

List of experiments

Class: IV sem VLSI Even Session 2024-25
Subject: Microcontroller and Computer architecture

Course Outcomes:

Upon successful completion of the course the students will be able to

After completion of the course, student will demonstrate the ability to:

CO1: Understand the basic concepts, working principle and programming techniques of Microprocessor 8085 and Microcontroller 8051.

CO2: Familiarize the architecture and operation of Programmable Interface Devices and realize the programming & interfacing of it with 8085 microprocessor.

CO3: Analyze the problem statements related to application areas of Microprocessor and Microcontroller and to provide engineering solutions through development of assembly language programs and interfacing diagrams

CO4: Get involved in self-learning approach to develop design Experiment / Project models using Microprocessor and Microcontroller to reveal different applications of these models to develop solutions for problems related to society and industry needs, writing Technical reports and presentations.

CO5: Describe the architecture & organization of 8085 Microprocessor and Microcontroller 8051, classify the instruction set, distinguish the use of different instructions and apply it in assembly language programming for given problem statement & develop skills for hardware interfacing and testing/verifying the performance of hardware model .

| Exp. No | Title and Problem Statement |
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| 1 | <p>Title: 8085 Architecture and Pin diagram</p> <p>Problem Statement/Aim: To study 8085 Architecture and its Pin diagram [CO 1]</p> |
| 2 | <p>Title: Data Transfer</p> <p>Problem Statement 1: WAP to load the data bytes 55H, 66H, 77H, and 88H in Accumulator, Registers B, C, D and E and 16 bit data 1122H in HL pair. [CO 1,2,3]</p> <p>Problem Statement 2: WAP to load the data bytes 55H, 66H, 77H, and 88H in memory locations C050,C051,C052 and C054.</p> |
| 3 | Title: Block transfer |

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| | Problem Statement: A block of 5 data bytes is stored in RAM locations starting at C501H. WAP to copy the data block in memory locations starting at C601H (a) In forward Direction and (b) In reverse order | [CO 1,2,3] |
| 4 | Title: Arithmetic operations on 8 bits data Problem Statement: WAP to perform Addition of two numbers stored in C501H and C502H. Place the result in C503 and C504H. Problem Statement: WAP to perform Subtraction of two numbers stored in C501H and C502H. Place the result in C503 and C504H. | [CO 1,2,3] [CO 1,2,3] |
| 5 | Title: Addition of series of data bytes Problem Statement: A series of 5 data bytes is stored in RAM locations starting at C501H. WAP to perform the addition of data bytes and save the result in C506 (sum) and C507 (carry). | [CO 1,2,3] |
| 6 | Title: Pairwise addition Problem Statement: 5 pairs of data bytes are stored in RAM locations starting at the address C501H. WAP to perform pairwise addition and save the result in same memory locations, i.e. sum replacing the first data byte and carry replacing the second one. [CO 2,3] | |
| 7 | Title: Identify largest number Problem Statement: A series of 10 data bytes is stored in RAM locations starting at C501H. WAP to identify largest number from the series, and place it C600H | [CO 1,2,3] |
| 8 | Title: Interfacing of 8255 with 8085 | |
| 9 | Design Experiment/Design Project | [CO 1,2,3,4,5] |
| 10 | Title: 8051 Architecture and Pin diagram Problem Statement/Aim: To study 8051 Architecture and its Pin diagram | [CO 1] |
| 11 | Title: Data Transfer Problem Statement: WAP to load the data bytes 55H, 66H, 77H and 2501H in Accumulator, registers R0, R1 and DPTR respectively | [CO 1,2,3] |
| 12 | Title: Block transfer | |

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| | Problem Statement: A block of 5 data bytes is stored in external RAM locations starting at 2501H. WAP to copy the data block in internal RAM locations starting from 25H (a) In forward order and (b) In reverse order | [CO 1,2,3] |
| 13 | Title: Arithmetic operations on 8 bits data Problem Statement: WAP to perform Addition and Multiplication Of two numbers stored in 2501H and 2502H. Place the result in 2503 and 2504H. | [CO 1,2,3] |
| 14 | Title: Addition of series of data bytes Problem Statement: A series of 5 data bytes is stored in external RAM locations starting at 2501H. WAP to perform the addition of data bytes and save the result in 2506 (sum) and 2507 (carry). | [CO 1,2,3] |
| 15 | Title: Pairwise addition Problem Statement: 5 pairs of data bytes are stored in internal RAM locations starting at the address 25H. WAP to perform pairwise addition and save the result in same memory locations, i.e. sum replacing the first data byte and carry replacing the second one. | [CO 1,2,3] |
| 16 | Title: To count number of negative data bytes. Problem Statement: A series of 10 data bytes is stored in external RAM locations starting at 2501H. WAP to perform to count number of negative data bytes and save the result (count) in internal RAM location with address 25H. | [CO 1,2,3] |
| 17 | Title: To swap the nibbles Problem Statement: A series of 10 data bytes is stored in external RAM locations starting at 2501H. WAP to perform to swap the nibbles of the data bytes and save the result in same memory locations. | [CO 2,3] |
| 18 | Title: Data Transfer (even numbers only) Problem Statement: A series of 10 data bytes is stored in external RAM locations starting at 2501H. WAP to identify and transfer even data bytes in internal RAM locations starting at 25H, while rejecting odd numbers. | [CO 2,3] |

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| 19 | Title: Identify largest number Problem Statement: A series of 10 data bytes is stored in external RAM locations starting at 2501H. WAP to identify largest number from the series, and place it in internal RAM location 25H. [CO 2,3] |
| 20 | Design Experiment/Design Project [CO 1,2,3,4,5] |

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