Computer Numbers Systems Conversions

Assumptions

- What is Binary ??
- Units of Data
- Types of Computer Number System

You already Know

What You Will Learn

- Computer Number system conversions

Course Contents

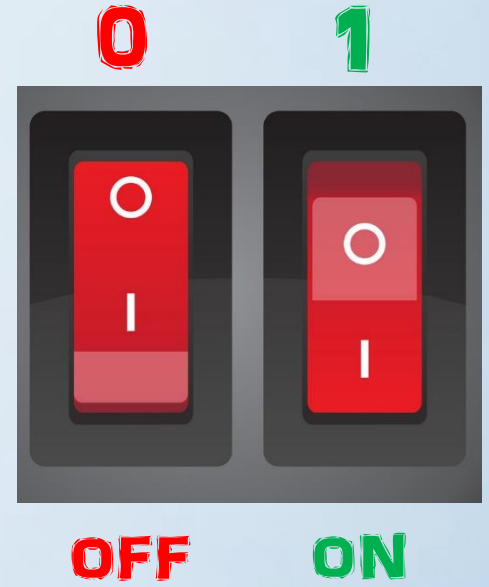
Short Summary

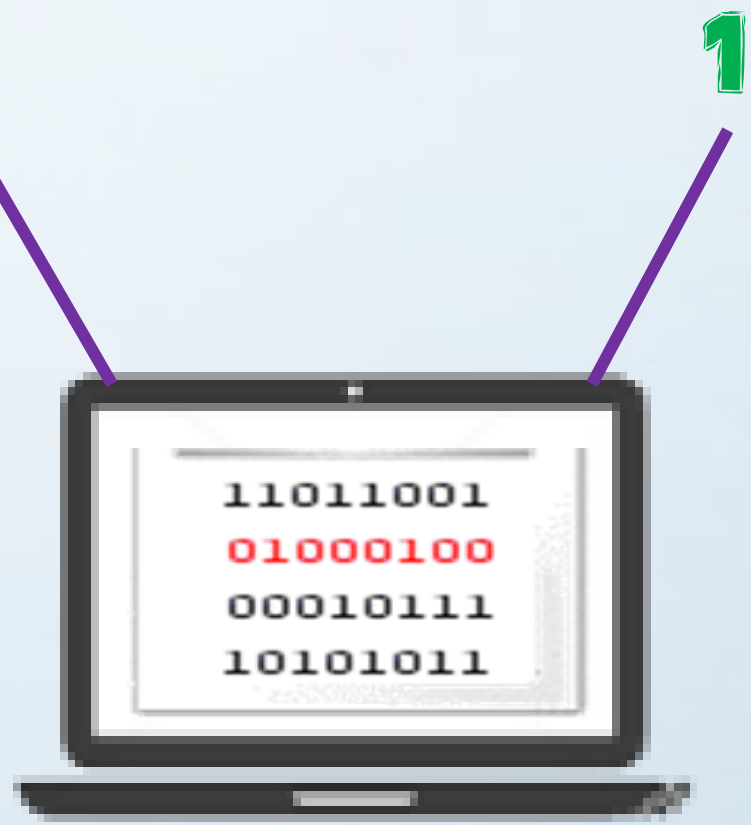
- What is Binary ??
- Units of Data
- Types of Computer Number System

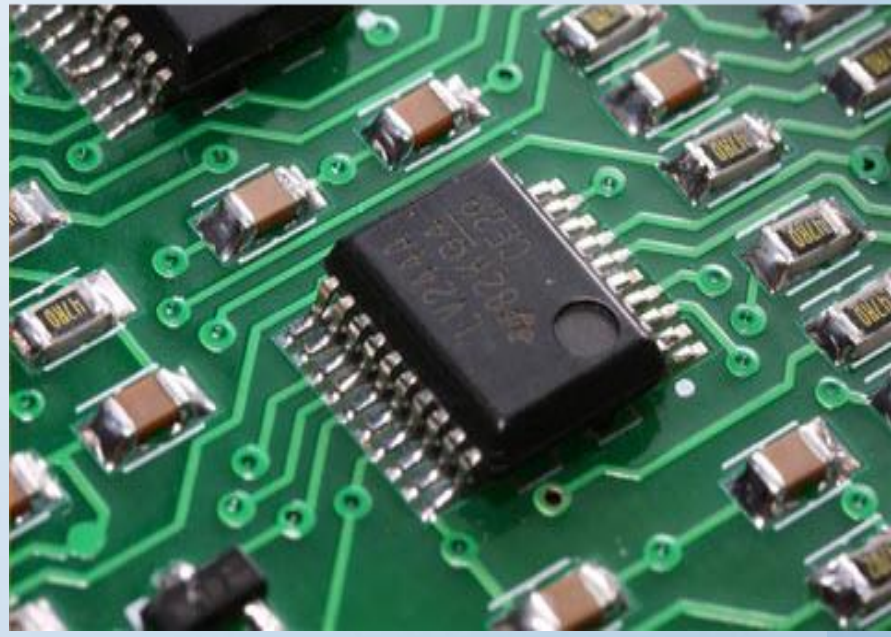
Course Topic

- Computer Number system conversions

What is Binary ?





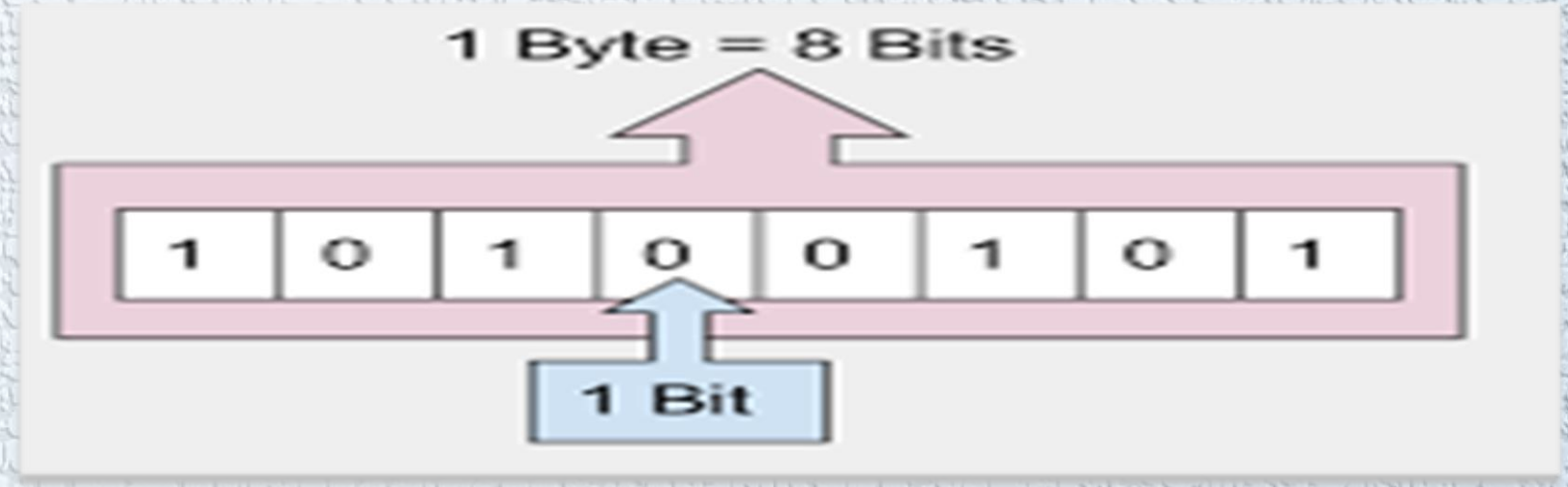


Bit = smallest unit of data

1 Bit = 0 OR 1 bit = 1

1 byte=8 bits

Units of Data



1 BIT=0 OR
1 BIT=1
1 BYTE=8 BITS
1 KILOBYTE (KB) = 1024 BITS
1 MEGA BYTE(MB) = 1024 KILOBYTES (KB)
1 GIGA BYTE (GB) = 1024 MEGABYTES (MB)
1 TERA BYTE(TB) = 1024 GIGABYTES (GB)

Types of Computer Number System

Types Of Computer Number Systems

Binary Number System

Base 2

Number of symbols = 2

0 , 1

Example: $(11010)_2$

Decimal Number Systems

Base 10

Number of Symbols=10

0,1,2,3,4,5,6,7,8,9

Example:$(219)_{10}$

Octal Number Systems

Base 8

Number of Symbols=8

0,1,2,3,4,5,6,7

Example:$(1736)_8$

Hexadecimal Number Systems

Base 16

Number of Symbols=16

0,1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15

A, B, C, D, E, F

Example: $(C23E)_{16}$

Number Systems Summary Table

Number System	Base	Used Digits	Example
Binary	2	0,1	$(11010101)_2$
Octal	8	0,1,2,3,4,5,6,7	$(175)_8$
Decimal	10	0,1,2,3,4,5,6,7,8,9	$(569)_{10}$
Hexadecimal	16	0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F	$(F0)_{16}$

CONVERSION ROAD MAP

Whole number

Floating point number

Octal into Binary

Use Table

Binary into Octal

HexaDecimal into Binary

Use Table

Binary into Hexadecimal

Octal into Hexadecimal

Octal → Binary → Hex

Hexadecimal into Octal

Hex → Binary → Octal

Decimal into other bases

Decimal → Binary

Decimal → Octal

Decimal → Hexadecimal

Other Bases into Decimal

Binary → Decimal

Octal → Decimal

Hexadecimal → Decimal