NAME: Sayan Das

REG NO. FET-BAML-2022-26-16

IOT 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 that is built to test a concept or process. It serves as a working model to validate ideas, explore potential design solutions, identify potential issues, and refine the final product before mass production or full-scale development. Prototypes can vary in fidelity, ranging from simple sketches or models to fully functional versions that closely resemble the final product.

Open Source Prototype Platforms: These platforms have publicly accessible design files, software, and hardware documentation. Users are free to view, modify, and distribute the platform according to the terms of the open-source license. Open source platforms encourage collaboration and community-driven development. An example of an open-source prototype platform is Arduino.

Closed Source Prototype Platforms: These platforms are proprietary, meaning the design files, software, and hardware documentation are not publicly accessible. The manufacturer retains control over the platform, and users typically cannot modify or redistribute the software or hardware. A closed-source platform may offer a more polished product but often limits customization and transparency. An example of a closed-source platform could be a proprietary development board provided by a specific company, where the design and code are not shared with the public.

* + **2. What is Arduino?**

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It consists of microcontroller boards and a development environment (IDE) for programming the boards. Arduino boards are designed to make it simple for anyone to create interactive projects, ranging from simple LED blinkers to complex robots. The platform supports various programming languages, including C and C++, and allows for the development of embedded systems.

* + **3. Arduino Uno R3 Key Specifications**

Main Processor:

1. Microcontroller: ATmega328P

Memory:

1. SRAM (Static Random-Access Memory): 2 KB
2. Flash Memory: 32 KB (of which 0.5 KB is used by the bootloader)

(iii) EEPROM (Electrically Erasable Programmable Read-Only Memory): 1 KB

I/O Pins:

* 1. Digital I/O Pins: 14 (of which 6 can be used as PWM outputs)
  2. Analog Input Pins: 6
  3. PWM Output Pins: 6
  4. UART (Serial Communication): 1
  5. I²C (Inter-Integrated Circuit): 1
  6. SPI (Serial Peripheral Interface): 1
  7. LED\_BUILTIN: Pin 13

These specifications make the Arduino Uno R3 a versatile board suitable for a wide range of beginner to intermediate projects.