CSE 230 Project 2: LED Pattern Generator

Learning Objectives:

- Use PLP branch instructions
- Read from a memory mapped I/O device

The Task:

Write a program in PLP assembly that repeatedly reads the value of the switches (address: `0xf0100000`) and displays a pattern on the LED array based on what switches. Each time the switch value is read, the pattern should be displayed (regardless of whether the switch value has changed or not since the last time it was read). The table below indicates the pattern that should be displayed for each possible switch setting:

Switch Number	Hexadecimal Switch Value	Binary Switch Value	Decimal Switch Value	LED Pattern
0	`0x00000001`	`0b00000001`	1	Turn on LEDs 0, 1, 2, and 3, then set all 8 LEDs to off
1	`0x00000002`	`0b00000010`	2	Turn on LEDs 4, 5, 6 and 7, then set all 8 LEDs to off
2	`0x00000004`	`0b00000100`	4	Create a scrolling pattern that moves from right to left starting with LED 1 and skipping every other LED. Only one LED should be on at any given time (i.e., LED 1, then LED 3, then LED 5, then LED 7) and the pattern should end with all LEDs off.
Other	Other	Other	Other	All LEDs off

Hint: Logical shifts are not required to complete this project, but they can be used to make your program shorter and more readable than hard coding every value to be written to the LEDs. Shifts can also be useful to generate the value that you compare with the value of the switches.

Deliverables:

1. Take the Project 2 Pre Quiz (2 points)
2. Submit your program on Canvas with the format: *Firstname_Lastname_project2.plp* (16 points)
3. Take the Project 2 Post Quiz (2 points)