

EL303 μ P Interfacing & Programming Lab Project Statement

Problem Statement:

Design and implement **8051 based digital alarm clock** that can display the real time on **2x16 LCD** once it is set. Use 12-hour clock format to display time like Microsoft Windows default time displaying format. The display of time is updated every minute on the LCD screen.

Following parameters are set by a **4x3 keypad**.

- Clock Time Setting
- Alarm Time Setting

Input Format: In order to set/modify the time of clock first the user will press * and then the time i.e., hour and minute values (HH MM --- 2-digit each) followed by either * or # key.

Example for **Time setting**: * 10 44 * means the clock should start ticking from 10:44AM. However, * 10 44 # means the clock should start ticking from 10:44PM.

Example for **Alarm setting**: # 10 44 * means the alarm will start ringing at 10:44AM. However, # 10 44 # means the alarm will start ringing at 10:44PM. Alarm must ring for at least 5 seconds. **Buzzer** must be used for alarm.

If the input is not according to the mentioned format then the string “Wrong Input” must be displayed on LCD.

	Attributes	Complex Activities
1	Range of resources	Equipment: 8051 trainer kit/ Vero board, 8051 uC, Jumper wires, Keypad, LCD, Buzzer Material: text book or online resources Technology: Keil software, Proteus
2.	Level of interaction	Discussion with group members
3.	Innovation	use of assembly language to efficiently program the microcontroller for this system
4.	Consequences to society and the environment	N/A
5.	Familiarity	N/A

Project Deliverables:

- Provide block diagram of the system to be designed, where each block represents a specific task/module in the design. Clearly mention input(s) and output(s) of each module. Identify and mention algorithm/technique to be used in module. Make smaller modules of the project and assign the modules among the group members along with the timeline (In tabular form).

(Maximum 3-pages)

[SLO-5.1, 11.1]

Deadline: December 13, 2020

- Provide two different solutions to design the required system and select one among the two through their comparison and contrast, to justify your selection. Also identify the hardware required to make this project and estimate the budget in a tabular form.

(Maximum 5-pages)

[SLO-5.2, 5.3, 11.3]

Solution should include the following:

Hardware circuitry required with proper diagrams and calculations.

Description of complete algorithm.

List of components required.

Simulation of the selected solution.

Deadline: December 20, 2020

- Hardware/Simulated System Evaluation in lab sessions

[SLO-5.3,5.5,

9.1,11.2,11.5,11.6]

Deadline: December (22/24), 2020

- List down the limitations and suggest improvements in the proposed design of the system.

(Maximum 2-pages)

[SLO-5.4]

Deadline: December 27, 2020

