KB per diskette. The diskette drive has the following characteristics:

48 tracks/inch, 40 tracks/diskette, 300 revolutions/minute, 8 ms track to track access time, and 20,480 bytes/second transfer rate. Up to two may be installed in a System Unit.

Asynchronous Communications Adapter (1502074)*

The Asynchronous Communications Adapter provides the IBM Personal Computer user with a channel to data processing or input/output devices outside of the immediate system. These can be connected by telephone using a plug-in modem, or directly by cable when the device is nearby. The communication "target" may be a large host computer, a Series/1, another IBM Personal Computer, a paper tape reader, a communicating typewriter, a laboratory instrument, or other machines providing the popular RS-232-C asynchronous interface.

The Asynchronous Communications Adapter is flexible enough to match most of the computers and related products available in the microcomputer marketplace. The user's program selects the appropriate speed (50-9600 bps), format (5, 6, 7 or 8-bit characters), parity and stop bits to reflect the attached device. Once communication has been established, the user's program performs reads and writes. Interrupts permit the program to perform data processing such as calculating, diskette reading or writing, or printing, and then pause to resume communications when a signal appears on the line.

The Asynchronous Communications Adapter has been verified to communicate with an IBM Series/1 with feature #1610, 2091/2092 attachment card using a sample program provided on the IBM Personal Computer DOS Diskette, and an application program running on Realtime Programming System Version 5 (5719-PC5) and Event Driven Executive Version 3 (5719-XS3).

The Asynchronous Communications Adapter provides an EIA RS-232-C interface. One 25 pin "D" shell, male type connector is provided to attach various peripheral devices. In addition, a current-loop interface is located in the same connector. A jumper block is provided to select manually either the voltage or the current loop interface.

BASIC language application programs supporting communications will require a diskette-based, minimum 32KB system containing DOS and the BASIC language extensions which include communications support.

Printer Cable (1525612)

Signal cable to connect the IBM 80 CPS Matrix Printer to either the IBM Monochrome Display and Printer Adapter or the Printer Adapter.

Printer Stand (1525614)

Supports the IBM 80 CPS Matrix Printer and holds fanfold paper.

Game Control Adapter (1501300)*

Supports two customer-supplied joysticks for video game interaction, allowing the user to move an object on the screen in any direction, or supports up to four customer-supplied game "paddles" for simple horizontal or vertical movement.

System software

IBM Personal Computer Diskette Software (DOS Diskette) (6024001)

The IBM Personal Computer Diskette Software (DOS Diskette) consists of the IBM Personal Computer Disk Operating System (DOS) and the Disk and Advanced BASIC language extensions to the Cassette level BASIC which is included in the ROM of the System Unit. DOS Diskette is designed so that the user can load into memory DOS, Disk or Advanced BASIC depending upon the functions required.

IBM Personal Computer Disk Operating System (DOS)

The IBM Personal Computer Disk Operating System (DOS) provides a high-level interface between a program and its hardware environment. DOS supports one or more 5¼" diskette drives. Sequential and random access of files is supported and file space is allocated dynamically as data is added. DOS functions include the display of a diskette directory and the rename, erase, display, compare, or copy of files. DOS also

permits the chaining of a series of diskette programs contained in a predefined job stream. Either a job stream or a single program may be designated for automatic execution when the system is first turned on.

The IBM Personal Computer DOS provides the diskette I/O for the PASCAL Compiler and any programs produced by it. DOS also provides Editor and Debug utility programs to aid in program development. A Linkage Editor is provided to convert language compiler relocatable modules to executable load modules.

The IBM Personal Computer DOS resides on the DOS Diskette. If the DOS Diskette is present in diskette drive "A" when power is turned on, DOS will automatically be loaded into memory. DOS requires a minimum of one diskette drive and 32KB memory.

IBM Personal Computer BASIC language extensions

The IBM Personal Computer BASIC Interpreter is structured in three functional levels: ROM Interpreter (Cassette), Disk, and Advanced. The Cassette level not only provides the necessary cassette input/output instructions, but also supports display, keyboard, printer, and customer-supplied light pen and joystick, and a full complement of editing, logic, math, and string functions. The Cassette level of BASIC is provided with each computer in the form of built-in read-only memory (ROM).

The Disk and Advanced levels of BASIC may be loaded into memory from the DOS Diskette. The Disk extensions to the language provide a full set of instructions, commands and built-in functions which support the companion Disk Operating System and add date, time of day, and communications capability. The Advanced extension to BASIC includes the Disk functions and further enhances the support for display graphics, and customer-supplied light pen and joystick. It also includes both the Graphics Macro Language (paint, circle, get/put display contents, store, and draw line segments) and the Music Macro Language* (provides 84 notes for the programmable speaker) and provides the capability to support a variety of external hardware devices. Advanced BASIC also supports interrupts for communications, function keys, light pen, and game controllers.

* Trademark Microsoft Inc.

The IBM Personal Computer language extensions require a minimum 32KB memory and at least one diskette drive. While IBM Personal Computer DOS can be loaded only from drive "A", the BASIC extensions may be loaded from either drive "A" or "B".

Some examples of the minimum memory configuration required are:

	Total Memory Required	User Memory 32KB	Available/ Total System Memory of 48KB	64KB
Cassette Level BASIC (ROM)	4.0KB	28.0KB	44.0KB	60.0KB
DOS	12.0KB	20.0KB	36.0KB	52.0KB
Disk Level BASIC				
- without communica- tions option	24.0KB	8.0KB	24.0KB	40.0KB
- with default communi- cations option	25.5KB	6.5KB	22.5KB	38.5KB
Advanced Level BASIC				
- without communica- tions option	29.0KB	3.0KB	19.0KB	35.0KB
- with default communi- cations option	30.5KB	1.5KB	17.5KB	33.5KB

IBM Personal Computer Pascal Compiler (6024010)

The Pascal Compiler is available as an optional software product. The IBM Personal Computer Pascal version supports all

of the facilities of the International Standards Organization (ISO) Working Draft #6, with the exception of conformant array parameters, which are instead provided by the "super array" type. Many additional features are also supported.

The Pascal program must be created as a source (text) file using a text editor such as the EDLIN utility program that is packaged with DOS on the DOS Diskette. The Pascal Compiler is then used to compile the program, producing a machine language (object) file in relocatable format. Finally, the Linker program, packaged with DOS on the DOS Diskette, is used to convert the relocatable program into one that is ready for loading and execution at a specific memory address.

A minimum 128KB two-diskette system is required to produce the final load module, although the module itself may be executable in a smaller system. If the program performs diskette I/O, the IBM Personal Computer DOS must be diskette and memory resident.

Applications software

Asynchronous Communications Support (6024032)

This support allows users, with no additional programming support, to use their IBM Personal Computer as a TTY ASR 33/35 terminal. In addition to the interactive terminal support, the package provides for the exchange of program and data files between the IBM Personal Computer and the host system with which it is communicating as well as between two IBM Personal Computers if both have the Asynchronous Communications Support.

The Asynchronous Communications Support Program is designed to allow connection to most host systems which support TTY ASR 33/35 terminals. The following terminal parameters may be stored on the IBM Personal Computer or specified interactively at program initiation:

- Bit rate (75 bps to 2400 bps)
- Parity
- Number of stop bits
- Line output turnaround characters
- Half or full duplex
- XON/XOFF support

If additional parameter settings supported by the Asynchronous Communications Adapter are needed, the user can expand the program using the BASIC language.

The program has operated with VM/370 Release 6 and VM/Systems Product Release 1 on an IBM System/370 Model 158 with an IBM 3705.

The User's Reference Manual contains a discussion of the VM system requirements to communicate with the Asynchronous Communications Support.

The IBM Personal Computer configuration must include 64KB of memory, the IBM Personal Computer Disk Operating System (DOS), Disk BASIC language extensions, and the Asynchronous Communications Adapter.

VisiCalc (6024004)

VisiCalc for the IBM Personal Computer is a unique tool which allows the businessman, the accountant, the analyst, and the planner an efficient way to solve their problems with no knowledge of a traditional programming language. VisiCalc combines the convenience and familiarity of a pocket calculator with the powerful memory and electronic screen capabilities of the IBM Personal Computer. Taking advantage of the tutorial nature of the documentation, new users will be able to build a spread sheet of numeric values easily, which they can then modify, causing the complete spread sheet to be recalculated using the new value or values entered.

Users can add labels, headings, and lines to their data to allow the printing of reports displaying the different "what if" situations which can be computed with the simple change of one or more of the data elements.

The VisiCalc program provides the facility to arrange data into a grid of up to 63 columns and 254 rows. Any element in this grid can be a numeric value, a label, or a formula. These formulas allow elements of the grid to relate to other elements, and have a wide range of flexibility. The formulas can also use the standard functions provided by VisiCalc. Some of these are: summation, net present value, integer, and trigonometric functions.

VisiCalc for the IBM Personal Computer is designed to operate with a minimum of 64KB of memory, 1 diskette drive, and one of the following display options:

- The IBM Monochrome Display and the IBM Monochrome Display and Printer Adapter;
- or
- A direct-drive color monitor or any 80-column black and white monitor with the Color/Graphics Monitor Adapter.

VisiCalc also requires the IBM Personal Computer Disk Operating System (DOS). VisiCalc supports the attachment of the IBM Printer.

EasyWriter (6024005)

EasyWriter is an extremely versatile and easy-to-use word processor whose menu-driven interface allows users with varied skills to be productive quickly. The simple text entry and the full-function, full-screen text editor facilitate: adding, inserting, deleting, and correcting of existing files; horizontal and vertical scrolling through text; and global and selective search and replace. This is combined with the flexibility of formatting the output to the printer.

EasyWriter is designed to operate with a minimum configuration of 64KB memory, 1 diskette drive, the IBM Printer, and one of the following display options:

- The IBM Monochrome Display and the IBM Monochrome Display and Printer Adapter;
- or
- A color or black and white monitor with the Color/Graphics Monitor Adapter. If this option is chosen, the Printer Adapter is also required to support the IBM Printer.

EasyWriter also requires the IBM Personal Computer Disk Operating System (DOS).

The Accounting System by Peachtree Software Inc.

The IBM Personal Computer Peachtree Accounting System is organized into three packages: General Ledger, Accounts Receivable and Accounts Payable. These cross-industry programs are applicable to many different businesses and provide the user with powerful tools for running and managing a business. The packages may be installed by selecting any combination of the three packages or a fully integrated system consisting of all three, depending on the user's specific needs.

Each package in the Accounting System by Peachtree Software Inc. is designed to operate with an IBM Personal Computer with 64KB of memory, 2 diskette drives, the IBM 80 CPS Matrix Printer with the Printer Adapter or the IBM Monochrome Display and Printer Adapter, and one of the following display/adaptor options:

- The IBM Monochrome Display and the Monochrome Display and Printer Adapter;
- or
- A customer-supplied direct drive color or 80-column black and white monitor and the Color/Graphics Monitor Adapter.

The IBM Personal Computer Disk Operating System (DOS) and Disk BASIC language extensions are also required.

The IBM Personal Computer General Ledger By Peachtree Software Inc. (6024008)

General Ledger is the heart of the total accounting system. It keeps a detailed record of all financial transactions and generates the balance sheet and income statement to provide timely information on the financial status of the company.

The General Ledger provides a comprehensive set of 16 application programs which collectively perform the creation, maintenance, updating, and report-generation function of the system. The system provides for the creation of a flexible chart of accounts which can be added to, changed, or deleted as the user requirements change. Transactions are entered through one transaction entry program and posted to the appropriate account after any required editing of the information.

If other packages are present, summary transactions can be passed from these packages to the General Ledger at the end of the accounting period. At the end of an accounting period, reports generated include: trial balance, transaction registers, balance sheet, and income statements.

The IBM Personal Computer Accounts Receivable by Peachtree Software Inc. (6024009)

Accounts Receivable is a complete invoicing and monthly statement generating package that keeps track of the current and aged accounts receivable. A complete record is maintained for each customer including: customer number; address; credit, discount, and tax rate; balances; credit, debit, and year-to-date information. The current status of any active customer account is instantly available. Highlights of this package include: open item or balance forward; automatic interface to the General Ledger; accounts receivable aging which includes three aged and one current period; and interface to the General Ledger package.

The IBM Personal Computer Accounts Payable by Peachtree Software Inc. (6024007)

Accounts Payable keeps track of current and aged accounts payable and incorporates programs which maintain a complete record for each vendor. Highlights of this package include: cash requirements forecast based on due or discount dates, printing checks with detailed stubs for vendors, automatic check register for each generation of checks, and interface to the General Ledger package.

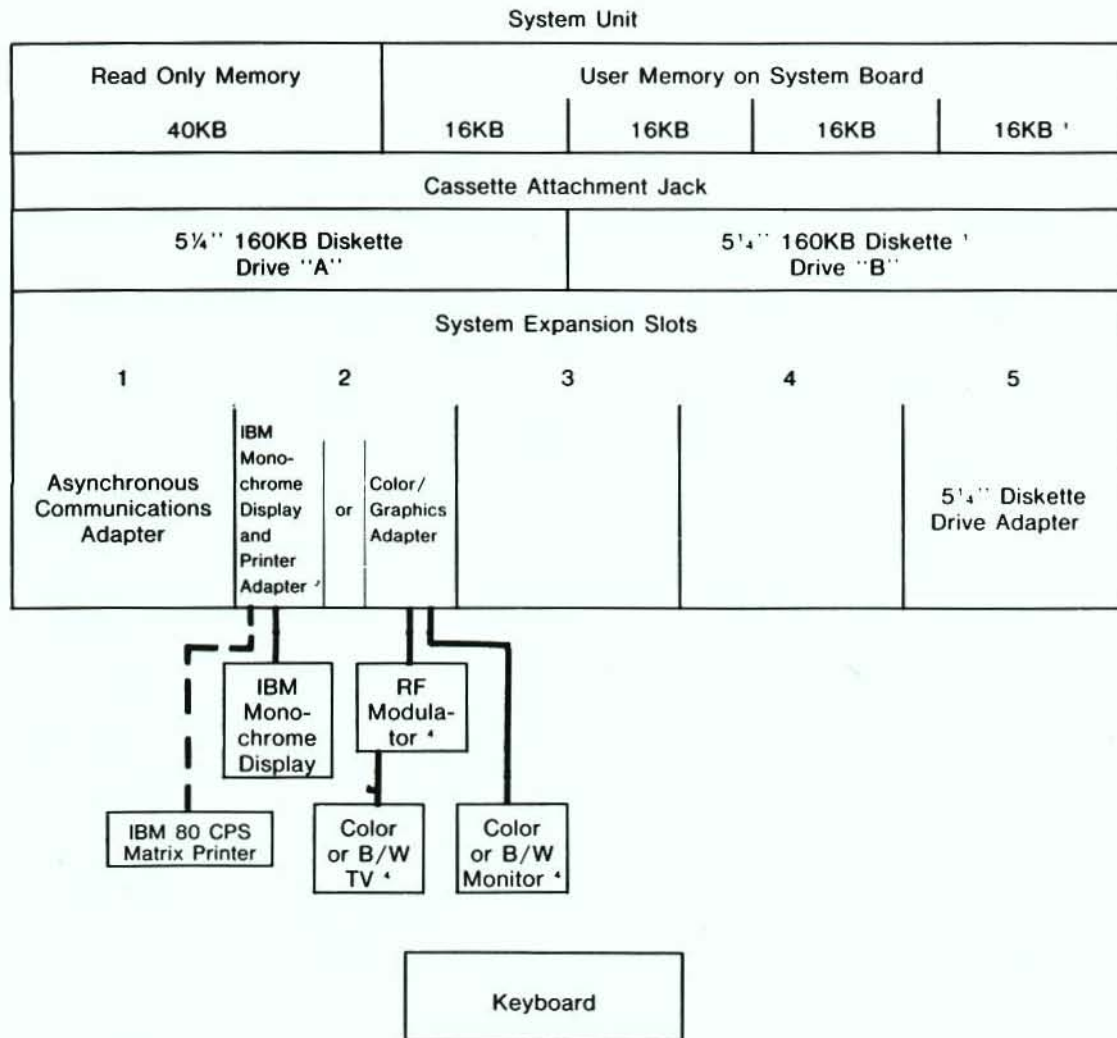
Microsoft Adventure (6024006)

Microsoft Adventure is a role-playing game where a single player acts out an adventure with the help of an IBM Personal Computer. The setting for this adventure is a vast network of caves beneath the earth and the land outside in the vicinity of the entrance to the caves. The world created by this program contains 130 rooms or nodes, 15 treasures, 40 useful objects, and 12 problems to solve.

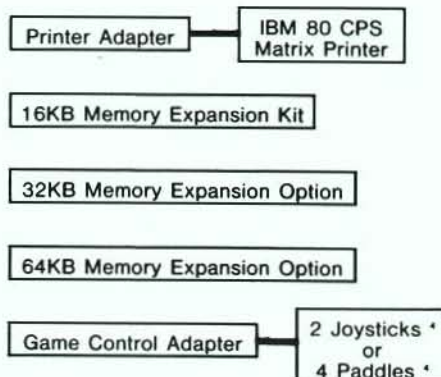
Microsoft Adventure was designed to operate on an IBM Personal Computer with at least 32KB of memory, one diskette drive, and one of the following display options:

- The IBM Monochrome Display and the IBM Monochrome Display and Printer Adapter;
- or
- A customer-supplied color or black and white monitor with the Color/Graphics Display Adapter;
- or
- A customer-supplied color or black and white TV set with the Color/Graphics Monitor Adapter and a customer-supplied RF modulator.

Standard System Unit Configurations 1 and 2 with User Video Options



System Unit options not included in the above System Unit are shown below. Each requires one System Expansion Slot, except the 16KB Memory Expansion Kit which is installed on the System Board.



Notes:

- ¹ Included in Standard System Unit Configuration 2.
- ² Recommended for installation in the second from the left (as viewed from the front of the machine) System Expansion Slot since guides are provided to aid the installation.
- ³ Recommended for installation in the right hand (as viewed from the front of the machine) System Expansion Slot to minimize the distance from the adapter to the diskette drive.
- ⁴ Customer-supplied.

Figure 1

