Embedded and Real-Time Systems

Project 3

Due to Aban 29th

In this project you are going to connect KL25Z board to a PC in order to communicate with it. Install a terminal program on a PC and connect the board to it. The link below is helpful, regarding this matter:
https://os.mbed.com/handbook/Terminals

As the first step, attach a temperature sensor, an LED, a buzzer and two pushbuttons to the board.

At the start of your program, the following line should be displayed in the PC terminal program:
"-$-> Enter your command:"

Now the terminal user can enter one of the following values to do the described affair:

1- Entry: temp
   Function: Get the current temperature from the temperature sensor attached to the board and show it in Celsius scale in the PC terminal.
2- Entry: on
   Function: Turn on the LED attached to the board.
3- Entry: off
   Function: Turn off the LED attached to the board.
4- Entry: play
   Function: Play the song from your previous project.

P.S. You can write a program to map the output of your temperature sensor to the Celsius scale. (Since we are using "mbed.h" library, it is not needed to use the ADC module of the board. Instead, simulate its behavior using a software code.)

After all, you should attach the pushbuttons to the board to receive user interrupts. When the user pushes the first button, the line below should be printed in the PC terminal and then your system should wait for 5 seconds:

"User interrupt 1 has been received."

If the user pushes the second button, no matter when, the line below should be printed in the PC terminal and then your system should wait for 5 seconds:

"User interrupt 2 has been received."

Pay attention to the point that the interrupt from the second button has a higher priority and it halts the wait in the ISR of the first button. The other important point is that if the system is waiting in the second button's ISR and the user pushes the first button, the ISR of the first button should be run after the waiting in the second button's ISR. Each button will not be pressed twice in a row while the ISR of the first press is still running.

After each interrupt and after completion of each command, your system should go back to command-receiving state.

Deadline: Aban 29th, 23:55

sinamahdipour@yahoo.com

narges.sayah75@gmail.com

sare.soltani74@gmail.com