**Tutorial 1 How Computer Works**

## Introduction

This first tutorial is designed to help you understand how computer works. It introduces you some main components inside a computer and their functions. It also helps you to review some key concepts from our first lecture

To answer some questions in this tutorial, you need to do your research and could search for the answers from Internet. Two useful websites are **Wikipedia.org** and **howstuffworks.org.**

## Identify Seven Components inside a PC

Check <http://computer.howstuffworks.com/inside-computer.htm>. You could also watch the video clip on YouTube: <https://www.youtube.com/watch?v=ExxFxD4OSZ0>: or alternatively: <http://www.gcflearnfree.org/computerbasics/inside-a-computer/1/>

According to the video clip, identify seven main components inside a PC cabinet. What are they and what are their functions? Complete the following: **Component Function**

1. **How does a computer boot up? Explain the terms: BIOS, CMOS, UEFI.**

## CPU and Memory

* 1. Computer memory is measured in bytes. A byte is made up of 8 bits and each bit is either 0 or 1. Memory is measured by Kilobyte, megabyte, gigabyte, terabyte. Find out what these terms mean and complete the following table in the format as the first example is shown below.

|  |  |  |
| --- | --- | --- |
| **Term** | **Abbreviation** | **Value** |
| Kilobyte | KB | 210 bytes ≈ 103 bytes |
| Megabyte |  |  |
| Gigabyte |  |  |
| Terabyte |  |  |
| PetaByte |  |  |

What’s after Petabyte?

* 1. What do RAM and ROM stand for? What are they used for?
  2. The processor relies on a small quartz crystal circuit called the system clock to control the timing of all computer operations. The system clock generates regular electronic pulses, or ticks, that set the operating pace of components of the system unit. Each tick equates to a clock cycle. The pace of the system clock, called the clock speed, is measured by the number of ticks per second. Current PC processors have clock speeds in the gigahertz range.

1. What does hertz mean?
2. what does 3 gigahertz (GHz) mean?
3. Does the system clock also keep track of the current date and time?
   1. Name the two leading manufacturers of personal computer processor chips. What is a **multi-core** processor**?** How many cores in a **dual-core**, **quad-core**, and **hexa-core** processor respectively?

## Question about the key concepts in Lecture 1

* 1. What is the **stored-program** concept and why is it important?
  2. What is the **Moore’s Law** and why is it important in computer development history?