Devanshu Surana
PC-23, Batch C1
1032210755

MAIoT Lab Assignment 1

Problem Statement:

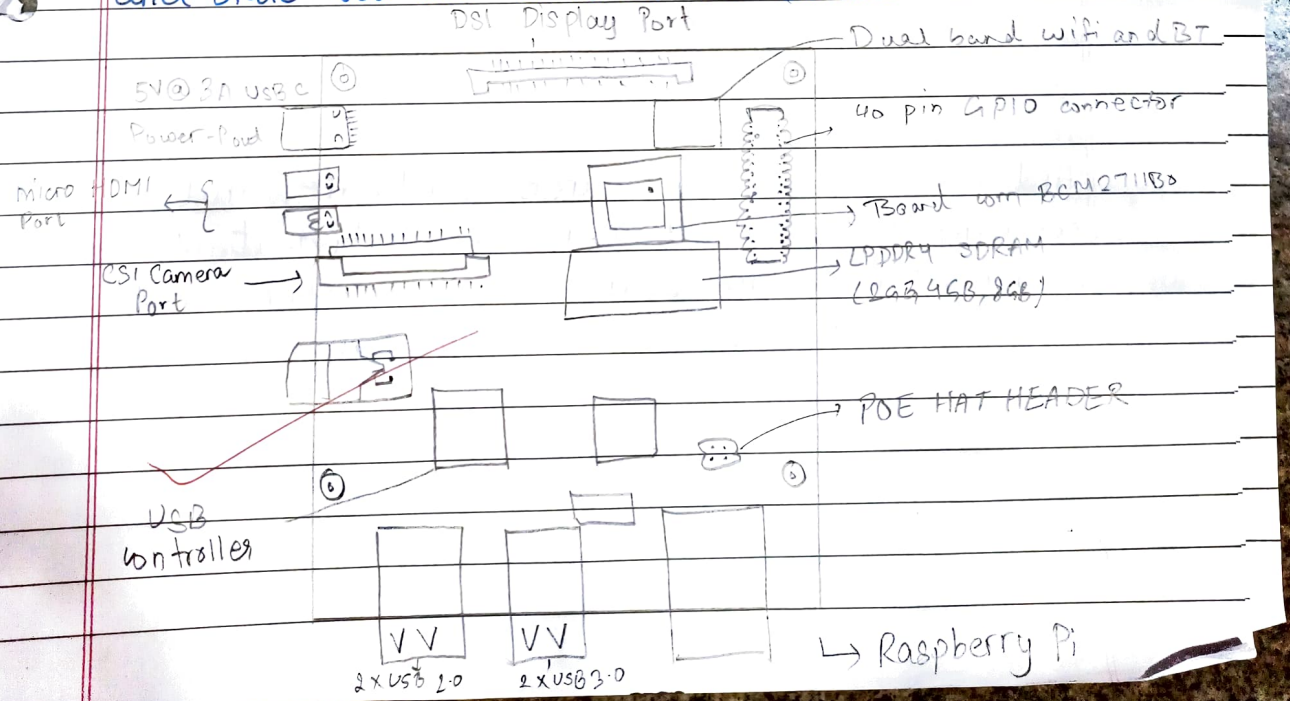
Study of IoT architecture, development platforms and various ARM SOC's such as Raspberry Pi/ ESP8266 boards/r. Beagle board/Arduino Uno etc. To perform OS installations used to build IoT devices.

Objectives:

1. To understand IoT development boards such as Raspberry Pi, Arduino and their Operating systems.
2. To prepare the development boards ready for experiments.

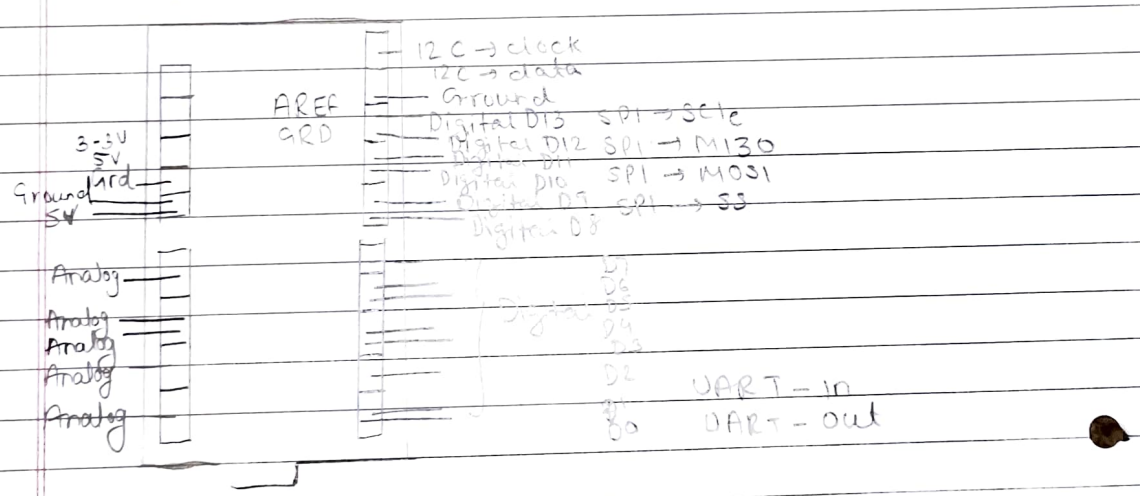
Theory:

1. Draw board layout diagram of Raspberry Pi or Arduino and state various units on the board.



Raspberry Pi is series of small single board computer developed ~~by~~ in the United Kingdom by the Raspberry Pi Foundation. it is leaned towards the promotion of teaching basic computer science in schools and in developing countries. It is typically used by computer and electronic hobbyists, due to its adoption of the HDMI and USB standards.

2) Draw Pinout diagram of either Raspberry Pi or Arduino development board.



ARDUINO UNO

Arduino is an open source hardware and software company, project and user community that designs and manufactures single board microcontrollers and microcontroller kits for building digital devices.

3) Difference

Arduino

1) The control unit of
2) Arduino

3) Difference.

Arduino

1) The control unit of the Arduino is from the ATmega family
2) Arduino works on the basis of a microcontroller.
3) Arduino boards have a very simple structure of software and hardware.
4) Arduino has an 8-bit Architecture.
5) It has a higher cost efficiency because its comparatively cheaper.

Raspberry Pi

1) The control unit of the Raspberry Pi is from the ARM family.
2) Works on the basis of microprocessor.
3) Raspberry Pi boards have a comparatively complex ~~structure~~ software and hardware architecture
4) Raspberry Pi has a 64-bit architecture.
5) It has a lower-cost efficiency because its comparatively cheaper.

Conclusion:

Thus, we have studied the IOT structure, development platforms and various ARM socs such as Raspberry Pi and Arduino Uno, etc. and also understood IoT development boards such as Raspberry Pi and Arduino and their OS.

FAQ's

1] State briefly IoT platforms available other than Raspberry Pi and Arduino.

→ 1) Particle: Offers a range of development kits designed to connect to the internet over wifi cellular.
2) Adafruit: offers one of the best online spaces to learn about DIY electronic hacking.
3) Sparkfun: A large retail store that sells everything from development kits, breakout boards to sensors.
4) Espressif: Espressif develops wi-fi and Bluetooth low-power IoT hardware solutions.

2] List important companies working in this domain.

→ 1] Samara
2] Vates
3] Oxagile
4] Verizon
5] HQ software Industrial IoT company.
6] IBM
7] Bosch

3] List and state applications of IoT.

→ 1] Creating better enterprises solution
2] Integrating smarter homes.
3] Building smarter cities
4] Upgrading supply chain management.
5] Installing smart grids.
6] Integrating connected factories.

4] List your favourite websites in the field of IoT learning.

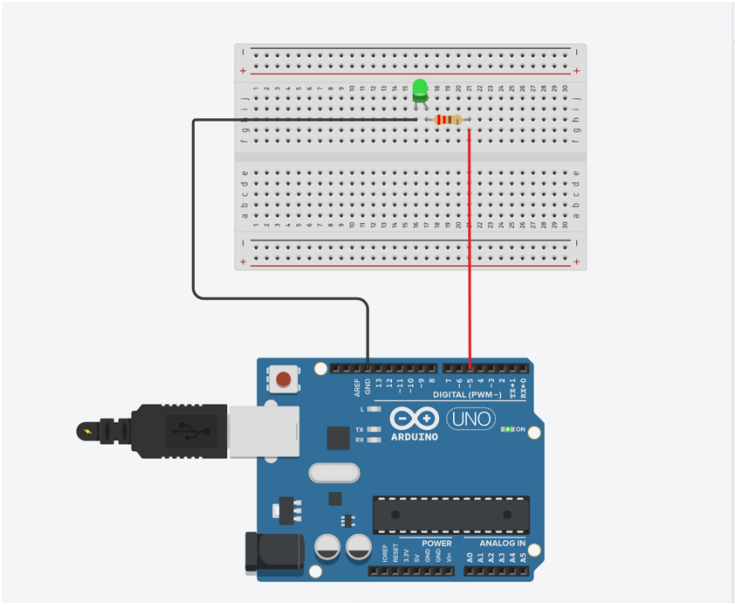
→ www.techtarget.com/iotagenda/
www.hackster.io/projects/tags/internetofthings
www.blog.bosch-digital.com
https://theinternetofthings.eu/iotcouncil-news

5] Name only 2 books which are popular for IoT.

→ "The Internet of Things" by Samuel Greengard
"Getting started with Internet of things" by Uno pfister.

6] List and state IoT platforms.

→ Amazon web services (AWS) IoT platform
Microsoft Azure IoT
Google IoT
IBM Watson IoT
Ciso IoT, Cloud Connect
Oracle IoT Intelligent Applications.



1 (Ardu

```
// C++ code
//
const int led=5;
void setup()
{
  pinMode(led, OUTPUT);
}

void loop()
{
  digitalWrite(led, HIGH);
  delay(10); // Wait for 1000 millisecond(s)
  digitalWrite(led, LOW);
  delay(10); // Wait for 1000 millisecond(s)
}
```