Project: Assessment1

Inputs:

* 2 push buttons (B1 and B2)
* 1 LDR (light sensor)
* 1 ultrasonic sensor

Outputs:

* 1 green LED (indicating sufficient settings for reading a book)
* 1 yellow LED (substituting the room’s light bulb)
* 3 red LED (time indication)

Requirements:

1. You are only allowed to use 1 analog pin for push buttons input (both of them).
2. Use the LDR to accomplish the following convention: If the light intensity in a closed room (assuming light intensity in the room is average everywhere) is enough to clearly read a book, then turn on the green LED. Otherwise, turn it off.
3. If the Ultra-sonic sensor detects an object less than 10cm away, turn on the yellow LED for 10 min if it was off or if it was supposed to keep on for less than 10 min.
4. On single pressing B1: ascendingly cycle through the following timer durations for the on state of the yellow LED {2 mins, 10 mins, 15 mins, 30 mins}. E.g., if the yellow LED is off, then a single press sets the timer to 2 mins and turns the yellow LED on. If the yellow LED is supposed to turn off in less than 2 mins, then a single press sets the timer to 10 mins. If the yellow LED is supposed to turn off in less than 10 mins but more than 2 mins, then a single press sets the timer to 15 mins...etc.
5. On single pressing B2: cycle through the same timer intervals in reverse order (descendingly).
6. On simultaneously pressing B1 and B2: flash the Yellow LED 3 times then turn it off.
7. On double pressing B1: turn off the Yellow LED.
8. On double pressing B2: set the yellow LED timer time to “30 - the current timer value”. E.g., if there were 11 mins left for the yellow LED, then on double pressing B2, 19 mins are left instead.
9. On triple pressing B1: set the yellow LED timer to 30 mins (and turn it on if it was off).
10. On long pressing B1: invert the convention of the green LED in the second point.
11. Use the 3 red LEDs to always indicate the time left before the yellow LED turns off. Use convenient way to represent the time left using different red LEDs configurations, where the different configurations are equidistant in time. The maximum timer value is 30 mins.

Note: the kit includes 330 ohm and 10k ohm resistors.