Assignment 1

# 1. What is a Prototype? What are Open source and closed source prototype platforms?

A prototype is an early sample, model, or release of a product built to test a concept or process. It is a tangible representation of an idea, used to validate design choices, test functionality, and gather feedback. Prototypes can vary in fidelity from simple sketches to fully functional models.  
  
Open source prototype platforms are platforms where the design, software, and hardware specifications are freely available to the public. Users can modify, share, and distribute their versions of the platform. Examples include Arduino, Raspberry Pi, and BeagleBone.  
  
Closed source prototype platforms are proprietary, meaning their design and software are controlled by a single company or entity. Users cannot modify or distribute the platform without permission. Examples include Intel's Edison and various proprietary development boards from companies like Texas Instruments or Microchip.

# 2. What is Arduino?

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It consists of a microcontroller that can be programmed to control sensors, lights, motors, and other physical objects. Arduino boards can be used to create interactive projects, prototypes, and even full-fledged products. The platform is designed to be accessible for beginners, yet flexible enough for advanced users to create complex systems.

# 3. Write down Arduino Uno R3 Key Specifications:

Main Processor: ATmega328P microcontroller

Memory:

- SRAM: 2 KB

- Flash Memory: 32 KB (0.5 KB used by bootloader)

- EEPROM: 1 KB

I/O Pins:

- 14 Digital I/O Pins (6 of which can provide PWM output)

- 6 Analog Input Pins

- 1 Serial (UART) Port

- 1 SPI Port

- 1 I2C Port

- 1 Reset Button