

MICROPROCESSORS AND MICROCONTROLLERS LAB

Course Objectives:

- To study programming based on 8086 microprocessor and 8051 microcontroller.
- To study 8086 microprocessor based ALP using arithmetic, logical and shift operations.
- To study modular and Dos/Bios programming using 8086 micro processor.
- To study to interface 8086 with I/O and other devices.
- To study parallel and serial communication using 8051 micro controller.

Course Outcomes:

CO1: Demonstrate ability to handle arithmetic operations using assembly language programming in TASM and training boards

CO2: Demonstrate ability to handle logical operations using assembly language programming in TASM

CO3: Demonstrate ability to handle string instructions using assembly language programming in TASM

CO4: Demonstrate ability to handle sorting operations and using assembly language programming in TASM

LIST OF EXPERIMENTS

Assembly Language Program – 8086 using TASM

1. Addition of two 16-bit numbers
2. Addition of two multi byte numbers
3. Product of two multi byte numbers
4. Division of two multi byte numbers
5. GCD of two 8-Bit signed numbers
6. Factorial of a number
7. Evaluate the given arithmetic expression
8. Evaluate given arithmetic signed expression
9. Convert two digit Packed BCD to Unpacked BCD
10. Find sum of ASCII numbers
11. Move a String from one location to other location
12. Display a String in reverse order
13. Compute length of a given String
14. Insert a character at the end of the given string

15. Delete first character of a given string
16. Sort list of numbers in descending order using bubble sort algorithm
17. Call a near procedure for converting BCD number to a binary number
18. Call far procedure defined in other module
19. Compute the factorial of a given number using recursive procedure
20. To display a string in the middle of the screen

Demonstration Programs for 8086 Trainer Kit

21. Addition of two 16-bit numbers using 8086 trainer kit
22. Addition of two 16-bit numbers with respective to address using 8086 trainer kit
23. Addition of two multi byte numbers using 8086 trainer kit
24. Subtraction of two 16-bit numbers using 8086 trainer kit
25. Multiplication of two 16-bit numbers using 8086 trainer kit
26. Division of two 16-bit numbers using 8086 trainer kit
27. Factorial of two 16-bit numbers using 8086 trainer kit

Interfacing with 8086

28. Interfacing Stepper motor with 8086 trainer kit using 8255
29. Interfacing Seven Segment Display using 8086 trainer kit and to display a string

Interfacing with 8051

30. Programming using arithmetic, logical and bit manipulation instructions of 8051
31. (a) Program and verify Timer/Counter in 8051
(b) Program and verify Interrupt handling in 8051

Additional Programs

1. (a) Read a character from a keyboard and display it on Screen
(b) Display a string on screen
2. To check for a Password

List of Equipment cost:

S. No.	Item Description	Quantity	Cost (Rs.)
1.	8086/8088 based, low cost, microprocessor trainer with on board LCD (20x4) interface for optional P.C. key board and user manual: model ESA 86/88E along with ESA PSM2 power supply and NI-CD battery	10	51,460.00
2.	8051 family of low cost micro controller trainer with on board LCD(20x4) interface for optional PC key board and user manual: model ESA 51E along with ESA PSM2 power supply and NI-CD battery	5	25,730.00
3.	8251/8253 study card interface with user manual model: IF SC 8251/8253	4	3,840.00
4.	8279 study card interface with user manual model: IF SC 8279	2	3,832.00
5.	8255 study card interface with user manual model: IF SC 8255	2	1,920.00
6.	8259 study card interface with user manual model: IF SC 8259	2	1,920.00
7.	Traffic lights interface with user manual Model: IF TRL	2	1,416.00
8.	Elevator interface with user with user manual: IF-ELV	2	1,416.00
9.	16 channel 8-bit ADC interface with user manual model: IF - 16ADC8	1	1,513.00
10.	Stepper Motor inter face with stepper Motor (3 kgcm) & power adapter with user manual : model IF-STEP	1	2,925.00
11.	Hp Pro 330 MT 500 GB HDD, 2GB RAM DDR3, Core i3, 3.0 GHz, 18.5'' (LCD monitor HP)	18	458820.00
12.	HP Compaq dx 2480 Business PC, 160 GB HDD, 1 GB RAM DDR3, Core 2 Duo 2.60 GHz, 18.5'' LCD Monitor (H.P)	15	288450.00
Total			8,43,242.00