***IOT Lab Assignment-1***

1. *What is a Prototype?*

*What are Open source and closed source prototype platforms?*

A **prototype** is an early model of a product used to test concepts and functionalities.

**Open Source Prototype Platforms**

These platforms have publicly accessible source code, allowing modification and distribution. Examples include:

* **Arduino**: Electronics platform for interactive projects.
* **Raspberry Pi**: Affordable microcomputer for programming and projects.

**Closed Source Prototype Platforms**

These platforms have proprietary source code, restricting modification and distribution. Examples include:

* **MATLAB**: Numerical computing environment.
* **LabVIEW**: Platform for data acquisition and control systems.

2. *What is Arduino?*

**Arduino** is an open-source electronics platform with a microcontroller and easy-to-use software. It reads inputs (like sensors) and turns them into outputs (like LEDs or motors). It's beginner-friendly and versatile, with a large community providing support and resources.

3. *Write down the Arduino Uno R3 Key Specifications.*

The Arduino Uno R3 is a popular microcontroller board with the following key specifications:

* **Microcontroller**: ATmega328P
* **Operating Voltage**: 5V
* **Input Voltage (recommended)**: 7-12V
* **Input Voltage (limit)**: 6-20V
* **Digital I/O Pins**: 14 (of which 6 provide PWM output)
* **Analog Input Pins**: 6
* **DC Current per I/O Pin**: 20 mA
* **DC Current for 3.3V Pin**: 50 mA
* **Flash Memory**: 32 KB (ATmega328P) of which 0.5 KB used by bootloader
* **SRAM**: 2 KB (ATmega328P)
* **EEPROM**: 1 KB (ATmega328P)
* **Clock Speed**: 16 MHz
* **LED\_BUILTIN**: 13 (on-board LED connected to digital pin 13)
* **USB Connection**: USB Type-B for programming and power supply
* **Power Jack**: Barrel jack for external power supply
* **ICSP Header**: For direct programming of the microcontroller
* **Dimensions**: 68.6 mm x 53.4 mm

