

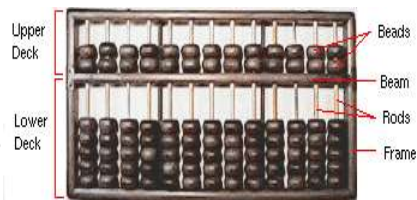
## HISTORY OF COMPUTING

Fall 2010 - CSE 111

Friday, September 3, Wednesday, September 8,  
Friday, September 10

### PRE 1642

- 3000 BC – Abacus is invented in Babylonia



- 800 AD - Chinese begin to use zero.

- ☀ From 800 to 1641 some kinda important stuff happens in math – algebra, calculus, geometry, etc.

## 1642 - 1800

- 1642-1643 – Blaise Pascal invents the first gear-driven adding machine “Pascalene”
- 1666 – Mechanical calculator that can add and subtract.
- 1777 – Multiplying calculator invented.



Photo courtesy of Wikipedia

## INDUSTRIAL REVOLUTION

- 1801 – Jacquard Loom
- Boom in development of machinery led to growth of factories and mass production of goods.



## CHARLES BABBAGE

- 1821 – Difference Engine
  - Used wheels with numbers and worked with gears like a clock. User inputted equation and turned crank until answer appeared. Only a prototype built.



○ Image from:  
<http://www.tcf.ua.edu/AZ/ITHistoryOutline.htm>

## CHARLES BABBAGE (CONT)

- 1834 – 1835, Babbage shifts his interest towards an Analytic Engine, a steam powered general purpose machine that did more than calculations.
- Actually four machines in one:
  - Receiver – instructions inputted on cards
  - Machine that performs the instructions
  - Machine that stores intermediate calculations
  - Machine that prints results to paper

## 1838 – 1890's

- 1838 – Telegraph demonstrated.
- 1854 – George Boole introduced system for logic and reasoning that will become basis of computer design.
- 1874 – Alexander Graham Bell invents and patents the telephone.
- 1893 – First four function calculator is introduced.



## 1890 CENSUS

- Herman Hollerith's Electric Tabulating System wins the competition to compute the 1890 census.
- 1896 – Hollerith establishes the Tabulating Machine Company



Photo: IBM



## 1900 - 1931

- 1907 – First regular radio broadcasts from New York.
- 1927 – First demonstration of TV in US with sound transmitted over telephone lines.
- 1929 – Color television signals transmitted.
- 1931 – Scan-tron is created



## 1931 - 1940

- 1931 – Konrad Zuse builds the Z1 – first electronic digital calculator.
- 1937 - Turing's paper presents ideas on computability.
- 1940 - Zuse builds the Z2, the first fully functioning electromagnetic computer.
- 1940 – First color television broadcast.



Photo: <http://www.bnv-gz.de/>



## 1941 - 1942

- December 5, 1941 – Zuse's Z3, a complete fully functional program – automatically controlled electromechanical computer. It has 64 word memory and takes 3 seconds per multiplication.
- 1942 – Colossus helps break German Enigma



Photo: <http://www.picotech.com/applications/colossus.html>

## 1943

- 1943 – ENIAC contracted for use in calculating ballistic tables
  - Weighed 30 tons
  - 30' x 50' space
  - 18,000 vacuum tubes
  - 360 multiplications performed per second

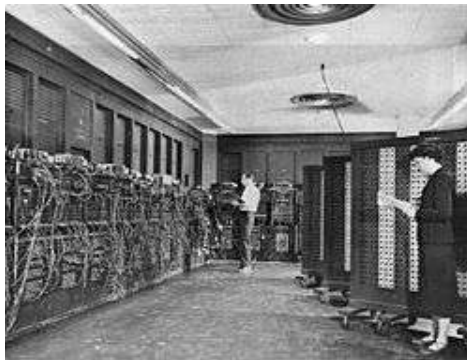


Photo: Wikipedia

## 1944

- 1944 – Mark I – uses punched paper to program and vacuum tubes and relays to solve problems



Photo from Wikipedia

## 1945 - 1950

- June 1945 – Stored program computer idea introduced by John vonNeumann.
- September 9, 1945 – First computer “bug” found at 15:45, a moth.
- ✦ 1950 – Turing test for machine intelligence published.

## 1951

- March 31, 1951 – UNIVAC I delivered to census bureau
  - 16,000 pounds
  - 5,000 vacuum tubes
  - 6,000 calculations per second
  - \$159,000
- June 16, 1951 – First programming error occurs at the census bureau.



Photo of Univac courtesy of Wikipedia


- ✦ 1951 – First American computer to implement the stored program concept is completed.

## 1952 - 1956


- 1952 – UNIVAC I predicts the outcome of the presidential election with only 5% of votes in.
- 1954 – First line printer developed.
- 1956 – First keyboard used to directly input information into a computer.
- 1956 – First programming language, FORTRAN invented.




## 1957 - 1962

- 1957 – First photograph is scanned, processed, and redisplayed by a computer.
  - 1958 – Second generation of computers (transistor computers) are produced. First generation are those made with vacuum tubes.
  - 1959 – First commercial copy machine introduced by Xerox.
  - 1962 – First department of Computer Science established at Purdue and Stanford.
  - 1962 – First video game (Spacewar) invented at MIT.
- 


## 1963 - 1969

- 1963 – Joseph Weizenbaum (MIT) develops Eliza.
  - 1964 – Mouse is invented.
  - 1964 – Third generation of computers emerges – integrated circuit
  - 1968 – Federal Information Processing Standard encourages use of six digit format YYMMDD.
  - 1969 – ARPANET – network of researches at UCLA, UC Santa Barbara, SRI, and U. of Utah goes live – Internet is born
  - 1969 – UNIX is created at AT&T Bell Labs.
- 


## 1970 - 1972

- 1970 – Floppy disks and daisy wheel printers debut.
  - 1970 – Fourth generation of computers – large scale integrated circuits: 15,000 circuits on a chip as opposed to 1,000 in third generation.
  - 1972
    - Hand held calculators introduced and makes slide rule obsolete.
    - Atari founded.
    - Email program created and sends messages across Arpanet.
- 


## 1973 - 1976

- 1973 – Xerox PARC and Alan King develop a PC that uses icons, graphics, and a mouse.
  - 1974 – Xerox PARC develops first WYSIWYG application, Bravo.
  - 1975 – IBM introduces laser printer.
  - 1975 – Xerox PARC – Ethernet and first LAN developed.
  - 1976 – IBM develops ink jet printer.
  - 1976 – Steve Jobs & Steve Wozniak build Apple I.
- 


## 1977 - 1980

- 1977 – Apple II announced and produced with 16K RAM, 16K ROM, \$1298.
  - 1978 – First word processor, Wordstar.
  - 1979 – First spreadsheet, VisiCalc
  - 1979 – Work on first database program begun – dBase II.
  - 1979 – Cell phones tested in Japan and Chicago.
  - 1979 – Pac Man and early video games appear.
  - 1980 – IBM selects PC-DOS from unknown company Microsoft as OS for its new PC.
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## 1981 - 1982

- 1981 – First commercially successful portable computer, the Osborne I: 23 pounds, 64K RAM.
  - 1982 – Commodore 64: 64K RAM, 20K ROM, \$595.
  - 1982 – Sony announces CD technology.
  - 1982 – Commercial email across 25 cities begins.
  - 1982 – Term Internet first assigned to a group of networked computers.
  - 1982 – 3,275,000 PCs sold, up from 300,000 in 1981.
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## 1983 - 1987

- 1983 - Lotus 1,2,3 combined spreadsheets, graphics, and database together in one package.
  - 1984 – Apple’s Macintosh unveiled with Graphical User Interface.
  - 1985 – Speeds reach 1 billion operations per second.
  - 1985 – Windows jumps on the GUI bandwagon.
  - 1986 – Wall Street Journal talks about Computer Aided Software Engineering.
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## 1988 - 1990

- 1988 – Internet Relay Chat debuts.
  - 1989 – 1000 hospital computer systems die  $2^{15}$  days after Jan. 1, 1990
  - 1990
    - 54 million computers in the US.
    - MS Windows 3.0 introduced.
    - First commercially available dial-up Internet access.
    - Arpanet decommissioned.
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## 1991 - 1992

- 1991
  - Mobile, pen-based computers that can read handwriting introduced.
  - World Wide Web standards released that describe framework for linking documents on different computers.
- 1992
  - Microsoft sells 3 million copies of Windows 3.1 in first two months.
  - Prodigy serves 1 million subscribers.
  - PDA announced by Apple.

## 1993 - 1997

- September 1994 – Netscape web browser becomes available.
- 1995 – Toy Story, fully generated by computer.
- August 1995 – Windows 95 is launched.
- 1995 – Ebay sells its first item
- 1996 – Heavy traffic on Internet causes World Wide Wait.
- 1997 – Worldwide:
  - 50 million World Wide Web users
  - 15 million Internet hosts computers.
  - 150 countries on the Internet.

## 1997 – 2000

- 1997 – Deep Blue beats chess master Kasparov in game of chess.
- 1998 – Google Inc is founded
- 1999 – Y2K worries cause companies to spend \$500 billion worldwide.
- 2000 – Dot com goes dot bust – growth of Internet companies comes to a screeching halt.



## 2001

- 2001 – Microsoft introduces XP as its newest Operating System.
- 2001 - Mac OS X the first Unix-based Mac OS is released.
- 2001 – Wikipedia is launched



## 2002 - 2009

- 2004 – Facebook debuts its first website
- 2004 – Mozilla releases Firefox
- 2005 – Mac announces they will use Intel processors inside the Mac
- 2007 – Windows releases Vista – Windows 7 release announced soon after
- 2007 – Apple introduces the iPhone
- 2010 – Apple introduces the iPad



## ADDITIONAL RESOURCES AND READINGS

- [http://www.comphist.org/ifip\\_report.php](http://www.comphist.org/ifip_report.php)
- <http://www.computerhistory.org/timeline>
- <http://plato.stanford.edu/entries/computing-history>
- Interesting people
- <http://www.computerhistory.org/fellowawards/hall>
- <http://ei.cs.vt.edu/~history/people.html>

