Embedded Systems

Sheet 4

Interfacing with Relays and Motors,

IR Communication,

Interfacing LCD Display Devices

For the following questions: provide both the software part and draw the hardware schematic for all required embedded systems.

Q1. Develop an embedded system that control a fan speed based on the measured temperature value. The system should set increase the fan speed if the temperature value goes high.

Q2. If the satellite dish position is controlled by three motors, develop an embedded system that allow user to control the rotation of each motors using three potentiometers.

Q3. It is required to control the fan speed using a remote control with infra red sensor, develop two embedded systems (sender/receiver) that allow user to supply four speed levels (Off, Slow, Medium, Fast).

Q4. Develop an embedded system that shows temperature value in an LCD display. Also the system allow user to show min, max, average temperature value in the last hour. User can switch between those values using a single push-button. If the user leaves the button for 30 second the system return to the main screen and show the current temperature value again.

Q5. With LCD display and two push-buttons, develop an interactive system that allow user to perform the following:

1. Set the fan speed (Off, Slow, Medium, Fast)
2. Read the temperature
3. Turn on-off the room temperature using a Relay

Use the first button to toggle between options, and the second button to apply the action.

Q6. Develop an LCD display that can show an Arabic word (مصر).

Q7. With Graphics LCD, develop an embedded system that shows current room temperature inside a rectangle.