

# **Microprocessor based System Design Laboratory (Gy)**

**Department of Computer Science and Technology, IEST Shibpur**

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## **Experiment No. 5: 8085 Assembly Language Programming – Using Monitor Routines for IO Operation**

**Objective:** The SDK being used in the laboratory has a number of IO Devices (Eg, Display Section containing 6 number of 7-segment LED modules, the Keypad having 32 keys, etc.) The manufacturer (Vinytcs) has provided with a number of functions (subroutines) as a part of the Monitor program available in the ROM part of the memory section of the SDK. **Please refer to the “Useful software routines” section (Page 46 to 58) in the user manual of the kit.**

In today's laboratory class you are to write and test 8085 programs involving those IO Devices (mainly the Keypad and the Display Section) of the kit, by using the monitor subroutines mentioned above.

**Each of you** have to write 8085 programs as specified below **in the format shown in the earlier classes.** For each program, you write the assembly code first, and then translate it to machine language using the Instruction Set Table provided to you. You can now load, execute and test the program.

**Get the program, that you have written in your notebook, signed by your teacher and upload it against the corresponding assignment in the Google Classroom.**

## **Programs**

[Consult the **2-page Instruction Set** and **16-page Instruction Set Reference Encyclopedia** for choosing appropriate Instructions while writing programs]

You will require the monitor functions documented in the **“Useful software routines” section (Page 46 to 58) in the user manual of the kit.**

1. Write a program that waits for the user to press a key and saves the code for the key at memory location 2000H.
2. Write a program that displays the contents of the memory location 2001H in the Data Part of the Display, waits for the user to press a key, upon which it returns to the monitor program.
3. Write a program that, **in an infinite loop**, waits for a key-press, upon which it displays the corresponding key-code in the Data Part of the Display.
4. Write a program that reads two Hex keys (keys labeled ‘0’ through ‘F’) from the user, forms a 1-byte number from those 2 keys (Eg, for keys ‘3’ and ‘A’, the number would be 58 (in decimal) or 3A H), and finally show it (in Hex) in the Data Part of the Display.
5. Write a program that displays the string formed by concatenating the last 2 characters of the Roll Numbers of the group members (in the 6 segments of the display section)