HW5: Slot Machine
CMPE 311

Everybody would have enjoyed playing slot machine and winning stuff. Now it’s time for you design one.

Typically Slot Machine is consists of circular rolls which rotate until you stop them, You will basically use LCD, Joystick, Buzzer and Led for making a slot machine on your own.

**Functionalities of Components:**

**JOYSTICK:**

  - UP – Reset
  - Down – Continue rotation
  - Right – See Score (LCD – Screen 2)
  - Left – Go back to game (LCD – Screen 1)
  - Centre – Stop the rotation

Below both functionalities will be used going through game.

**LED** – write function to blink led (led lit time is 500ms)

**Buzzer** – write a function to Beep from Buzzer (Beep time is 500ms)

**LCD**

  - **Screen – 1**
    
    LCD can hold maximum of 6 digits. Screen -1 will be divided into two parts: The Left most Part is a Single Digit which shows number of iterations remaining. Right most part is 3 digits which represent 3 circular rolls of slot machine.

    X XXX

  - **Screen – 2**
    
    Holds calculated combined score of all your iterations.

    XXX

**Objective of game:** you will have 10 chances to score 150 points.

**How to play:**

Upon the start of the game Screen – 1 is shown on LCD, which should be 0 000. If you press Joy Stick Down button slot machine rolls should start rotating and the number of iterations left should be 9. When the user presses the Center button rolls will stop, and the sum of values in rolls is added to the total score.
To continue, press the Down button, continue doing this until you reach the maximum number of iterations or you gain 150 score to win. After every stopping of rolls the code should check if the current score meets winning score. If the user wins, then LED blinks twice and buzzer beeps twice. After the last iteration, if the user was unable to achieve winning score, then the buzzer beeps five times without LED blinking.

Some functionalities in How to play:

Calculating of points: Rolls should stop at random numbers when you press center button on JOY STICK. SUM all the three numbers on JOY STICK Screen currently. Add to Total score that is shown in Screen – 2.

Continue Game: Game should continue After Stopping by using Down Press on JOYSTICK. Number of iteration should be decreased by one and rolls should start rotating.

Rotation of rolls: we have 3 rolls and each rolls should rotate at different speed. For example, 1st Digit changes in 10ms, 2nd one should change at 15ms, 3rd one at 20ms. Max duration for Digit in any roll should not exceed 200ms i.e., rate of change of Digits should be more 5 values/sec. Rotation should go on until center press.

Scrolling Between Screens: At any time, the user should be able to switch between screens using Left and Right press.

Note:
This HW is expected to review of the majority of what you did in the past projects and is meant to examine your practical learning in this class. No additional code or formal discussion by TAs is needed to finish this project. However you can ask any question from TAs regarding the project and see their suggestions.

Couple of Hints:

- You can use LCD code (which probably you should be good at using it by now)
- You can use either interrupts or DDR registers for buttons whichever is convenient for you
- You can use timers, delay based loops for rotation of rolls
- Use DDR registers for LED blink and Buzzer beep.