Computer Systems Architecture
CST 363-2

H.P.D.P. Pathirana (B.Sc, M.Sc(Reading))

Intended Learning Outcomes (ILO)

After successful completion of the course students should be able to;

- ILO 1 - Understand the structure of a computer.
- ILO 2 - Analyze a computer system based on performance.
- ILO 3 - Perform effective programs in assembly language.
- ILO 4 - Understand the processors, data path and memory architecture.
- ILO 5 - Understand peripheral devices.
- ILO 6 - Differentiate pipelined and non-pipelined processors.

ILO No.	Content
ILO 1	Computer System and Components, Computer revolution
ILO 2	Performance Matrices, Instruction Execution, Execution Cycle, Instruction set Architectures, Registers, Computer arithmetic's
ILO 3	Structure of a assembly programme, MIPS Assembly Programming, syscall
ILO 4	Processor Design, Data path , Control Path , Superscalar, Memory Architecture, Memory hierarchy, RAM , Cache , Cache mapping, Cache replacement algorithms, Direct Memory Access,
ILO 5	Input and Output, Peripheral Devices , IO Modules , Interrupts, Multiprocessor, Core technology , Multi-Threading , Parallel Processing
ILO 6	Pipelined and non-pipelined processors

Content

- Computer System and Components, Computer revolution.
- Performance Matrices, Instruction Execution, Execution Cycle, Instruction set Architectures, Registers, Computer arithmetic’s.
- Structure of a assembly programme, MIPS Assembly Programming, syscall.
- Processor Design, Data path , Control Path , Superscalar, Memory Architecture, Memory hierarchy, RAM , Cache , Cache mapping, Cache replacement algorithms, Direct Memory Access,

Content (Cont.)

- Input and Output, Peripheral Devices , IO Modules , Interrupts, Multiprocessor, Core technology , Multi Threading , Parallel Processing
- Pipelined and non-pipelined processors

Assessment strategy

- Continuous assessments - 40%
  - Quiz 1 -10%
  - Assignment 1 – 20%
  - Assignment 2 – 10%
- End Semester Examinations - 60%

Attendance

- 80 % Compulsory for Eligibility of end Semester Examination.

Contents

- Numbering System.
- Computer Abstractions.
- Computer System and Components.
- Computer Revolution.
- Performance Matrices.
- Instruction Execution.
- Execution Cycle.
- Instruction set Architectures, Registers, Computer arithmetic’s.
- Practical MIPS Assembly Programming.
- Processor, Processor Design, Data path, Control Path, Pipeline, Superscalar.
- Memory Architecture, Memory hierarchy, RAM, Cache, Cache mapping, Cache replacement algorithms.
- Input and Output, Peripheral Devices, IO Modules, Interrupts, Direct Memory Access, Multiprocessor, Core technology, Multi-Threading.
- Parallel Processing

Recommended references

- Patterson,D.A ,Hennesy,L.H, 2005, Computer Organization and design, 3 rd Elsevier.
- Mano,M.M, 1993, Computer System Architecture M.Moris Mano , 3 rd Edition or Latest, Edition or Latest

Thank You !