ECE 341
Introduction to Computer Hardware

Instructor: Zeshan Chishti
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Fall 2014

Portland State University

When and Where?

- When: Mondays and Wednesdays 4:40 - 6:30 PM
- Where: EB 103
- Office hours: Mondays & Wednesdays after class, or by appointment
- TA: Leela Kamalesh Yadlapalli (leelak2@pdx.edu)
- TA office hours: Tuesday 1PM -- 2PM, Friday 5PM – 6PM in Tektronix Lab (FAB 60-01)
- Webpage: http://ece.pdx.edu/~zeshan/ece341.htm
- Go to the course webpage for:
  - Class slides
  - Course syllabus and schedule
  - Grading policies
  - Homework assignments and solutions

Course Information

- Textbook: Computer Organization and Embedded Systems, 6th Edition, *Hamacher, Vranesic, Zaky and Manjikian*. McGraw-Hill, 2011. ISBN 9780073380650 / 0073380652

- Expected background: CS201 or equivalent
  - Basic knowledge of computer organization
  - Data representation in binary, decimal, and hexadecimal notation
  - Basic knowledge of instruction set architecture
  - Assembly language programming

Grading Policy

- Homeworks 35%
  - 8 homework assignments, top 7 chosen for each student to contribute towards the 35% weightage
- Midterm Exam 25%
- Final Exam 40%
- Grading scale (tentative):
  - A: 92-100% A-: 87-91.5%
  - B+: 83-86.5% B: 79-82.5% B-: 75-78.5%
  - C+: 71-74.5% C: 67-70.5% C-: 63-66.5%
  - D+: 59-62.5% D: 55-58.5% D-: 50-54.5%
  - F: Below 50%

Other Policies

- All homeworks due in class. No extensions given
- Submit homework to the instructor soon after entering the class
- You can also submit homeworks via email before the start of class

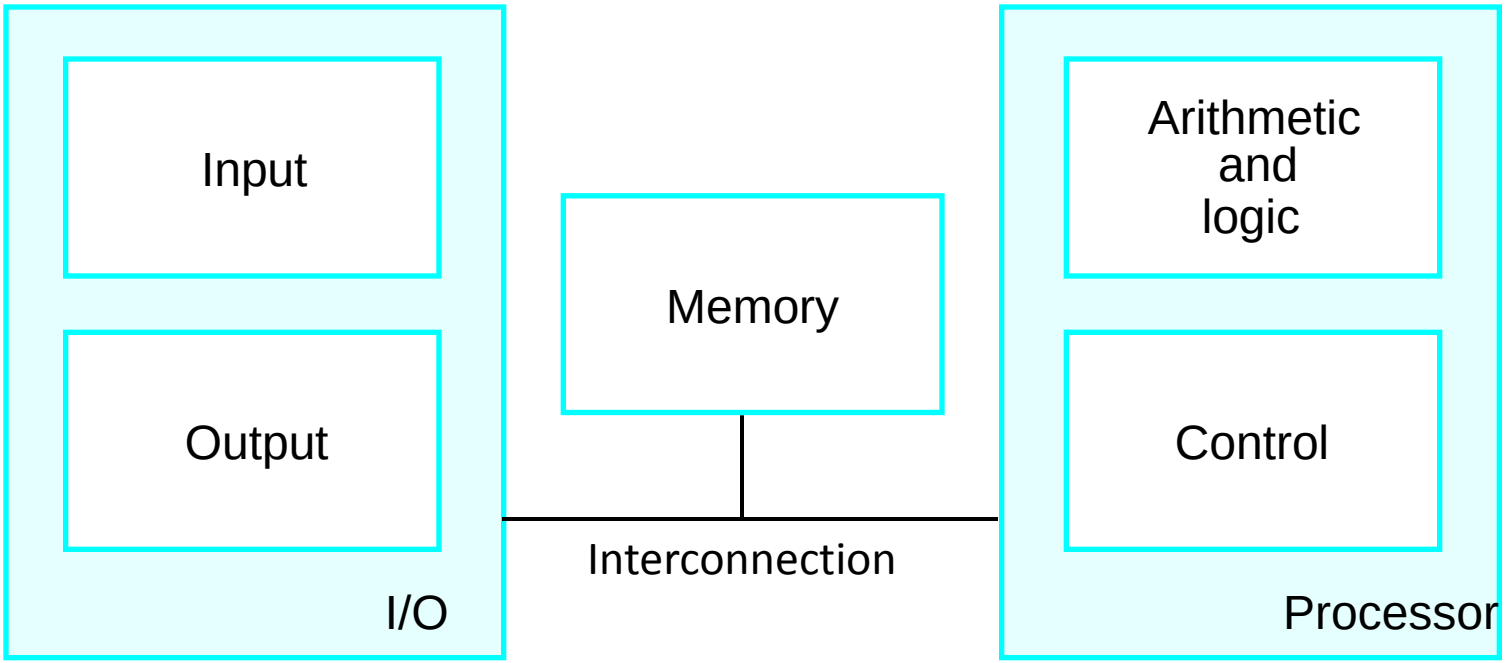
- Midterm exam in class during week 6
  - Wednesday, November 5, 4:40 – 6:30 PM

- Final exam will cover entire course with more emphasis on material taught after the midterm exam

What this course is all about?

This course is about designing a computer in hardware

End Goal: To understand the hardware implementation of different components of a modern computer



Basic functional units of a computer

Course Topics

- Digital logic – gates, flip flops, multiplexers, state machines
- Computer arithmetic
- Basic computer architecture – data path, control, and buses
- Pipelining hardware
- CISC vs RISC architectures
- Memory hierarchy and virtual memory
- Input/output techniques – polling, interrupts, and DMA