

Component 4: Introduction to Information and Computer Science

Unit 1: Basic Computing Concepts, Including History

Lecture 5

BMI540/640

Week 1

This material was developed by Oregon Health & Science University, funded by the Department of Health and Human Services,
Office of the National Coordinator for Health Information Technology under Award Number U24OC000015

Personal Computers

- Up until 1970s, large computers and mainframes were used by government, large industries and universities
- Reduced size and cost of microprocessors led to computers for personal use
- People who had been programming large machines at work and school could now own their own computers at home!

First Personal Computer Altair 8800



- Available in 1975 as a kit or fully assembled
- Programmed with switches
- Output was given with flashing lights
- Very popular with hobbyists
 - Bill Gates and Paul Allen started Microsoft with compiler for Altair



Apple I computer
Computer History
Museum
Mountain View,
California



Apple II Computer

Apple

- Steve Jobs and Steve Wozniak started Apple Computer Company in 1976
- Apple I (1976) was a kit—user had to provide keyboard, power supply and monitor.
- Apple II (1977) came with keyboard, monitor and floppy drive

IBM Personal Computers

- In 1981, IBM released its first personal computer
 - Based on Intel 8088 chip
 - Used off the shelf parts, software
- Because its architecture wasn't proprietary, led to the development of "clones"
- Used for business and personal use
- Launched success of Microsoft



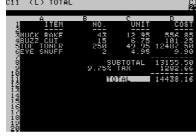
IBM PC
http://en.wikipedia.org/wiki/File:IBM_PC_5150.jpg

Software

- These machines needed software to run programs
- The operating system is necessary for coordinating with the hardware
 - DOS was developed for Apple
 - QDOS was developed for Intel Chip
 - Bought by Microsoft
 - Became MS-DOS for IBM PC

First Popular Software Program

- VisiCalc was developed by Harvard Business School students Dan Bricklin and Bob Frankston in 1978
- Spreadsheet program for PC
- 100,000+ copies were sold the first year



VisiCalc

The Internet

- In the meantime, the beginnings of the Internet were starting
- In 1969, ARPANET connected 4 universities
 - Sponsored by the US Government for connecting researchers
 - Motivated by the Cold War
- By 1971 there were 15 sites on the network
- By 1980s there were over 1000 sites on the network and the term Internet is born

The Internet



Historic World Wide Web Logo

- Other networks formed and eventually all merged to become the Internet
- In 1989, Tim Berners-Lee developed the World Wide Web software
- In 1992, Congress votes to allow commercial activity on the Internet
- In 1993, first web browsers were released
- In 1997, PubMed was launched

The Perfect Storm in the 1990s

- Personal computers became faster, cheaper and smaller as technology advanced
 - More households and people purchased computers
- Microsoft introduced Windows
 - Computer interaction easier with a mouse and graphical user interface
- The Internet was open to commercial use and browsers made exploring websites easy

⇒ The Internet Boom!

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Electronic Medical Records

- Become more pervasive in the 1990s
- In 1996, HIPAA was passed establishing rules for accessing and storing electronic medical records
- By 2000, 16% private physicians, < 10% hospitals used EMRs
- By 2005, 25% private physicians used EMRs



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Since Then...

- Personal Data Assistants introduce hand held computing
 - Smartphones replace PDAs
- Wireless networks are widely available
 - Mobile computing is now pervasive
- Social networking sites connect people
- Computers and the Internet are ubiquitous
- HITECH Act passed in 2009 to provide incentives for EMR use starting in 2011

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The Future?

- Computing technology will continue to become faster, more powerful and smaller
- Mobile and cloud computing are hot topics
- More ubiquitous?
- More embedded computers?
- Difficult to say for sure...



Cloud Computing Diagram

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