CSE211:COMPUTER ORGANIZATION AND DESIGN

L:3 T:1 P:0   Credits:4

Course Outcomes: Through this course students should be able to

CO1 :: recognize the need and understanding of basic building blocks of digital circuits

CO2 :: discuss about the usability of various functional components of a digital computer

CO3 :: apply the knowledge of building blocks to get more insights about the working operations of various functional components of digital system

CO4 :: categorize the different types of transfer schemes and analyze the process of direct memory access

CO5 :: illustrate and getting more insights about the interconnection structure of memory

CO6 :: define pipelining and provide the technical insights about the latest trends of computer architecture

Unit I

Basics Of Digital Electronics : registers, shift registers, Introduction to combinational circuit, introduction to sequential circuits
Register Transfer and Micro Operations : Bus and Memory Transfer, Logic Micro Operations, Shift Micro Operations, register transfer language, register transfer, arithmetic logic shift unit

Unit II

Computer Organization : instruction codes, computer registers, common bus system, computer instructions, timing and control, instruction cycle, memory reference instructions, input-output and interrupt

Unit III

Central Processing Unit : General Register Organization, Stack Organization, Addressing Modes, Reduced instruction set computer, Complex instruction set computer, instruction formats

Unit IV

Input-Output Organization : Peripheral Devices, Input Output Interface, Data Transfer Schemes, Program Control and Interrupts, Direct Memory Access Transfer and Input/Output Processor, Priority interrupt, Direct memory access transfer, Input/Output processor., modes of data transfer, Processor status word

Unit V

Memory Unit : Memory Hierarchy and Processor Vs Memory Speed, Associative Memory, Memory Management, Memory hierarchy, Cache memory, Virtual memory, main memory, auxiliary memory

Unit VI

Computer Arithmetic : Addition and Subtraction Algorithm, Multiplication Algorithm

Introduction to Parallel Processing : Pipelining, Characteristics of multiprocessors, Interconnection Structures, parallel processing
Latest technology and trends in computer architecture : next generation processors architecture, microarchitecture, latest processor for smartphone or tablet and desktop

Text Books:
1. COMPUTER SYSTEM ARCHITECTURE by M. MORRIS MANO, RAJIB MALL, PEARSON

References:
1. COMPUTER ORGANIZATION AND ARCHITECTURE by WILLIAM STALLINGS, PEARSON