Computer Organization and Architecture Lab

Department of Information Technology

Lab Description:

The Computer Organization and Architecture Lab provides practical understanding of the internal working of computer systems. Students perform experiments related to digital logic, processor organization, instruction execution, and memory systems. The lab helps in correlating theoretical concepts with hardware-level operations. It strengthens analytical skills and understanding of system performance and architecture.

Tools & Software / Reference Material

S. No.	Name of the Equipment / Apparatus / Setup / Machine etc.	Model / Make / Major Specifications	Quantity Available	Working Status
1	Advanced Analog Digital Trainer Kit	Excel/ CMOS,1MHZ-100MhZ,10MHz, 1 Hz, +5v, _5V-+15 V,_15V	2	Working
			10	Working
2	Digital trainer Kit	Trinity (CMOS,1MHZ-100MhZ,10MHz, 1 Hz, +5v, _5V-+15 V,_15V)	06	Working
3	Logisim Simulator	Version 2.7.1	1	Open source software accessible through PC/Mobile

List of Experiments – Computer Organization and Architecture Lab

COs	Course Outcome
BCS352.1	Understand the operations of digital logic circuits and the organization of computer system.
BCS352.2	Design digital logic circuit for Input / Output and Arithmetic and Logical Unit
BCS352.3	Design and Implement the circuit for Control Unit of the Computer System

S. No.	Name of the Experiment	Mapped with COs
1	Implementing HALF ADDER, FULL ADDER using basic logic	CO2
2	Implementing Binary -to -Gray, Gray -to -Binary code conversions	CO2
3	Implementing 3-8 line DECODER.	CO2
4	Implementing 4x1 and 8x1 MULTIPLEXERS	CO2
5	Verify the excitation tables of various FLIP-FLOPS	CO2
6	Design of an 8-bit Input/ Output system with four 8-bit Internal Registers.	CO2
7	Design of an 8-bit ARITHMETIC LOGIC UNIT	CO2
8	Design the data path of a computer from its register transfer language description.	CO3
9	Design the control unit of a computer using either hardwiring or microprogramming based on its register transfer language description.	CO3
10	Implement a simple instruction set computer with a control unit and a data path.	CO3
11	Introduction to Logisim simulator.	CO1
12	To study and understand nomenclature, pin configurations and verification of truth tables of logic gates AND, OR, NOT, NAND, NOR Using Logisim.	CO1
13	To design a BCD adder.	CO2
14	Design and Implementation of a Priority Encoder (8-to-3)	CO2
15	Implementing and Analysing a 4-bit Synchronous Counter	CO3
16	Design and Implement a Serial-in-Parallel-out Shift Registers & Counters	CO3