University of Nairobi

School of Computing & Informatics

M.Sc. Information Systems

ICS 610: Computer Architectures

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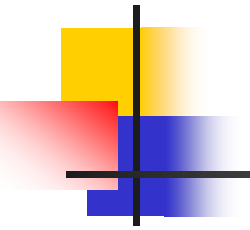
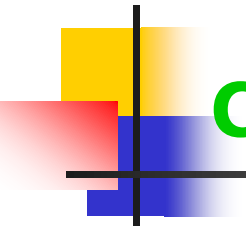
Course overview:



Objectives:

- To appreciate the machine level system architecture:
  - the conceptual building blocks and their interconnection structures.
- To appreciate how the conceptual building blocks of the system architecture are organized internally.
- To appreciate the realization of those conceptual building blocks in contemporary systems.

- **Learning outcomes:**
  - Able describe computer system conceptual building blocks, their functions and their interconnection structure options
  - Able to describe and explain the internal organization of the building blocks
  - Able to describe and discuss the various performance enhancement approaches of machines based on the von Neumann architecture
  - Able to describe and explain the realization of the conceptual building blocks in contemporary systems



Course Topics

1. A brief introduction to computers
2. System Architecture: components & interconnection
3. Memory subsystem: organization & technology
4. Input/output sub-system organization
5. Secondary/mass storage sub-system
6. CPU instruction set architecture
7. CPU Internal architecture

Performance enhancement:

8. Pipelined, superscalar, vector processing architectures
9. Array processor architectures
10. MIMD architectures: SMP, Cluster and NUMA

Delivery: Lectures

Reference Texts:

1. Structured Computer Organization, Tanenbaum A. S.;
2. Computer Organization and Architecture, Stalling W.;
3. Advanced Computer Architecture: A Design Space Approach, Sima D, etal.

Softcopy Lecture notes (slides): http://10.2.20.48

Assessment:

- Written assignments 20%; CAT 30%;
- Final exam 50%

Time table:

- Mon 5:45-7pm; Wed 5:45 to 8:30pm

Welcome!