

- 1.) Computer is a dumb friend.
- 2.) It doesn't understand English or Hindi etc

Machine / Binary Language

(what?)

a series of just 0's & 1's

English \Rightarrow a, b, c, d, e, ..., z \Rightarrow 26 alphabets

With

Instructions

00 100 \Rightarrow Addition

(How?)

$(9523)_{10}$

Binary Numbers
 \hookrightarrow Base 2

Decimal
 \hookrightarrow Base 10

$$\begin{array}{ccccccc}
 9 \times 10^{000} & + & 5 \times 10^0 & + & 2 \times 10^1 & + & 3 \times 10^2 \\
 \downarrow & & \downarrow & & \downarrow & & \downarrow \\
 9 \times 10^3 & + & 5 \times 10^2 & + & 2 \times 10^1 & + & 3 \times 10^0 \Rightarrow (9523)_{10}
 \end{array}$$

$$13 \Rightarrow 1 \times 10^1 + 3 \times 10^0$$

$$\begin{array}{c}
 \text{1101} \\
 \swarrow \quad \searrow \quad \downarrow \quad \downarrow \\
 1 \times 2^3 \quad + 1 \times 2^2 \quad + 0 \times 2^1 \quad + 1 \times 2^0 \\
 \downarrow \quad \downarrow \\
 8 \quad 4
 \end{array}
 \Rightarrow 8 + 4 + 0 + 1 = 13$$

Because of the difficulty to convert everything to machine language, programming languages were much needed.

Compilers / interpreters are the tools which convert the source code to machine code.
source code: written by programmers like you & me
machine code: binary that computers understand.

-
- 1.) Assembly language $\rightarrow 1947$
 - 2.) FORTRAN (specific to math)
 - 3.) COBALT (" " business)
 - 4.) BASIC

5.) C

- a.) UNIX based system (MacOS, Linux)
- b.) SQL

6.) C++

7.) Java (C++ minus the pointers)

Eg. Decimal to binary.

$$54 / 2 \Rightarrow 0$$

$$\Downarrow$$
$$27 \Rightarrow 1$$

\Downarrow

$$13 \Rightarrow 6 \Rightarrow 3 \Rightarrow 1 \Rightarrow 0$$

1 0 1 1

$$\begin{array}{ccccccc} & 2^4 & & 2^2 & & 2^0 & \\ & \uparrow & & \uparrow & & \uparrow & \\ & 1 & & 1 & & 1 & \\ \boxed{1} & \boxed{1} & \boxed{0} & \boxed{1} & \boxed{1} & \boxed{0} & \\ & \downarrow & & \downarrow & & \downarrow & \\ & 2^5 & & 2^3 & & 2^1 & \end{array}$$

$$\Rightarrow 32 + 16 + 4 + 2$$
$$\Rightarrow 54$$

1.) How to open a class on LearnYard?

a.) Go to learnyard.com

b.) Click on class room button on top-right corner.

c.) Login using your registered mobile number.

d.) Find the "100% job ready" in the my purchases section.

e.) Watch the lectures.

Given a number, check whether that number is even or odd?

1.) Divide the number by 2

2.) If the remainder is 0

↳ then *even*.

else

↳ *odd*.

You have a watermelon. Weighs W Kg

Cut this watermelon to exactly 2 parts. &

both parts should weigh even number of Kilos.

Eg. 12 Kg

Possible → 4 Kg 8 Kg 6 Kg 6 Kg

$(4 + 8 = 12)$

10 Kg ⇒ *Possible*

↳ 6 Kg 4 Kg
8 Kg 2 Kg

Given a w ($1 \leq w \leq 100$), how to check if it is possible or not?

Eg. $w = 9$

① 8 \Rightarrow X

2 ⑦ \Rightarrow X

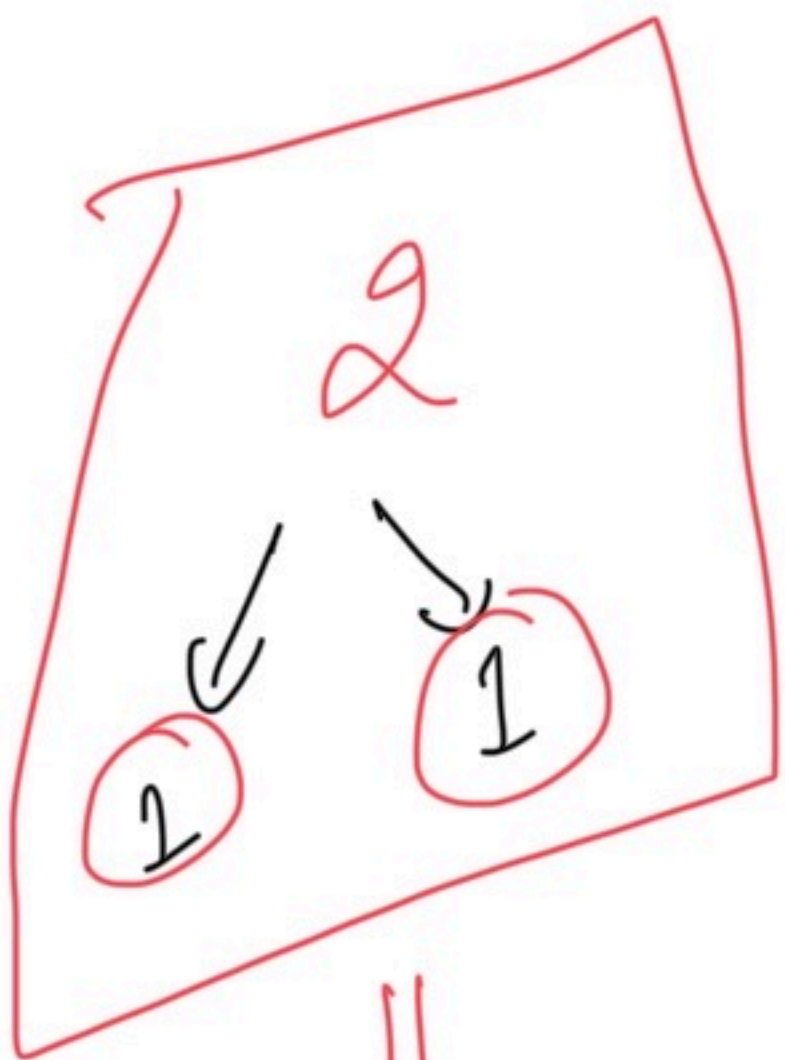
③ 6 \Rightarrow X

4 ⑤ \Rightarrow X

1) Divide w by 2.

2) If the remainder is 1

\hookrightarrow Not Possible



\Downarrow
Not Possible

