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Component of a Computer

- * Hardware Components
- * Software Components

* Computer hardware are those physical aspect of a computer which we use for sending instructions to the computer system

* Software → series of codes used to perform tasks it is seen as a sequence of programs that works together to perform a task

Storage unit

1 Primary storage

2 Secondary storage

Primary storage are made up of volatile devices they cannot contain heat e.g random access memory (RAM)

Secondary storage they are non volatile (they can contain heat) e.g hard disk

Processing unit

Processing unit is ~~that~~ what processes data and gives information

Component of processing unit

1 Register

Central units
Arithmetic & Logic ^{unit} ~~gate~~

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Software

A software can be defined as a series of instructions given to computer to exercise a specific task

Types of Software

- System software
- Application software

System Software: Controls & manage the computer hardware & provides a platform for running application software e.g. operating systems, (Windows, macOS, Linux, Android, iOS) utility programs (Anti-virus, disk cleanup, Backup tools) device drivers (printer, drivers keyboard drivers)

Application software are meant to solve human problems. It is designed to help users perform specific tasks

e.g. Microsoft Word, Excel, PowerPoint (presentation), WhatsApp

Number System

1- Decimal — Base 10 (0-9)

2- Octal — Base 8 (0-7)

3- Hexadecimal — Base 16 (0-f)

4- Binary — Base 2 (0-1)

20_{10} — 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, A, B, 14, 15, 16, 17, 18, 19, 20

20_8 — 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20

10_2 — 0, 1

20_{16} — 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, 12, 13, 14, 15, 16, 17, 18, 1A, 1B, 1C, 1D, 1E, 1F, 20

Convert from One Base to another

14_{10} Convert to base 8

Soln

$$\begin{array}{r|l} 8 & 14 \\ & 1 \text{ r } 6 \\ & 0 \text{ r } 1 \end{array}$$

$$14_{10} \text{ to } 8 = 16_8$$

to convert 16_8 to base 10

Soln

$$1 \times 8^1 + 6 \times 8^0 = 14_{10}$$

2 Convert 78_{10} to base 2

2	78	
2	39 R 0	
2	19 r 1	
2	9 r 1	
2	4 r 1	
2	2 r 0	
2	1 r 0	
2	0 r 1	

1001110₂

6 5 4 3 2 1 0

1001110₂ to base 10

$$1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 78_{10}$$

3. 275₈ Convert to base 2

First Convert to base 10

$$2 \times 8^2 + 7 \times 8^1 + 5 \times 8^0 = 189_{10}$$

Convert to base 2

2	189	2	5 r 1
2	94 r 1	2	2 r 1
2	47 r 0	2	1 r 0
2	23 r 1	2	0 r 1
2	11 r 1		

10111101_2