CS 223 Computer Architecture & Organization

Course Overview

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Instructors

- Dr. John Jose
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Class Schedule

- **Monday: 11 am – 11:55 am**
- **Tuesday: 11 am – 11:55 am**
- **Friday: 10 am – 10:55 am**

Syllabus

- Functional units of a computer: CPU, memory, I/O;
- Instruction Set Architecture: instruction format, addressing modes, ISAs for common CPUs and assembly languages;
- Data representation: signed number representation, fixed and floating point representations;
- Processor design: datapath components, control unit, pipelining and hazards;
- Memory: concept of hierarchical memory organization, cache memory, mapping functions and replacement algorithms, main memory organization, virtual memory;
- Input-Output: I/O transfers - program controlled, interrupt driven and DMA, I/O devices - secondary storage;
- Introduction to multi-core architectures.

Reference Books

1. Computer Organization and Architecture: Designing for Performance William Stallings, Pearson Education.
2. Computer Organization and Design: David. A. Patterson and John. L. Hennessy, Morgan Kaufmann.
3. Computer Organization: Carl V. Hamacher, Vranesic, Z.G., and Zaky, S.G.,McGraw Hill.

Grading

- Grading Scheme
  - Quiz-1 (10%)
  - Mid Semester (25%)
  - Quiz-2 (10%)
  - End Semester (25%)
  - Final Viva (30%)
    - Last week of the instruction

Teaching Assistant

- **Sivakumar S**
  - sivakumar@iitg.ac.in

Mode of Instructions

- Through MS Teams
  - Group: Grp_CS223_Jan22
- A form will be circulated in the group
  - Please provide your WhatsApp's number and Gmail-id
- We may use WhatsApp and Google meet if needed

Study Materials

- NPTEL course on Computer Organization and Architecture
  - https://nptel.ac.in/courses/106/103/106103180
- Module-1: Fundamentals of Digital Computers
- Module-2: Addressing modes, Instruction set and Instruction execution flow

Thank you & Happy Learning