ET387 Robotics – Extra Credit   15 points total   Name:_____

Write a single program (Arduino sketch based on diagram below) that will include these features (3 points each towards class grade, 15 points total). Note: LED = pin 5, Switch = pin 7, Servo = pin 11, Potentiometer= pin A0

You must demonstrate the lab instructor that this is working to get the proper credit for it. You can get partial credit for the parts that work.

1. Create a menu so that a user can select the following in the Serial Monitor:
   Please choose one of following options:
   Press 1 to turn ON & OFF led
   Press 2 to adjust LED blink rate
   Press 3 to control LED brightness
   Press 4 to control Servo sweep

2. When you type 1 on the keyboard it will allow you to turn "LED on" when you press push button and "LED off" when you press button again.

3. When you type 2 on the keyboard it will allow you to turn "LED on" when you press a push button and "LED off" when you press the push button again. Also:
   a. LED will blink when is on.
   b. LED **blink rate** will be adjustable with connected variable resistor (pot) with adjustable blink time will be between 100µs to 1000µs

4. When you type 3 on the keyboard it will allow you to turn "LED on" when you press push button and "LED off" when you press button again.
   a. LED **brightness** will be adjustable with connected variable resistor

5. When you type 4 on the keyboard potentiometer (variable resistor) will control 180° sweep of servo motor arm.
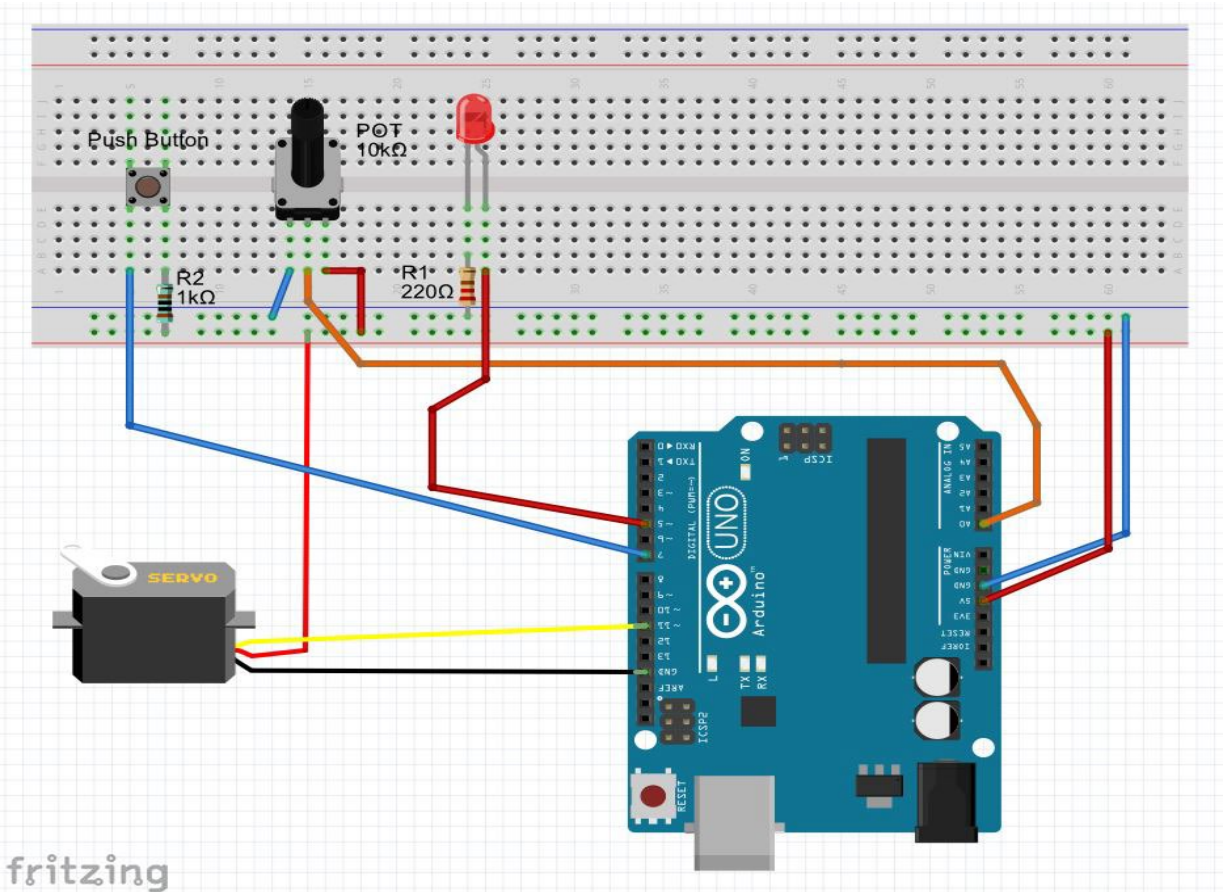
Once you select, program will display your choice, for example after selecting option number 3, computer (serial monitor) will display a message "Running LED brightness control program."

Suggested commands:

```
1. Serial.begin()
2. Serial.available()
3. Serial.read() or Serial.parseInt()
4. Serial.print() and Serial.println()
5. if()
6. switch case
7. map()
8. analogRead()
```