Department of CSE and IT

Computer Organization and Architecture Lab (15B17CI373)



Jaypee Institute of Information Technology,Noida

1. **Introduction to Virtual Tool and Implement Digital Combinational Circuit :** Design and implement basic gates, universal gates, half adder, full adder, ripple adder , multiplexor using elementary components of digital electronics etc
2. **Design Compact Digital Circuit :** Subtractor, Adder subtractor, Carry lookup adder, Carry select, Carry save adder, Decoder , ALU with ICs and create compact digital circuit etc
3. **Introduction of 8085 Assembly Programming on 8085 Simulator:** Programming Model of 8085, Instruction set of 8085, Programming with basic instructions like arithmetic, logical, data types (like db, dw)
4. **Control Statement and Loops in 8085 Assembly Programming:** Conditional and unconditional jump instruction, Loops using jump instruction , Flag checking
5. **Arrays in 8085 assembly Programming:** Array manipulation, Bit manipulation, Flag set/reset instructions , Shift instruction, Sorting & searching in array
6. **Introduction of 8086 Assembly Programming on Emulator/ MASM**: Programming Model of 8086, Instruction set of 8086, Introduction to memory segmentation, Programming with basic instruction like arithmetic, logical, assembler directives (like DB, DW, EQU etc), Variables, Conditional and unconditional jump instruction, loops/repeat instruction , Flag checking, Array manipulation
7. **Bit Manipulation and BIOS Interrupt for I/O operations in 8086 assembly**: Bit manipulation, Accessing arrays using memory address, INT 21 software interrupt for input/output
8. **Arrays and Strings in 8086 Assembly Programming :** Accessing arrays using memory address, Accessing character’s array (string) using memory address/offset, BIOS software interrupt for strings and characters, Strings manipulation in memory’s data and extra segment
9. **Introduction of MIPS Assembly Programming on MARS Simulator**: Programming Model of MIPS, Instruction set of MIPS, Introduction to memory segmentation, Programming with basic instruction like arithmetic, logical, conditional and unconditional jump instruction, Loops using jump instruction, Array manipulation
10. **Develop Microprocessor/Microcontroller based Applications:** Developing microprocessor/ microcontroller (like 8085, 8086, MIPS, Arduino, etc) based applications like Smart garbage bin, Heart rate measuring, Smart irrigation system etc using hardware component or virtual tool (like tinkercad.com)

List of Experiments