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IOT & AUTOMATION

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.

**Open Source Prototype Platforms**

* Platforms where the source code is available to the public for use and modification.
* **Examples**:
  + Arduino

**Closed Source Prototype Platforms**

Platforms where the source code is proprietary and not available to the public.

* **Examples**:
  + MATLAB/Simulink

1. **What is Arduino?**

**Arduino is an open-source electronics platform based on easy-to-use hardware and software. It consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or Integrated Development Environment (IDE), that runs on your computer and is used to write and upload computer code to the physical board.**

1. **Write down Arduino Uno R3 Key Specifications:**

**The Arduino Uno R3 is one of the most popular and widely used Arduino boards. Here are its key specifications:**

1. **Microcontroller: ATmega328P**
2. **Operating Voltage: 5V**
3. **Input Voltage (recommended): 7-12V**
4. **Input Voltage (limit): 6-20V**
5. **Digital I/O Pins: 14 (of which 6 provide PWM output)**
6. **PWM Digital I/O Pins: 6**
7. **Analog Input Pins: 6**
8. **DC Current per I/O Pin: 20 mA**
9. **DC Current for 3.3V Pin: 50 mA**
10. **Flash Memory: 32 KB (ATmega328P) of which 0.5 KB is used by the bootloader**
11. **SRAM: 2 KB (ATmega328P)**
12. **EEPROM: 1 KB (ATmega328P)**
13. **Clock Speed: 16 MHz**
14. **LED\_BUILTIN: 13**
15. **Length: 68.6 mm**
16. **Width: 53.4 mm**
17. **Weight: 25 g**

**These specifications make the Arduino Uno R3 a versatile and reliable choice for various electronic projects, from simple LED blinkers to more complex sensor and actuator systems.**

