
Session 0 Introduction

Lecture Summary

Introduction and Motivation

- What is this course?
- Why study “Computer Organization and Architecture”?
- Course information and expectations

What is a Modern Computer?


1. Analog and digital representation of information
2. Digital devices represent, store and process information expressed as numbers
3. Electronic circuits implement digital devices, binary code represents circuit state
4. Binary code can be interpreted as numbers in binary system
5. Computers are multifunction: computation, control & select circuits
6. Binary code represent operations performed by physical circuits
7. Instructions, instruction sets and machine language
8. Hardware and software operations, programming and stored program computers
9. Modern computers are stored program, multifunction, electronic, digital devices

History

- von Neumann computer importance & limitations
- Early modern general-purpose electronic computers: ENIAC, EDSAC

Session Exercise

Reading List

- One-page course syllabus, and [FAQ](#)
-  1.1

Learning Outcomes

- Compare analog and digital representations of information.
- Explain the significance of binary code in modern computing.
- Identify the key characteristics of a modern electronic computer.
- Describe the von Neumann stored program computer.
- Identify landmark historical general-purpose electronic computers.

Keywords

ALU (a**rithmetic l**ogic **u**nit), analog, [computer] architecture, binary, bit (b**i**nary d**i**git), byte, component, control, CPU (c**e**ntral p**r**ocessing **u**nit), design, device, digital, encoding, [performance] evaluation, function, implementation, instruction, interconnection, memory, microprocessor, organization, performance, processor, program, realization, representation, structure