1971

Kenbak-1

First commercially assembled personal computer.
Small and large integrated circuits
Memory capacity of 256 bytes
switches for input/ lights for output
limited input/output capabilities

1972

1973

MCM-70

Intel 8008 processor
2 kB RAM, 14kB ROM
cassette drive

1974

Altair 8800

2 MHz Intel 8080 microprocessor
Memory 256 bytes expandable to 64kB
open 100line bus structure
Space for 18 cards

1975

BASIC

Originally designed for the Altair computer.
Required 6k of memory
Other versions were created at 4k, 8k, and 12k
The software was licensed to MITS and Microsoft received royalties on the sale of each computer with the Operating System installed.

(Many versions of BASIC were written since it worked as an interpreter and therefore had to change depending on the hardware and the original language. Other interpreters were written after BASIC for the programming languages COBOL, FORTRAN, PASCAL. It was originally written to work with the CP/M system but versions were

1 http://www.computerhistory.org/timeline/ ; (page accessed in November and December of 2007)
3 Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)
4 http://www.computerhistory.org/timeline/ ; (page accessed in November and December of 2007)
written to work with other systems as well. Each company would contract with Microsoft, and license the right to use the system on their machine)\(^b\)

1976

Altair 680b
- Motorola 6800 processor\(^7\)
- Memory 256 bytes expandable to 64kB
- open 100line bus structure
- space for 18 cards

IBM 5100
- Originally Released in Japan
- 16 kB RAM expandable to 64 kB
- BASIC
- tape storage drive holding 204 kB per tape
- keyboard
- built-in 5-inch screen\(^8\)

1977

TRS-80
- Zilog Z80 microprocessor
- 4kB RAM 4kB ROM
- tape cassette
- Stopped in 1981 due its failure to meet new FCC radio frequency interface regulations\(^9\)

VDP-80
- Intel 8085
- 3 MHz RAM
- 48 or 64 KBROM
- CP/M 1.4 to 2.2
- Two PERSCI 8" FDD\(^{10}\)

\(^7\) Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)

\(^8\) Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)

\(^9\) Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)

\(^{10}\) http://www.old-computers.com/museum/default.asp (accessed in November and December of 2007)
1978
Atari 400
MOS 6502 microprocessor at 1.8 MHz
8kB of RAM (expandable to 16)
Display: 16 lines of 32 characters
high resolution 320 by 192 Pixels

Atari 800
MOS 6502 microprocessor at 1.8 MHz
8kB of RAM (expandable to 16)
Improved keyboard over the 400

1979
TRS-80 Model II
4 MHz Zilog Z80 A
32 / 64 KB RAM depending on models
TRS-DOS

TI-99/4
TI9940 16bit microprocessor

1980
XENIX OS
advanced version of UNIX
Uses Intel8086, Zilog Z8000, Motorola M68000, or DECPDP-11
Not available to individual consumers, it is only licensed
More stable than GUI since the code is simpler

DEC Data system 408
separate dual density disk drive unit

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15 The History and Future of Microsoft Operating Systems
   http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
Atom

British
6502 CPU 1 mHz
6847 Video Display Generator, PIA 8255 (keyboard & tape)
2 KB RAM (up to 12 KB, or 32 KB using external RAM expansion kit.)
6 K VRAM
8 KB ROM (up to 16kB)
Atom BASIC and COS

TRS-80 Model III
Zilog Z80 processor
4kB RAM

1981
MS-DOS
Requires 136K bytes of storage
Command line driven
can support up to 320kB disk size
can not support hierarchical directory structure
can not support hard drives
can not support double sided floppy disks or High density floppy disks
Originally shipped with the IBM personal Computer

XEROX 8010 Star Information System
bitmapped screen
WYSIWYG word processor
SmallTalk language
Ethernet
mouse

XEROX 820
Z80 CPU
CP/M and BASIC

19 A History of the Personal Computer, Roy A. Allan, Allan Publishing London, 2001. pg. AB/1
20 The History and Future of Microsoft Operating Systems
http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
IBM PC 5150
- 4.77MHz Intel 8088 microprocessor CPU
- 16kB RAM (expandable to 256kB)
- 40kB ROM
- one 5.25 inches floppydrive (160kB)
- MS-DOS operating system
- Offered options of PC-DOS, Microsoft BASIC, VisiCalc, UCSD Pascal, CP/M-86, and Easywriter1.021

1982
MS-DOS 1.1
- Additions to previous versions:
  - Requires two disk drives
  - Enabled writing on both sides of a disk (doubles capacity from 160K to 320K bytes)22

MS-DOS 1.25
- Same as 1.1 but made for IBM compatible computers23

TRS-80 Model 16
- Zilog Z80 A + Motorola MC 68000 CPU 4 MHz (Z80) + 6 MHz (68000)
- 128 KB (up to 512 KB) RAM
- New DOS / Xenix
- Memory cards up to 7 MB24

Compaq Portable PC
- compatible with the IBM PC
- 4.77 MHz Intel 8088 processor
- 128 kB RAM
- 320 kB 5.25-inch disk drive
- 9-inch monochrome monitor25

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22 A History of the Personal Computer, Roy A. Allan, Allan Publishing London, 2001. pg. AB/1
23 A History of the Personal Computer, Roy A. Allan, Allan Publishing London, 2001. pg. AB/1
Commodore 64
  6510 processor
  64 kB RAM, 20 kB ROM
  Microsoft BASIC
  custom SID sound chip
  8 sprites
  16-color graphics
  40-column screen
  First personal computer with an integrated sound synthesizer chip

1983
MS-DOS 2.0
  Additions to previous versions:
    Support for IBM 10MB hard drives
    360kB double density 5.25inches floppy disk
    Hierarchical directories
    UNIX features
    limited multitasking for printing

IBM PC XT
  Intel 8088 processor
  10 MB hard drive
  128 kB RAM, 40 kB ROM
  double-sided 360 kB floppy drive
  eight expansion slots
  serial port

IBM 5160 Model 588
  Intel8088 CPU
  768 kB RAM 40 kB ROM
  360 KN disk drive
  10 MB hard drive
  double-sided 360 kB floppy drive
  eight expansion slots
  serial port
  add-in card containing an Intel 8087 math coprocessor
  two Motorola 68000 chips to execute or emulate System/370 instructions

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27 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
1984

MS-DOS 2.1
Extends foreign and character support\(^{31}\)

MS-DOS 2.11
Same as 2.0 but for International use:
supports commas instead of decimal points and varied date format\(^{32}\)

MS-DOS 3.0
Added features:
- High density 1.2MB 5.25 inches High Density Floppy Disk
- 32MB hard drive\(^{33}\)
- volume names
- RAM disk
- ATTRIB command\(^{34}\)

MS-DOS 3.1
Added features:
- networking capabilities for Microsoft MS-NET and IBM PC Network\(^{35}\)

IBM PCjr
- Intel 8088 CPU
- 64 kB RAM (expandable to 128kB)
- detached keyboard
- two cartridge slots
- joystick
- light pen
- serial port
- 5.25-inch floppy drive
- PC-DOS 2.1 operating system available as an option\(^{36}\)

\(^{30}\) Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)

\(^{31}\) The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)

\(^{32}\) A History of the Personal Computer, Roy A. Allan, Allan Publishing London, 2001. pg. AB/1

\(^{33}\) The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)

\(^{34}\) A History of the Personal Computer, Roy A. Allan, Allan Publishing London, 2001. pg. AB/2


\(^{36}\) Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)
IBM PC/AT
- 6 MHz 80286 processor
- PC-DOS 3.0
- 5.25-inch 1.2 MB floppy drive
- 256 or 512 kB RAM
- optional 20 MB hard drive
- monochrome or color monitor
- XENIX operating system from Microsoft is also available

1985
Windows 1.01
- requires 192kB RAM
- acts as the GUI
- taskbar
- tiled windows
- drop down menus
- Is really a shell enhancement that runs on top of MS-DOS
- Can’t detect hardware so the user has to specify the I/O address of all the
  additional hardware the computer may have

Commodore 128 PC
- Three computers in one:
  - Z80 processor
  - 128 kB RAM
  - 8502 processor
  - complete Commodore 64
  - a CP/M mode
  - new 128 kB mode
  - ROM cartridge port

Amiga 1000
- Motorola 68000 CPU
- 256 kB RAM
- 880 kB 3.5-inch disk drive
- multitasking, windowing operating system
- color graphics with a 4096-color palette
- stereo sound

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38 The History and Future of Microsoft Operating Systems
  http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
1986

**MS-DOS 3.2**
Support for 720kB 3.5 inch floppy disk

**MS-DOS 3.25**
support for 1.44MB 3.5 inch High density Floppy Disk
Allows for hard drive partitions

**MS-DOS 4.0**
Requires 1.1 MB of storage
Added features:
- Can be used with a mouse due to new DOS shell or graphical user interface
- support for hard disk partitions over 32 megabytes
- Hard Drive limit of 2GB
- extended memory above 1024kB of RAM
- Extended memory allowed programmers to write larger and more complex code.

**IBM RT PC**
One of the first commercially-available 32-bit RISC-based computers
- 1 MB RAM
- 40 MB hard drive
- 1.2 MB floppy

1987

**MS-DOS 3.3**
Added features:
- Improved foreign character support
- Accommodates multiple partitions
- Supports a 32MB hard disk

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41 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
42 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
44 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
Windows 2.0

Added features:
- Overlapping resizable windows
- Ability to drag and drop icons to new positions on desktop
- Taskbar removed
- Integrated utilities: clock, calculator, and paint

Amiga 500

- 68000 processor
- 512 kB RAM
- Floppy disk drive
- Custom chips for animation, video, and audio

IBM PS/2

- 8 MHz 8086 processor
- 640 kB RAM
- 720 kB 3.5-inch floppy drive
- 20 MB hard drive
- Three expansion slots
- PC-DOS 3.3

1988

Windows/286 2.1

Added features:
- Able to run multiple DOS applications at the same time

Windows/386 2.1

Added features:
- Takes advantage of Intel 80386 CPU
- Is able to run multiple DOS applications at the same time

IBM PS/2 Model 30 286

- 10 MHz 286
- 512 kB RAM

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47 The History and Future of Microsoft Operating Systems
   http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
50 The History and Future of Microsoft Operating Systems
   http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
51 The History and Future of Microsoft Operating Systems
   http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
20 MB hard drive
VGA
uses the AT-bus

1989
IBM PS/2 Model P70 386
20 MHz 80386
60 MB hard drive
MCA slots
IBM PS/2 Model 55 SX
16 MHz 80386SX processor
MCA slots
30 MB hard drive
2 MB DRAM
1.44 MB 3.5-inch floppy drive
VGA
13-inch color monitor

1990
Windows 3.0
Improved GUI graphics
VGA support
Program Manager
File Manager
Can run in three modes: 8086-real mode, 286 standard mode, and 386 enhanced mode
8086 and 286 have memory limits of 640kB and 16MB
386 can utilize a page file which sits on the hard drive and can be used by the OS as a substitute for RAM
PS/2 Model 90 XP 486- OJ5,OJ9,OKD
25 MHz 80486 processor
17-msec 80 MB hard drive
4 MB RAM
8 kB caching controller
1.44 MB floppy drive

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55 The History and Future of Microsoft Operating Systems
http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
one parallel port
two serial ports
mouse port
XGA video graphics on system board
four 32-bit Micro Channel slots
Processor Complex board
two memory boards
three 3.5-inch drive bays
one 5.25-inch drive bay

PS/2 Model 95 XP 486 - OJ9, OJD, OKD
25 MHz 80486 processor
16-ms 160 MB SCSI hard drive
4 MB RAM
8 kB caching controller
1.44 MB floppy drive
one parallel port
two serial ports
eight SIMM sockets
XGA Display Adapter/A
eight 32-bit Micro Channel slots
Processor Complex board
two memory boards
two 3.5-inch drive bays
five 5.25-inch drive bay

PS/2 Model 75
33 MHz 486
8 MB RAM
160 MB SCSI hard drive
1.44 MB floppy drive
10-inch gas-plasma VGA screen

Amiga 3000
2 MB RAM
40 or 100 MB hard drive
Motorola 16 or 25 MHz 68030
68881 or 68882 math coprocessor

Zorro III bus
AmigaDOS v2.0
AmigaVision authoring system
new Enhanced Chip Set

1991
MS-DOS 5.0
Added features:
Kernel that would load into HMA
Limited switching capabilities
New Shell
Improved multitasking
On-line help
Full screen editor
80386 memory management
MS-DOS editor
QBASIC

1992
Microsoft Windows for Working Groups 3.1
16bit 64kB
True Type Fonts
ability to “Drag and Drop” in the File Manager
Object Linking and Embedding
multimedia support: sound, graphics, animation, video, CD-ROM
Provides full networking support

PS/2 Ultimedia Model M57SLC
20 MHz IBM 386SLC processor
4 MB RAM
160 MB SCSI hard drive
VGA
six MCA slots
XGA video adapter
M-Audio audio board
3.5-inch 2.88 MB floppy drive
600 MB SCSI CD-ROM drive

61 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
62 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
Thinkpad series

300:
- 25 MHz 386SL processor

700:
- monochrome 9.5-inch display
- 25 MHz 486SLC
- 80/120 hard drive
- 4 MB RAM

700C:
- 4 MB RAM
- removable 120 MB hard drive
- Microchannel bus
- 10.3-in TFT active-matrix VGA
- DOS 5.0
- TrackPoint II integrated pointing device

1993

Windows NT 3.1
- 32bit
- Maximum of 4GB
- First version of Windows NT released
- First true operating system (not just a shell on top of MS-DOS)
- Has two parts the workstation and the server
  - Workstation is the desktop PC
  - Server Primarily controls network logons and security
- User interface is the same as Windows 3.1 except: existence of Personal and Common Program Manager Groups
- New Control Panel Icons
- Administrative tools program group
- Able to accommodate longer file names

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64 Chronology of Personal Computers http://www.islandnet.com/~kpolsson/comphist/index.htm ; (page accessed in November and December of 2007)
65 The History and Future of Microsoft Operating Systems http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
MS-DOS 6.0
  Requires 8.4MB of storage
  Added features:
    Improved memory management
    Multi-configuration support on startup
    Improved SmartDrive
    File transfer utility: Interlink
    DoubleSpace disk compression
    Anti-virus and undelete utilities (licensed from Central Point Software Inc.)
    Backup and defrag utilities (licensed from Symantec Corporation)

1994
MS-DOS 6.21
  Deletes DoubleSpace
  Added:
    Scandisk
    Double Guard

MS-DOS 6.22
  Adds DriveSpace (disk compression system)

Windows NT Workstation 3.5, Server 3.5
  New and updated networking components:
    Account lockout feature
    Network administration can remotely boot computer
    OLE support
    Open GL support

IBM ThinkPad 755
  First Portable computer with a CD-ROM drive

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68 The History and Future of Microsoft Operating Systems
   http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)
70 The History and Future of Microsoft Operating Systems
   http://www.thezac.com/MicrosoftHistory/index.htm ; (page accessed in November and December 2007)