Al Hussein
Technical University
جامعة الحسين التقنية

Internet Of Things

Getting Started with Raspberry Pi

RaspberryPi

Prepared by:

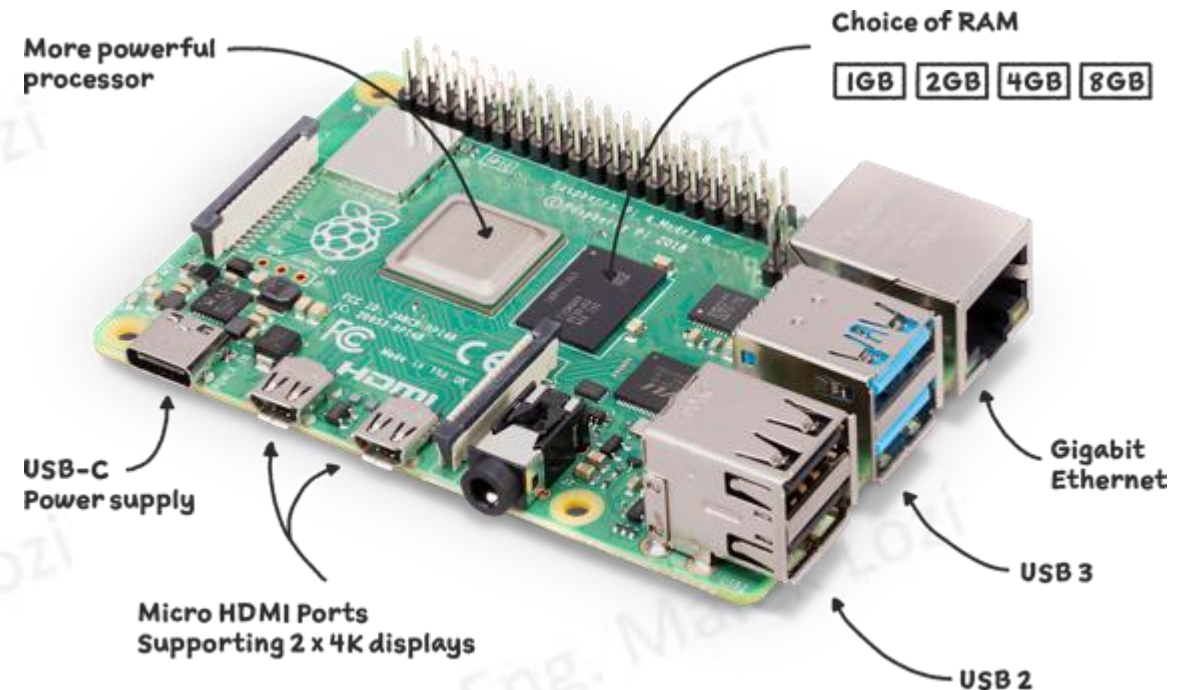**Dr. Murad Yaghi**

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Introduction

- **Raspberry Pi is a credit card sized minicomputer**

- **Can do basically anything a computer can do**

- **It has two things going for it**
  - **The size**
  - **Readily accessible GPIO pins**

- **Low power computer**

More powerful processor

Choice of RAM
1GB 2GB 4GB 8GB

USB-C Power supply

Micro HDMI Ports Supporting 2 x 4K displays

Gigabit Ethernet

USB 3

USB 2

Introduction

- **GPIO stands for General Purpose Input Output**

- **GPIOs can do many things like control other devices**

  - **Turn ON and OFF lights**

  - **Move servo motors**

  - **Read sensor data**

- **Due to its size, it can be used in different applications like IOT**

- **We will work with Raspberry Pi 4 model B**

Additional things that we need
Breadboard

- **It's used to provide an easy way to connect and test electronic components**

- **We will use it to connect components with the Raspberry Pi**
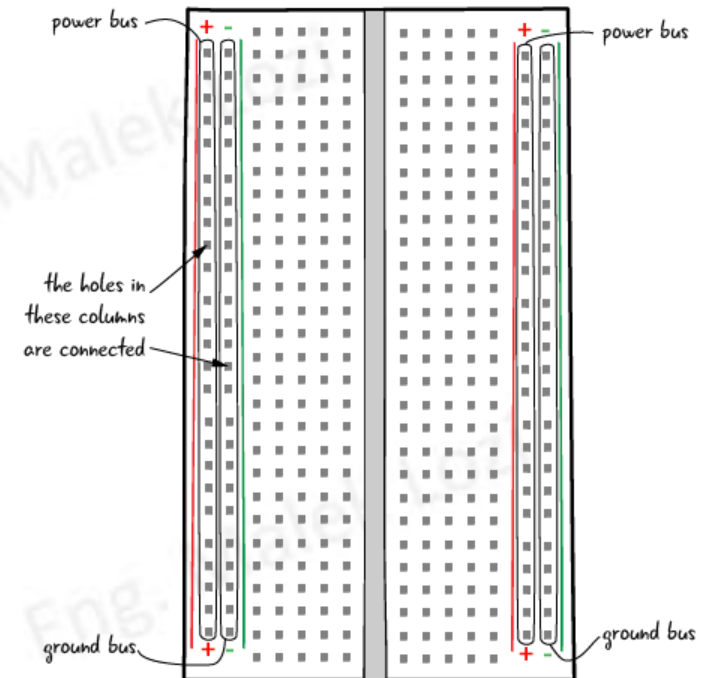
Additional things that we need

- **USB type C power supply**

- **Micro SD card with flashed OS on it**
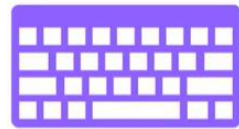
- **Keyboard**

- **Mouse**

- **Monitor**

Raspberry Pi OS

- **After powering up the Raspberry Pi you will see the Desktop**

Raspberry Pi Configuration

- **We are going to use raspi-config tool**

- **raspi-config is a configuration tool in Raspbian**
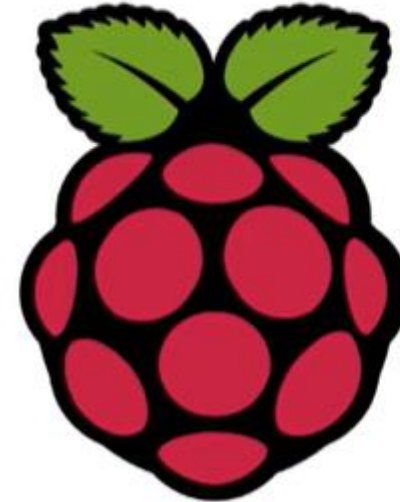
- **It enable us to configure various settings**
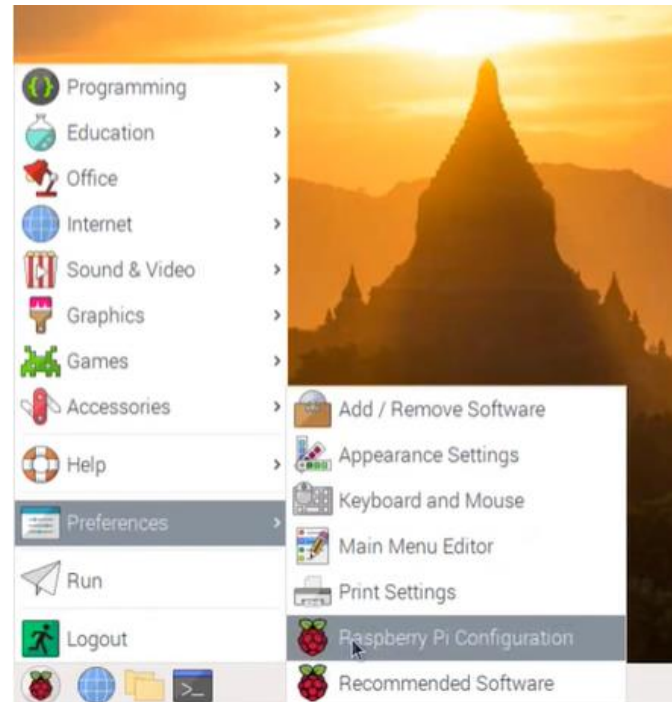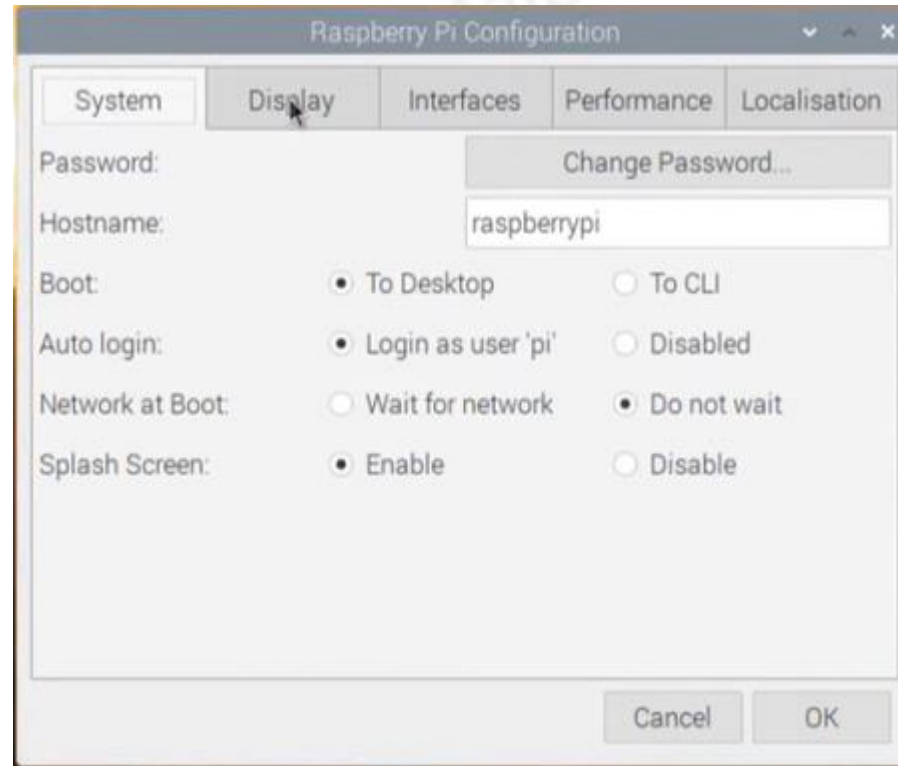
Keyboard Layout

Time Zone

Pi Password

SSH Access

Raspberry Pi Configuration

- **We can access raspi-config tool in two ways**
  - **Through terminal**
  - **Raspberry Pi configuration GUI**

Raspberry Pi Configuration GUI

- **You can check the five different tabs: System, Display, Interface, Performance, Localization**
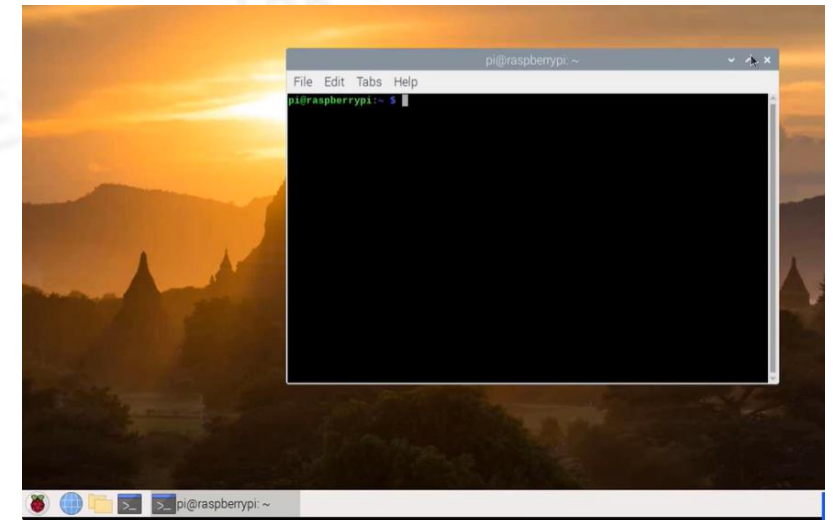
Raspberry Pi Configuration CLI

- **We can launch the CLI (terminal) by clicking the icon shown below**
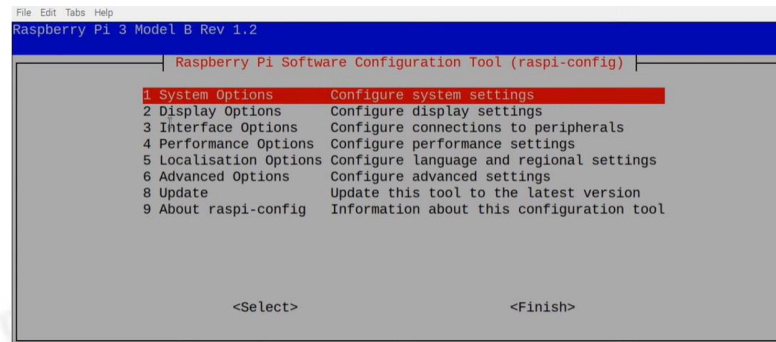

- **Then the terminal will show up**

Raspberry Pi Configuration CLI

- **In the terminal, you can write Linux commands to interact with the OS**
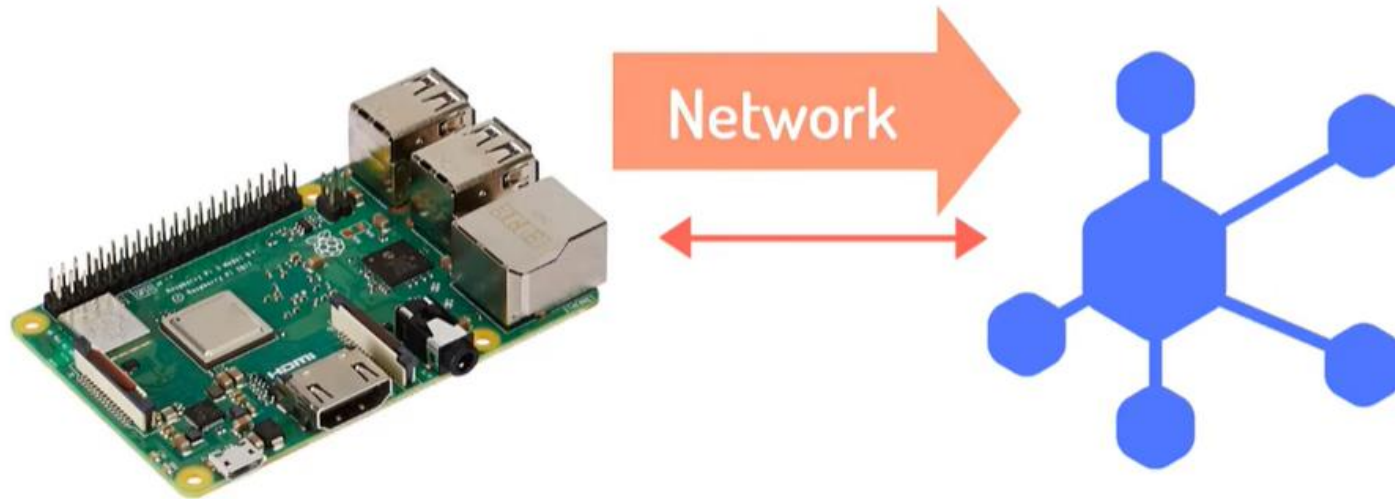
- **You can write "sudo raspi-config"**

- **then the Raspberry Pi configuration menu will open**

- **You can use keyboard arrows to navigate the options**

Raspberry Pi Networking

- **Raspberry Pi is designed to connect to the internet**

Raspberry Pi Networking

- **To connect it to a network, we have two communication technologies on the board**

Raspberry Pi Networking

- **This ability to connect to the internet, is one of the key features that makes it widely used in different applications**
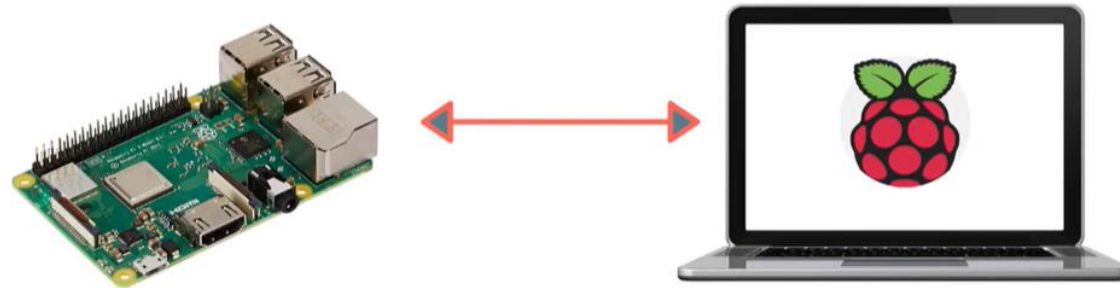
Internet of Things

Home Automation

Web Server
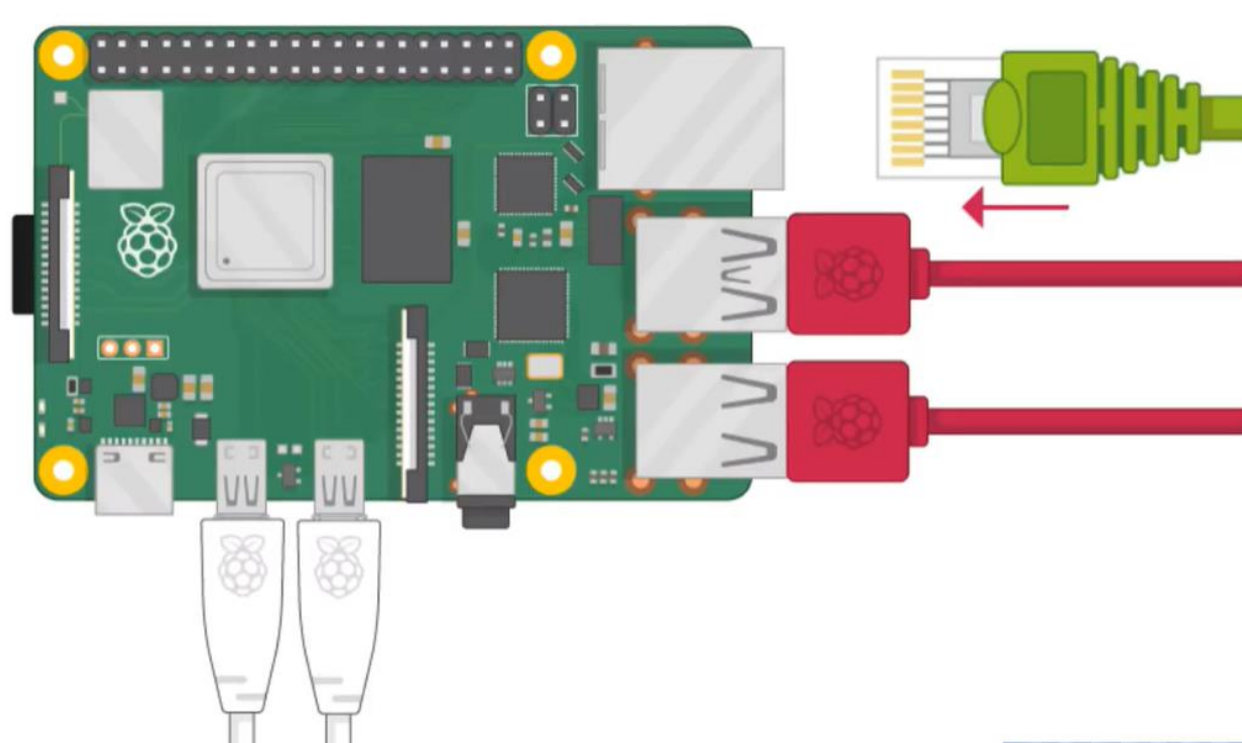
Network Monitoring

Raspberry Pi Networking

- **Connecting to internet enables us to access our Raspberry Pi remotely from any other computer**

Raspberry Pi Networking

- **To connect it to the internet, we need ethernet cable connected to a router**

- **Or we can use its onboard WiFi**

Raspberry Pi Networking

- **To connect to using WiFi, click on the following icon at the down right corner**

- **You will see all available WiFi networks**

- **We can check the IP address by using "ifconfig" command on the terminal**

Raspberry Pi
Basic Linux commands

- *Exercise*: using the terminal, create a text file and write your full name, university ID and your major inside it, this text file should be inside folder called IOT located at the desktop

Raspberry Pi
Nano text editor

- **There are different text editors that we can use in the CLI**
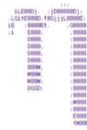
Nano   **VI EDITOR**

emacs Editor

- **We will learn how to use nano text editor**

Nano Text Editor

Raspberry Pi
Nano text editor

- **To create a new text file, write "nano filename.ext"**

- **Here, we are creating a text file called "innova.txt"**

- **The file will be opened, write your text**

Raspberry Pi
Nano text editor

- **To save the file, press CTRL+O then press enter**

- **To close the file, press CTRL+X**

- **To open the file again, you can write "nano filename.ext"**

- **You can check more options on the bottom line**

Any Questions???