Remember to use correct resistors in your circuits. If you are unsure refer to https://mehackit.org/en/courses/electronics\_and\_programming\_basics/

Arduino Challenges

Your customer wants a 3 colored lighting system where the user can choose which colours are providing light and how bright the lights are. If possible, the customer would like to adjust each brightness on its own.

Customer wants to have a servo that turns from left to right or right to left at constant pace. He wants to have a separate adjustment that changes the speed, but the moved boxes cannot be jostled.

Customer wants to have led strobe light, but she wants to be able to adjust the frequency of the light turning off and on during the night. Desing a system that can stores a number of clicks and the time it took to input them and that otherwise keeps the flashing happening at the stored rate.

Customer wants a rhythm instrument that keeps the same tempo until manually altered. He wants to be able to alter the pitch of the sound up or down just like going up a half step on piano keyboard.

Customer wants three different memory games. Produce one or all three if you feel like it

1. The game always shows the same lights in the same order but always adds one more to the end. The game should be able to go to at least 10 consecutive lights. The player then repeats the sequence.
2. The game shows random lights in random order. The shown number increases each round, but there is no memory between rounds. This game should go at least round 6. The player repeats the sequence.
3. The game shows a random 4 light sequence each round. The time the lights are shining and the total time to answer decreases each round.

Customer wants to have led strobe light, but she wants to be able to adjust the frequency of the light turning off and on during the night. Desing a system that can store a number of clicks and the time stamp of each click. Once the saving period is done the strobe should keep flashing until it receives new input.

Desing a 4-operator calculator using leds, potentiometer and at most 2 switches. The calculator should be capable of adding, subtracting, multiplying and dividing, at least as long as the results and the inputs are between 1-10. For extra challenge you can increase the range of results and inputs and maybe add other operators.