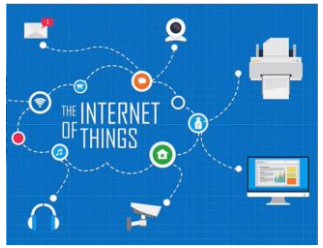
Al Hussein
Technical University
جامعة الحسين التقنية

# Internet Of Things

## Introduction

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# Hardware

- The Hardware component that we are going to learn throughout this course is Raspberry Pi
- We will use almost all the features of the Raspberry Pi

# Software

- We will learn the raspberry pi by programming it using Python

python™

# Objective

- You will learn IOT in practical manner
- By the end of this class, you will be able to build your own IOT applications based on the concepts that we will learn

# Requirements

- Understand basic C programming language
- Understand basic electronics knowledge

# You will learn

- Features of the Raspberry Pi
- Programming Raspberry Pi using Python to interface
  - LEDs
  - Push buttons
  - Sensors
- Connecting the Raspberry Pi to the internet

# Let us go

## What is IOT

# IOT Definition

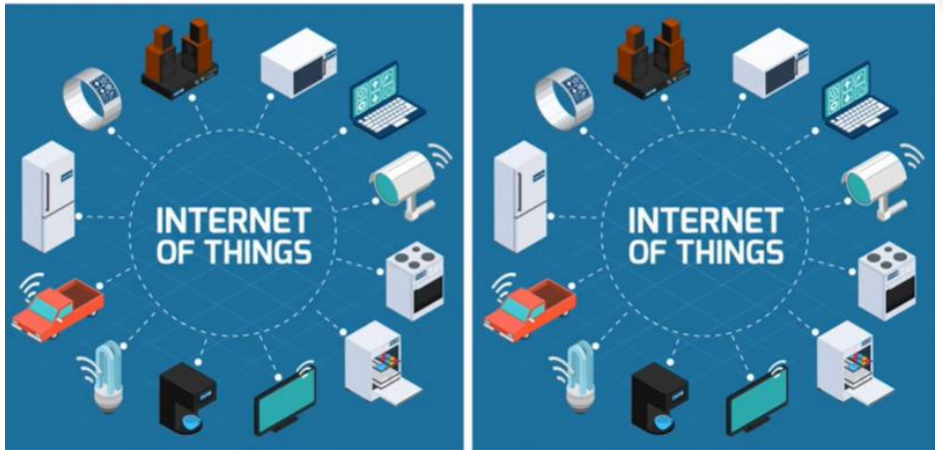
- There are many definitions, but the most common definition is:

**Internetwork of physical objects embedded with sensors to acquire data, computers to make intelligent decision, connectivity that enables these things transform it into knowledge and actuators to generate physical actions.**

# IOT Definition

- Let us understand this definition line by line:
- To understand the term **internetwork**, suppose that we have the following two different networks

A B

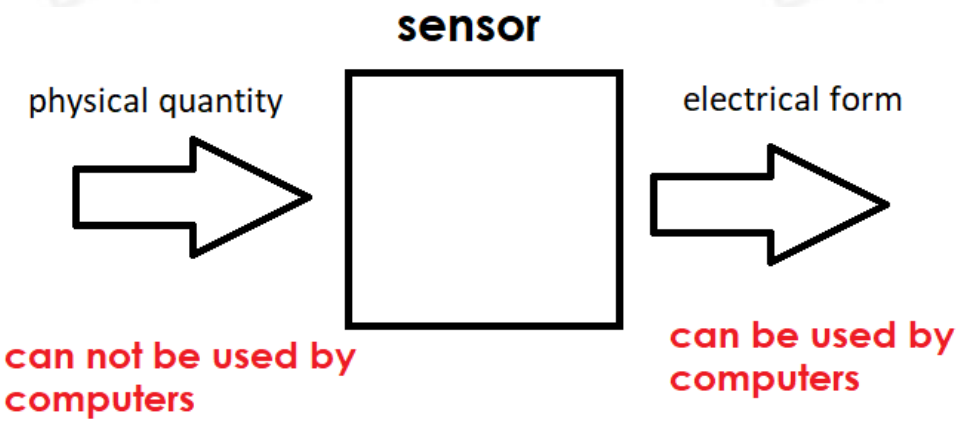


# IOT Definition

- Network A has different several devices connected to it, also network B has several devices connected to it.
- If a device from network A can send/receive data from another device in network B, then these two networks are called internetwork.

# IOT Definition

- The term **physical objects** means things, these things will be having some sensors to acquire data.
- Sensors are most widely used for acquiring data, by converting acquired physical quantity to electrical form.



# IOT Definition

- Computers are useful for making decisions based on data received from sensors.
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# IOT Definition

- Computers are useful for making decisions based on data received from sensors.
- Also, computers used to connect these things to the internet (**connectivity**)
- This helps to access (receiving / sending data) these things remotely

# Example

- Useful for washing our clothes
- Three basic operations: rinsing, cleaning and drying

Normal Washing Machine

# Example

- If we assume that the washing machine have an IOT capability
- So, it will have sensors attached to it and connectivity to the internet.

# Example

- Sensors are used to acquire data, suppose these is a sensor to monitor the amount of washing powder.
- If the amount of washing powder decreased to a certain level, it will be automatically notifying the nearest supermarket.
- Suppose that there is another sensor to monitor all the parts of the washing machine.

# Example

- If one of the parts get a fault, then it will automatically send a notification to the maintenance workshop to fix the faulty part.
- Also, it can notify its user with various information, like the status of the washing cycle.
- So this is a complete IOT washing machine which is capable to do all jobs by itself without human interaction.

# Any Questions???