

CS 121 Course Objectives

Class One: Foundations

Describe the purpose of this class and list its course outcomes.

Describe what is meant by *software development*.

Describe four general types of computer software, and give examples of each.

Discuss the types of career opportunities that exist for computer programmers and multimedia developers.

Recognize examples of software (as opposed to hardware or information).

Computer Architecture

Describe the functions of each of these computer components: CPU, ALU, Register, RAM (main memory), mass storage, input unit, output unit.

List the different types of memory (register, RAM, disc) in order of access speed. Rank them also by size and cost per byte stored.

Describe the function of cache memory.

The Operating System and OS Evolution

List the general tasks of a computer's operating system.

Describe the purpose of the BIOS.

Discuss the significance of increased processor speeds and memory capacity in the evolution of GUIs (graphical user interfaces).

Compare/contrast these operating systems, and describe their claim to fame: Multics, OS 360, Unix, CPM, DOS, Mac OS, Linux.

The CS/MM Program and Software Development Careers

Describe the purpose of the CS/MM program's core requirements.

Discuss the similarities and differences of the concentrations in CS/MM.

Describe four general types of computer software, and give examples of each.

Discuss the types of career opportunities that exist for computer programmers and multimedia developers.

Software Development Models

Describe the purpose of a software design and development model.

List the stages of software development in a traditional *waterfall model*.

Describe the work done at each stage of this model.

Describe the *rapid prototyping model*.

Describe the *scenario-based design* model.

Discuss situations that would be suited for use of the rapid prototyping and scenario-based design models.

History of the Internet and World-Wide Web

Describe the history of the internet. In particular, discuss the significance of these events/entities:

Sputnik launched

ARPANet

e-mail

First connections to England (When did the net become international?)

TCP (Transmission Control Protocol)

NSF Net

Gopher

GML

Computer Security

What is the difference between viruses, worms, and Trojan horses?

Describe different types of "malware"

How did the first virus get started?

What is phishing?

How does virus protection software work?

What measures can a computer user take to practice safe computing?

Computing History: Ancient and Modern

Identify the time frame for these important events in computing history:

First mechanical calculator

First automatic calculator

First programmable computer designed

First use of binary code in computing

First transistor

First integrated circuit (IC)

First microprocessor

First "Home Computer"

Describe the contributions of the following individuals to the history of computing: Blaise Pascal, Charles Babbage, Ada Lovelace, John Von Neumann, John Atanasoff, Alan Turing, Grace Hopper.

Explain why the invention of transistors and integrated circuits is significant in the history of computing.

Explain what these have in common: "Jacquard Loom," "1890 census," "IBM."

Digital Media

Describe what “sampling” and “quantizing” mean when digitizing images.

Describe what “sampling” and “quantizing” mean when digitizing audio.

Describe the difference between “lossless” and “lossy” compression.

Identify the common file formats for images and audio, and state whether they are lossy or lossless.