A Chronology of Computer History:

3000 BC: Dust abacus is invented, probably in Babylonia.

1800 BC: Babylonian mathematician develops algorithms to resolve numerical problems.

500 BC: Bead and wire abacus originates in Egypt.

200 AD: Saun-pan computing tray is used in China; soroban computing tray used in Japan.

1000: Gerbert of Aurillac or Pope Sylvester II devises a more efficient abacus.

1617: Scottish inventor John Napier uses bones to demonstrate division by subtraction and multiplication by addition.

1622: William Oughtred develops the slide rule in England.

1624: Wilhelm Schickard builds first four-function calculator-clock at the University of Heidelberg.

1642: Blaise Pascal builds the first numerical calculating machine in Paris.

1673: Gottfried Leibniz builds a mechanical calculating machine that multiplies, divides, adds and subtracts.

1780: American Benjamin Franklin discovers electricity.

1805: Joseph-Marie Jacquard invents perforated card for use on his loom.

1822: In England Charles Babbage designs a Difference Engine to calculate logarithms, but the machine is never built.

1833: Charles Babbage designs the Analytical Machine that follows instructions from punched-cards. It is the first general purpose computer.

1842: Lady Ada Byron, Countess of Lovelace and daughter of Lord Byron, the poet, documents Babbage's work and writes programs for Babbage.

1854: Irishman George Boole publishes The Mathematical Analysis of Logic using the binary system now known as Boolean algebra.

1855: George and Edvard Scheutz of Stockholm build the first practical mechanical computer based on Babbages work.

1876: Telephone is invented by Alexander Graham Bell.

1884: Herman Hollerith applies for patents for automatic punch-card tabulating machine.

1884: Institute of Electrical Engineers (IEE) is founded.

1886: William Burroughs develops the first commercially successful mechanical adding machine.

1889: Patent is issued for Hollerith tabulating machine.

1890: Dr. Herman Hollerith constructs an electromechanical machine using perforated cards for use

in the U.S. census.

1896: Hollerith founds the Tabulating Machine Co. and constructs a sorting machine.

1903: Nikola Tesla, a Yugoslavian who worked for Thomas Edison, patents electrical logic circuits called gates or switches.

1911: Computer-Tabulating-Recording Company is formed through a merger of the Tabulating Company (founded by Hollerith), the Computing Scale Company, and the International Time Recording Company.

1912: Institute of Radio Engineers (IRE) is formed.

1914: Thomas J. Watson becomes President of Computing-Tabulating-Recording Company.

1921: Czech word robot is used to describe mechanical workers in the play R.U.R. by Karel Capek.

1924: Computing-Tabulating-Recording Company changes its name to International Business Machines.

1925: Vannevar Bush, builds a large scale analog calculator, the differential analyzer, at MIT.

1927: First public demonstration of television. Radio-telephone becomes operational between London and New York.

1927: Powers Accounting Machine Company becomes the Tabulating Machines Division of Remington-Rand Corp.

1928: A Russian immigrant, Vladimir Zworykin, invents the cathode ray tube (CRT).

1931: First calculator, the Z1, is built in Germany by Konrad Zuse.

1933: First electronic talking machine, the Voder, is built by Dudley, who follows in 1939 with the Vocoder (Voice coder).

1936: Englishman Alan M. Turing while at Princeton University formalizes the notion of calculableness and adapts the notion of algorithm to the computation of functions. Turing's machine is defined to be capable of computing any calculable function.

1937: George Stibitz builds the first binary calculator at Bell Telephone Laboratories.

1938: Hewlett-Packard Co. is founded to make electronic equipment.

1939: First Radio Shack catalog is published.

1939: John J. Atanasoff designs a prototype for the ABC (Atanasoff-Berry Computer) with the help of graduate student Clifford Berry at Iowa State College. In 1973 a judge ruled it the first automatic digital computer.

1940: At Bell Labs, George Stibitz demonstrates the Complex Number Calculator, which may be the first digital computer.

1940: First color TV broadcast.

1940: Remote processing experiments, conducted by Bell Laboratories, create the first terminal.

1941: Colossus computer is designed by Alan M. Turing and built by M.H.A. Neuman at the University of Manchester, England.

1941: Konrad Zuse builds the Z3 computer in Germany, the first calculating machine with automatic control of its operations.

1944: Colossus Mark II is built in England.

1944: Mark I (IBM ASCC) is completed, based on the work of Professor Howard H. Aiken at Harvard and IBM. It is a relay-based computer.

1944: Grace Murray Hopper starts a distinguished career in the computer industry by being the first programmer for the Mark I.

1945: John von Neumann paper describes stored-program concept for EDVAC.

1946: Binac (Binary Automatic Computer), the first computer to operate in real time, is started by Eckert and Mauchly; it is completed in 1949.

1946: ENIAC (Electronic Numerical Integrator and Computer), with 18,000 vacuum tubes, is dedicated at the University of Pennsylvania. It was 8 by 100 feet and weighed 80 tons. It could do 5,000 additions and 360 multiplications per second.

1946: Eckert-Mauchly Computer Corporation is formed as the Electronic Control Co. to design a Universal Automatic Computer (Univac).

1946: Term bit for binary digit is used for first time by John Tukey.

1947: Alan M. Turing publishes an article on Intelligent Machinery which launches artificial intelligence.

1947: Association for Computing Machinery (ACM) is formed.

1948: EDSAC (Electronic Delay Storage Automatic Calculator) is developed at the University of Cambridge by Maurice V. Wilkes.

1948: IBM introduces the 604 electronic calculator.

1948: IBM builds the Selective Sequence Electronic Calculator (SSEC), a computer with 12,000 tubes.

1948: Transistor is invented by William Bradford Shockley with John Bardeen and Walter H. Brattain.

1949: EDVAC (Electronic Discrete Variable Automatic Computer) supports the first tests of magnetic disks.

1949: Jay Forrester uses iron cores as main memory in Whirlwind. Forrester patent is issued in 1956.

1949: Claude Shannon of MIT builds the first chess playing machine.

1950: Maurice V. Wilkes at Cambridge University uses assembler (symbolic assembly language) on

EDSAC.

1950: Remington-Rand acquires Eckert-Mauchly Computer Corp.

1950: SEAC (Standards Eastern Automatic Computer) is delivered to the National Bureau of Standards.

1951: First Joint Computer Conference is held.

1951: Maurice V. Wilkes introduces the concept of microprogramming.

1951: IEEE Computer Society is formed.

1951: UNIVAC I is installed at the Bureau of Census using a magnetic tape unit as a buffer memory.

1951: Wang Laboratories, Inc. is founded by An Wang in Boston.

1951: Whirlwind computer becomes operational at MIT. It was the first real-time computer and was designed by Jay Forrester and Ken Olsen.

1952: First computer manual is written by Fred Gruenberger.

1952: IBM introduces the 701, its first electronic stored-program computer.

1952: Nixdorf Computer is founded in Germany.

1952: Remington-Rand acquires Engineering Research Associates (ERA).

1952: RCA develops Bizmac with iron-core memory and a magnetic drum supporting the first database.

1952: UNIVAC I predicts an Eisenhower landslide with 7% of the votes, just one hour after the polls close.

1952: U.S. Department of Justice sues IBM for monopolizing the punched-card accounting machine industry.

1953: Burroughs Corp. installs the Universal Digital Electronic Computer (UDEC) at Wayne State University.

1953: First high-speed printer is developed by Remington-Rand for use on the Univac.

1953: First magnetic tape device, the IBM 726, is introduced with 100 character-per-inch density and 75 inches-per-second speed.

1953: IBM ships its first stored-program computer, the 701. It is a vacuum tube, or first generation, computer.

1954: FORTRAN is created by John Backus at IBM. Harlan Herrick runs the first successful FORTRAN program.

1954: Gene Amdahl develops the first operating system, used on IBM 704.

1955: First SHARE users group meeting is held.

1955: Remington-Rand merges with Sperry Gyroscope to form Sperry-Rand.

1956: APT (Automatic Programmed Tool) is developed by D.T. Ross.

1956: Burroughs acquires Electrodata and the Datatron computer, which becomes the Burroughs 205.

1956: Government antitrust suit against IBM is settled; consent decree requires IBM to sell as well as lease machines.

1956: A. Newell, D. Shaw and F. Simon invent IPL (Information Processing Language.)

1956: RCA ships the Bizmac.

1956: T.J. Watson, Jr. assumes presidency of IBM.

1956: The acronym artificial intelligence is coined by John McCarthy.

1957: Control Data Corporation is formed by William C. Norris and a group of engineers from Sperry-Rand.

1957: Digital Equipment Corporation is founded by Ken Olsen.

1957: First issue of Datamation is released.

1957: Honeywell joins with Raytheon to ship the Datamatic 1000.

1958: ALGOL, first called IAL (International Algebraic Language), is presented in Zurich.

1958: First virtual memory machine, Atlas, is installed in England by Feranti. It was developed at the University of Manchester by R.M. Kilburn.

1958: First electronic computers are built in Japan by NEC: the NEC-1101 and -1102.

1958: Frank Rosenblatt builds the Perceptron Mark I using a CRT as an output device.

1958: LISP is developed on the IBM 704 at MIT under John McCarthy.

1958: Seymour Cray builds the first fully transistorized supercomputer for Control Data Corp., the CDC 1604.

1958: Jack Kilby of Texas Instruments makes the first integrated circuit.

1959: COBOL is defined by the Conference on Data System Languages (Codasyl), based on Grace Hoppers Flow-Matic.

1959: First packaged program is sold by Computer Science Corporation.

1959: IBM introduces the 1401. Over 10,000 units will be delivered during its lifetime.

1959: IBM ships its first transistorized, or second generation, computers, the 1620 and 1790.

1959: Jack S. Kilby at Texas Instruments files a patent for the first integrated circuit.

1959: Robert Noyce of Fairchild Semiconductor develops the monolithic idea for integrated circuits.

1960: Benjamin Curley develops the first minicomputer, the PDP-1, at Digital Equipment Corporation.

1960: COBOL runs on UNIVAC II and RCA 501.

1960: Control Data Corporation delivers its first product, a large scientific computer named the CDC 1604.

1960: DEC ships the first small computer, the PDP-1.

1960: First electronic switching central office becomes operational in Chicago.

1960: Removable disks first appear.

1961: AFIPS (American Federation of Information Processing Societies) forms.

1961: Multiprogramming runs on Stretch computer. Time-sharing runs at MIT on IBM 709 and 7090 computers by F. Corbato.

1961: IBM delivers the Stretch computer to Los Alamos. This transistorized computer with 64-bit data paths is the first to use eight-bit bytes; it remains operational until l971.

1962: APL (A Programming Language) is developed by Ken Iverson, Harvard University and IBM.

1962: First general-purpose simulation languages are proposed: (1) SIMSCRIPT by the Rand Corporation, and (2) GPSS by IBM.

1962: IBM markets 1311 using removable disks.

1962: IBM's U.S.-based annual revenues from computer products reaches $1 billion and for the first time surpasses its other revenue.

1962: H. Ross Perot founds EDS (Electronic Data Systems) in Dallas, TX.

1963: Control Data acquires Bendix Corp. computer division.

1963: Conversational graphics consoles are developed by General Motors (DAC-1) and MIT Lincoln Laboratories (Sketchpad), resulting in computer-aided design (CAD). Sketchpad uses the first light-pen, developed by Ivan Sutherland.

1963: DEC ships the first PDP-5 minicomputer.

1963: Tandy acquires Radio Shack (9 stores).

1964: IBM announces the System 360, the first family of compatible computers.

1964: Control Data Corporation introduces the CDC 6000, which uses 60-bit words and parallel processing. CDC ships the 6600, the most powerful computer for several years. It was designed by Seymour Cray.

1964: BASIC (Beginners All-purpose Symbolic Instruction Language) is created by Tom Kurtz and John Kemeny of Dartmouth. First time-sharing BASIC program runs.

1964: Graphic tablet is developed by M.R. Davis and T.D. Ellis at Rand Corporation.

1964: Honeywell introduces the H-200 attacking IBM's installed base of 1400 systems.

1964: NCR introduces the 315/100.

1965: CDC founds the Control Data Institute to provide computer-related education.

1965: Digital Equipment ships the first PDP-8 minicomputer.

1965: First computer science Ph.D. is granted to Richard L. Wexelblat at the University of Pennsylvania.

1965: IBM ships the first System 360, its first integrated circuit-based, or third generation, computer.

1966: Honeywell acquires Computer Control Company, a minicomputer manufacturer.

1966: Scientific Data Systems (SDS) introduces Sigma 7.

1966: Texas Instruments offers the first solid-state hand-held calculator.

1967: DEC introduces the PDP-10 computer.

1967: A.H. Bobeck at Bell Laboratories develops bubble memory.

1967: Burroughs ships the B3200.

1967: First issue of Computerworld is published.

1968: Dendral, the first medical diagnostic medical program, is created by Joshua Lederberg at Stanford University.

1968: Univac introduces the 9400 computer.

1968: Integrated Electronics (Intel) Corp. is founded by Gordon Moore and Robert Noyce.

1969: Edson deCastro leaves DEC to start Data General Corp. and introduces the Nova, the first 16-bit minicomputer.

1969: First International Joint Conference on Artificial Intelligence is held.

1969: IBM unbundles hardware and software; introduces a minicomputer line, System/3.

1969: Lockheed Electronics ships the MAC-16.

1969: PASCAL compiler is written by Nicklaus Wirth and installed on the CDC 6400.

1970: Computer Logic Systems ships SLS-18.

1970: DEC ships its first 16-bit minicomputer, the PDP-11/20.

1970: Data General ships SuperNova.

1970: First ACM Computer Chess tournament is held.

1970: Honeywell acquires General Electric's computer operations. 1970: IBM ships its first System 370, a fourth generation, computer.

1970: Xerox Data Systems introduces the CF-16A.

1971: Computer Automation introduces the Alpha-16.

1971: IBM introduces the 370/135 and 370/195 mainframe computers.

1971: Floppy disks are introduced to load the IBM 370 microcode.

1971: Intel Corporation announces the first microprocessor, the Intel 4004, developed by a team headed by Marcian E. Hoff.

1971: John Blankenbaker builds the first personal computer, the Kenbak I.

1971: NCR introduces the Century 50.

1971: Sperry-Rand takes over the RCA computer product line.

1972: Cray Research is founded.

1972: First electronic pocket calculator is developed by Jack Kilby, Jerry Merryman, and Jim VanTassel of Texas Instruments.

1972: Gary Kildall at Naval Postgraduate School writes PL/1, the first programming language for the Intel 4004 microprocessor.

1972: Intel introduces the 8008, an 8 bit microprocessor.

1972: Prime Computer is founded.

1973: First National Computer Conference (NCC) is held in New York City.

1973: IBM settles a lawsuit by Control Data, selling Service Bureau Corporation (SBC) to Control Data.

1973: PROLOG language is developed by Alain Comerauer at the University of Marseilles-Luminy, France.

1973: R2E markets the MICRAL, the first microcomputer in France.

1973: Winchester disk drives are first introduced by IBM, who uses the term as a code name for its Model 3340 direct-access storage device.

1974: Digital Equipment enters the Fortune 500 ranking of the largest industrial companies.

1974: Intel introduces the 8080, an 8 bit microprocessor that will be used in numerous personal computers.

1974: Zilog is formed.

1975: Cray-1 supercomputer is introduced.

1975: Homebrew Computer Club, considered the first personal computer users group, is formed.

1975: MITS introduces the Altair personal computer, named after a Star Trek episode, A Voyage to Altair. The kit cost $397 for a 256 byte computer. The I/O consisted of switches and lights. It was designed by Ed Roberts and Bill Yates.

1975: Microsoft is founded after Bill Gates and Paul Allen adapt and sell BASIC to MITS for the Altair PC.

1975: The first computer store opens in Santa Monica, CA.

1975: Xerox withdraws from the mainframe computer industry.

1976: First fault-tolerant computer, the T/16, is introduced by Tandem.

1976: MYCIN, an expert system to diagnose and treat infectious blood diseases, is developed at Stanford University by E. Shortliffe.

1976: NEC System 800 and 900 general-purpose mainframes are introduced.

1976: Seymour Cray engineers and delivers Cray 1 with 200,000 freon-cooled ICs and 100 million floating point operations per second (MFLOP) performance.

1976: Superminicomputers are introduced by Perkin-Elmer and Gould SEL.

1976: Zilog Z-80 chip is introduced.

1977: Apple Computer is founded and introduces the Apple II personal computer.

1977: Apple, Commodore, and Tandy begin selling personal computers.

1977: DEC introduces its first 32-bit superminicomputer, the VAX-11/780.

1977: Datapoint introduces ARC system, the first local area network.

1977: First ComputerLand franchise store opens in Morristown, NJ under the name Computer Shack.

History, 1978 - 1994

1978: SPRINT business service is inaugurated.

1978: Texas Instruments introduces the Speak-and-Spell educational toy featuring digital speech synthesis.

1978: Total computers in use in the U.S. exceed a half million units.

1978: The first COMDEX trade show is held.

1979: Ada language is developed by a team at CII-Honeywell Bull (France) directed by Jean Ichbiah.

1979: The Source and CompuServe Information Services go on-line.

1979: VisiCalc, the first electronic spreadsheet software, is shown at the West Coast Computer Faire.

1979: Wordstar, one of the best-selling word processing programs for PCs, is released by Micropro (now called Wordstar International).

1980: Control Data Corporation introduces the Cyber 205 supercomputer.

1980: First issue of InfoWorld is published.

1980: Microsoft licenses UNIX operating system from Bell Laboratories and introduces its XENIX adaptation.

1980: Total computers in use in the U.S. exceed one million units.

1981: Commodore introduces the VIC-20 home computer, which sells over one million units.

1981: IBM enters the personal computer market, creating a de facto standard.

1981: Osborne Computer introduces the Osborne 1, the first portable computer.

1982: AT&T agrees to give up 22 Bell System companies in settling a 13-year-old lawsuit brought by the Justice Department.

1982: Compaq Computer incorporates.

1982: Sun Microsystems is founded.

1982: Microsoft licenses MS-DOS to 50 microcomputer manufacturers in the first 16 months of availability.

1982: Time Magazine names the computer its Man of the Year.

1982: U.S. drops IBM antitrust suit begun in 1969.

1983: Compaq ships its first computer in January and sells $111M, the greatest first-year sales in the history of American business.

1983: Cray 2 computer introduced with one billion FLOPs (floating point operations per second) performance rating.

1983: Lotus 1-2-3 replaces VisiCalc as the spreadsheet software of choice for microcomputers.

1983: NEC announces the SX-1 and SX-2 supercomputers.

1983: Total computers in use in the U.S. exceed ten million units.

1984: Apple introduces the Macintosh computer.

1984: IBM introduces the PC AT (Advanced Technology). IBM merges with Rolm Corp., which becomes a telecommunications subsidiary.

1984: The Tandy 1000 personal computer becomes the #1 selling IBM PC-compatible in its first year.

1985: IBM delivers the new 3090 Sierra systems.

1985: Aldus introduces PageMaker for the Macintosh and starts the desktop publishing era.

1986: Burroughs merges with Sperry to form Unisys Corporation, second only to IBM in computer revenues.

1986: Compaq makes the Fortune 500 list. Introduces its first Intel 80386-based PC.

1986: Computerworld publishes its 1,000th issue on November 3.

1986: HP introduces its Spectrum line of reduced instruction set computers (RISC).

1986: Tandy has over 7300 retail outlets including more than 4800 company-owned Radio Shack stores in the U.S.

1986: The number of computers in the U.S. exceeds 30 million.

1987: IBM introduces its PS/2 family and ships over 1 million units by year end.

1987: Cray Research introduces the Cray 2S which is 40% faster than the Cray 2.

1987: ETA Systems introduces its ETA-10 family of supercomputers.

1987: Sun Microsystems introduces its first workstation based on a RISC microprocessor.

1987: Apple introduces the Macintosh II and Macintosh SE and HyperCard.

1987: IBM introduces its Systems Applications Architecture (SAA).

1987: DEC introduces Vaxstation 2000 workstation computer, and the MicroVAX 3500 and 3600.

1987: Aldus introduces PageMaker for the IBM PC and compatible computers.

1987: Compaq reaches a billion dollar in sales in its fifth year of operation.

1987: Conner Peripherals beats Compaq's first year sales record: $113M vs $111M.

1987: Computer Associates acquires UCCEL in the largest ever software acquisition ($780M).

1987: IBM invests in Steve Chens Supercomputer Systems, Inc.

1987: Apple spins off its application software business as a separate company and names it Claris.

1987: Texas Instruments introduces the first AI microprocessor chip.

1988: DEC introduces VAXstation 8000.

1988: Cray Research introduces the Cray Y-MP, a $20M supercomputer.

1988: IBM introduces a new mainframe computer operating system called MVS/ESA.

1988: IBM announces its long awaited Silverlake mid-range computers called AS/400.

1988: Motorola announces the 88000, a RISC microprocessor.

1988: The first graphics supercomputers are announced by Apollo, Ardent and Stellar. These computers are aimed at 3D graphics applications.

1988: The first PS/2-compatible computers are announced by Tandy, Dell Computer and others.

1988: Unisys introduces the 2200/400 family to replace its mid-range 1100 series.

1988: AT&T announces plan to acquire 20% of Sun Microsystems, and that Sun will help AT&T develop the next version of UNIX.

1988: In response to the AT&T-Sun cooperation, IBM, DEC, HP, Apollo and several other major computer companies form the Open Software Foundation to set a UNIX counterstandard.

1988: Sun Microsystems surpasses the $1 billion sales mark, and introduces 80386-based workstations.

1988: IBM and Sears joint videotex venture starts operation under the PRODIGY name.

1988: Sematech picks Austin, TX as its headquarters and the consortium will be headed by Robert Noyce.

1988: A consortium of PC companies led by Compaq introduces the EISA counter standard to IBM's PS/2 MicroChannel bus.

1988: IBM introduces the ES/3090 S series mainframe computer.

1988: IBM wins a $3.6B contract to build the next generation air traffic control system.

1988: Unisys acquires Convergent Technologies for $350M.

1988: Computer Associates acquires Applied Data Research for $170M from Ameritech.

1988: Next unveils its innovative workstation computer which is the first computer using erasable optical disks as the primary mass storage device. IBM license Next's graphics user interface.

1988: A nondestructive worm spreads via the Internet network and brings several thousand computers to their knees.

1989: Solbourne Computer introduces the first Sun 4-compatible computer.

1989: DEC announces a workstation using Mips Computer's RISC microprocessor.

1989: Microsoft buys a 20% stake in Santa Cruz Operation, a major UNIX software developer.

1989: Intel announces the 80486 microprocessor and the I860 RISC/coprocessor chip. Both chips have over one million transistors.

1989: Hewlett-Packard acquires Apollo for $476M.

1989: Sun Microsystems introduces its SPARCstation, a low-end RISC workstation with an entry price of only $9,000.

1989: Control Data discontinues its ETA supercomputer subsidiary.

1989: IBM announces the Officevision software using the SAA protocol, which runs on PS/2s, PS/2 LANs, AS/400 and mainframe computers.

1989: Cray restructures itself into two companies: Cray Research which continues with its current business and Cray Computer Corp. headed by Seymour Cray, which will develop a gallium arsenide-based supercomputer.

1989: Next sells a 16.6% share to Canon for $100M.

1989: Seagate buys Control Data's Imprimis disk drive subsidiary for $450M.

1989: Computer Associates acquires Cullinet for $333M.

1989: Prime Computer agrees to be bought by a J.H. Whitney-formed company, ending a long and acrimonious takeover battle by MAI Basic.

1989: Apple introduces its long awaited portable Macintosh.

1989: The worldwide number of computers in use surpasses 100M units.

1989: Poqet announces the first pocket sized MS-DOS compatible computer.

1989: Grid introduces a laptop computer with a touch sensitive pad that recognizes handwriting--the GridPad.

1989: The number of computers in the U.S. exceeds 50M units.

1989: The battery-powered notebook computer becomes a full function computer including hard and floppy disk with the arrival of Compaq's LTE and LTE/286.

1989: Digital Equipment extends the VAX-family into the mainframe arena with the VAX 9000.

1989: The first EISA-based personal computers arrive.

1989: The first 80486-based computers are introduced.

1989: Dun & Bradstreet acquires MSA in a major software acquisition worth $333M.

1990: Motorola introduces the 68040 microprocessor.

1990: IBM announces its RISC Station 6000 family of high performance workstations.

1990: Digital Equipment introduces a fault-tolerant VAX computer.

1990: Cray Research unveils an entry-level supercomputer, the Y-MP2E, with a starting price of $2.2M.

1990: Microsoft introduces Windows 3.0.

1990: Lotus wins its look and feel suit against Paperback Software's spreadsheet program.

1990: IBM ships the PS/1, a computer for consumers and home offices.

1990: IBM announces the System 390 (code name Summit), its mainframe computer for the 1990s.

1990: Microsoft's fiscal year revenue ending 6/30/90 exceeds $1B.

1990: NCR abandons its proprietary mainframes in favor of systems based on single or multiple Intel 486 and successor microprocessors.

1990: Apple introduces its low-end Macintoshes: The Classic, LC and IISI.

1990: Intel launches a parallel supercomputer using over 500 860 RISC microprocessors.

1990: Sun Microsystems brings out the SPARCstation 2.

1990: Microsoft along with IBM, Tandy, AT&T and others announced hardware and software specifications for multimedia platforms.

1990: The first SPARC compatible workstations are introduced.

1991: Go Corp. releases PenPoint, an operating system for pen-based computers.

1991: Advanced Micro Devices announces its AMD 386 microprocessor to compete with Intel's 386 chips.

1991: Notebook PCs are introduced by most PC vendors.

1991: HP unveils its RISC-based 9000 Series 700 workstations with exceptional price-performance.

1991: Compaq leads a group of 21 companies to launch the Advanced Computing Environment (ACE) to establish a new standard for high-end PCs and workstations.

1991: The Federal Trade Commission launches an investigation into Microsoft's business practices.

1991: Intel introduces the 486SX, a lower priced 486 chip.

1991: NCR agrees to be acquired by AT&T in a deal valued at $7.4B.

1991: Apple releases the System 7.0 operating system for Macintosh.

1991: Wang will resell IBM's PS/2, RS/6000 and minicomputers. IBM will invest $100M in Wang.

1991: Microsoft rolls out DOS 5.0 with great success.

1991: Major changes among PC dealers as ComputerLand acquires Nynex's computer stores, CompuCom acquires Computer Factory, ValCom and Inacomp merge, JWP buys Businessland and Intelligent Electronics acquires BizMart.

1991: Borland buys Ashton-Tate for $440M.

1991: SunSoft, a Sun Microsystems subsidiary, announces Solaris which is a UNIX operating

system for SPARC workstations and 386/486 PCs.

1991:- The Bell companies receive permission to enter the on-line information services market.

1991: Apple and IBM sign a historic deal--including two joint ventures: Kaleida will develop multimedia products, Taligent will develop object-oriented operating software.

1991: Apple rolls out its PowerBook notebook and Quadra Macintosh PCs.

1991: Wavetracer introduces its Zephyr massively parallel computer system with up to 8192 processors.

1991: IBM reorganizes itself into more autonomous business units and several divisions become wholly-owned subsidiaries.

1991: AT&T/NCR agrees to acquire Teradata for $520M.

1991: Many major computer companies have quarterly or full-year loses including Compaq, DEC, IBM, Lotus and Unisys, primarily due to work force reduction costs.

1991: The first general purpose pen-based notebook computers are introduced.

1991: IBM has its first revenue decline in 45 years.

1992: IBM invests $100M in Groupe Bull.

1992: Silicon Graphics buys Mips Computer in a $400M stock swap.

1992: IBM releases OS/2 Version 2.0 and ships over 1M units.

1992: Microsoft introduces Windows 3.1 and ships nearly 10M units.

1992: The core of Apple's lawsuit versus Microsoft Windows is dismissed.

1992: Sun Microsystems launches a new generation of SPARC computers--the SPARCstation 10 family.

1992: Compaq announces several new lines of PCs and becomes a price trend setter. Its low-price strategy is very successful.

1992: Ken Olsen resigns from Digital Equipment after 25 years at the helm.

1992: Sears and IBM forms a new venture, named Advantis, to compete in the value added network service market.

1992: Wang Laboratories files for Chapter 11 bankruptcy protection.

1992: IBM makes the IBM PC Co. a subsidiary.

1992: IBM follows Compaq's strategy and introduces aggressively priced PCs--also with good success.

1992: Compaq enters the Japanese market with aggressively priced PCs--as much as 50% lower than Japanese PC prices.

1992: Digital Equipment announces its next generation computer architecture--the RISC-based Alpha.

1992: Microsoft introduces Windows for Workgroup.

1992: Intel says its next microprocessor will be called Pentium instead of 586.

1992: Hewlett-Packard ships the LaserJet 4, a 600 by 600 dots per inch resolution laser printer.

1992: Novell to acquire UNIX Systems Laboratory, including Univel, from AT&T for $350M.

1993: IBM reports its worst year in history with a loss of $4.97B on revenues of $64.5B.

1993: IBM chairman John Akers resigns and after the most executive search publicity ever, Louis Gerstner becomes the new chairman & CEO.

1993: General Magic, an Apple spin-off, debuts Telescripts, a communications-intensive operating system for PDAs.

1993: Next sells its hardware business to Canon and will concentrate its effort on the Nextstep software business.

1993: Novell unveils NetWare 4.0.

1993: IBM introduces the F series of the AS/400.

1993: Lotus announces Notes 3.0.

1993: Motorola start shipping the first PowerPC microprocessor.

1993: IBM's storage division, Adstar, becomes a subsidiary.

1993: - Microsoft unveils Windows NT.

1993: Pentium-based systems start shipping.

1993: EPA's Energy Star Initiative is unveiled and most PC vendors support the program with announcements of energy efficient PCs.

1993: Apple ships the Newton MessagePad--its first Personal Digital Assistant.

1993: AT&T announces it will acquire McCaw Cellular for $12.6B.

1993: Compaq introduces the Presario, a PC family targeted for the home market.

1993: FTC ends its probe of Microsoft without any actions, but the Antitrust Division of the Department of Justice will launch its investigation.

1994: John Sculley leaves Apple after 10 years at the helm.

1993: Microsoft outlines the Plug and Play and Microsoft at Work (MAW) initiatives.

1993: IBM debuts its first workstations based on the PowerPC chip.

1993: Novell transfer the UNIX trademark to X/Open and X/Open will certify that an operating system is UNIX compliant.

1993: IBM announces OS/2 for Windows, which upgrades the Windows environment to OS/2.

1993: Sun Microsystems license NextStep and makes a $10M investment in Next.

1993: IBM say it will sell its Federal Systems division ($2.2B in yearly revenue) to Loral for $1.6B.

1994: Apple enters the on-line service market by announcing eWorld.

1994: HP becomes a Taligent partner and buys 15% from Apple and IBM.

1994: MCI invests $1.3B in Nextel Communications, a wireless service provider.

1994: Macintoshes using the PowerPC start shipping.

1994: Intel introduces the 486DX4 clock-tripling microprocessor

1994: Aldus and Adobe agree to merge in a transaction worth $525M and will form a $0.5B+ software company.

1994: Novell says it will acquire WordPerfect for $1.14B and will buy Borland's Quattro Pro for $145M.