Networking and Cloud

1. Introduction to Virtualisation/Networking

Lectures

- Introduction to computer networking
- Introduction to virtualisation

Lab

- Create virtual instance using Virtualbox
- Bootstrap virtual instance using Vagrant

2. Link and Internet Layer

Lectures

- Physical Interfacing, MAC Addresses
- Network Layer, IP addressing, IPv6.

Lab

- Provision virtual network (3 boxes)
- Packet Sniffing using tshark

3. Transport and Application Layer Protocols

Lectures

- TCP, UDP

- HTTP, FTP,DHCP and IPv6

Lab

- Java Sockets across Virtual Network (IntelliJ)
- Connect Device (pi) to virtual network

4. Device Messaging and wireless Networking protcols

Lectures

- WIFI, Bluetooth
- MQTT and Messaging

Lab

- RabbitMQ on Pi
- The Physical Web (Turn Pi into BLE Beacon)

5. Cloud Platforms and Insfrastructure as a Service

Lectures

- Amazon Web Services for Infrastrucure
- Amazon IoT

6. Cloud Platforms: IoT services

Lectures

- IoT Architectures
- IoT Applications

Lab

- IoT Case Study (Precence detection Smarthome app)