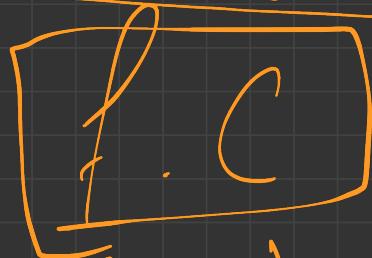


① Introduction To Programming

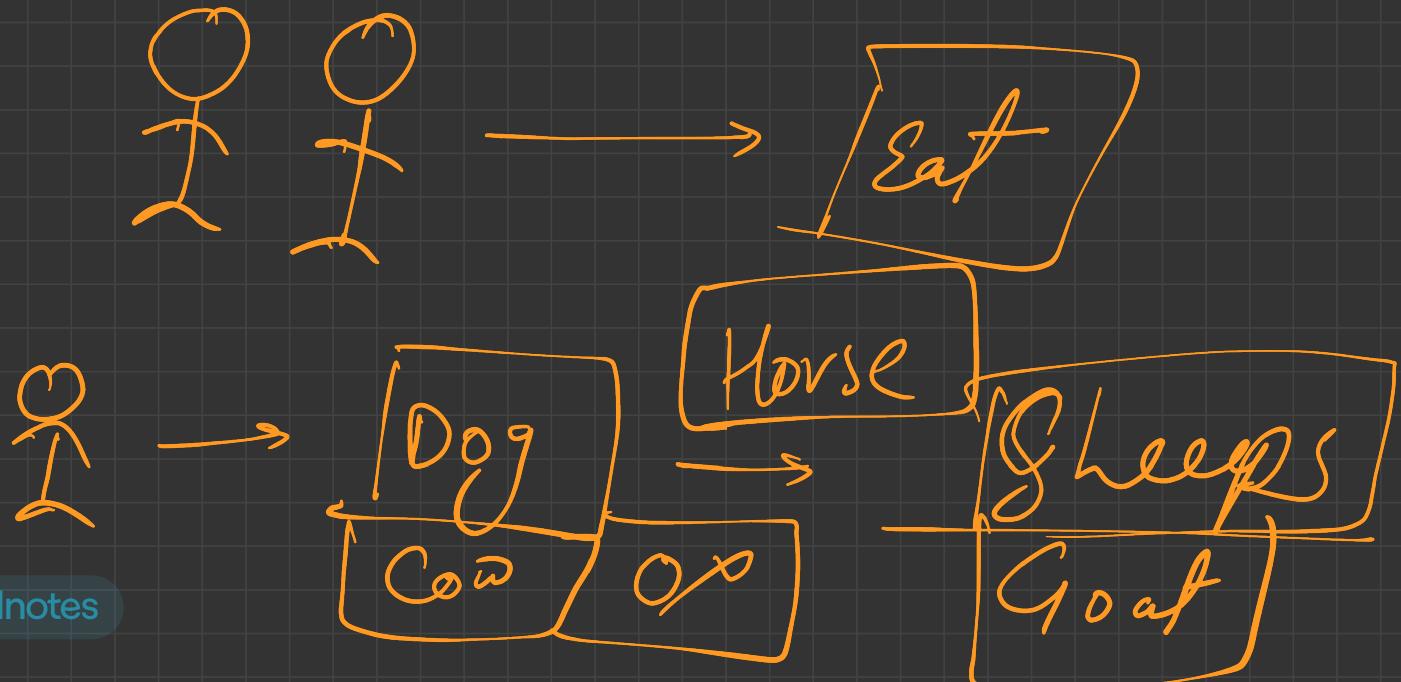
→ Topics

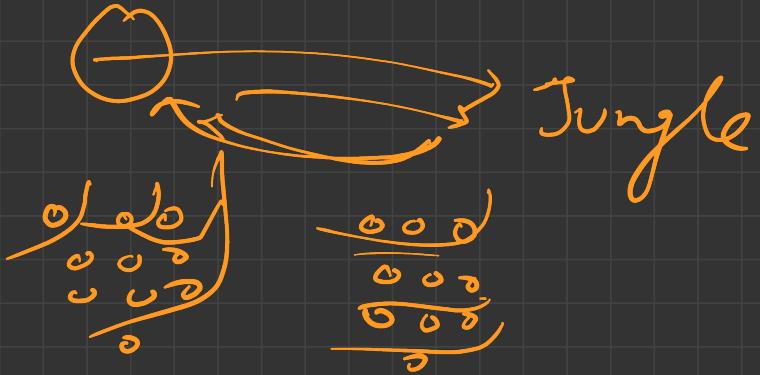
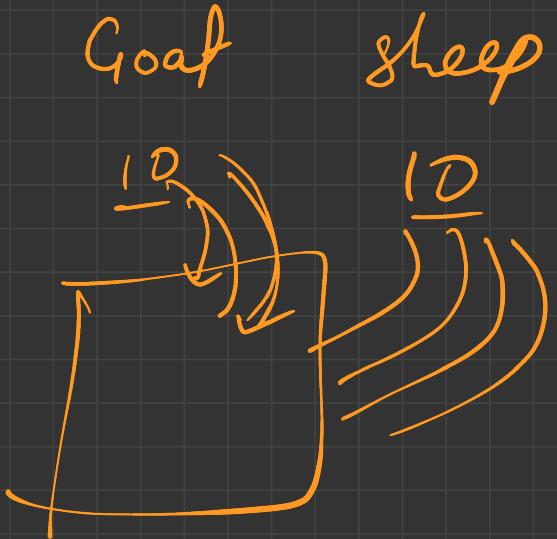
→ Question (L, Q, C)

→ Real life



2024 → 20000





$$10 \rightarrow \frac{\text{Goals}}{100} \quad \frac{\text{Sheep}}{100}$$

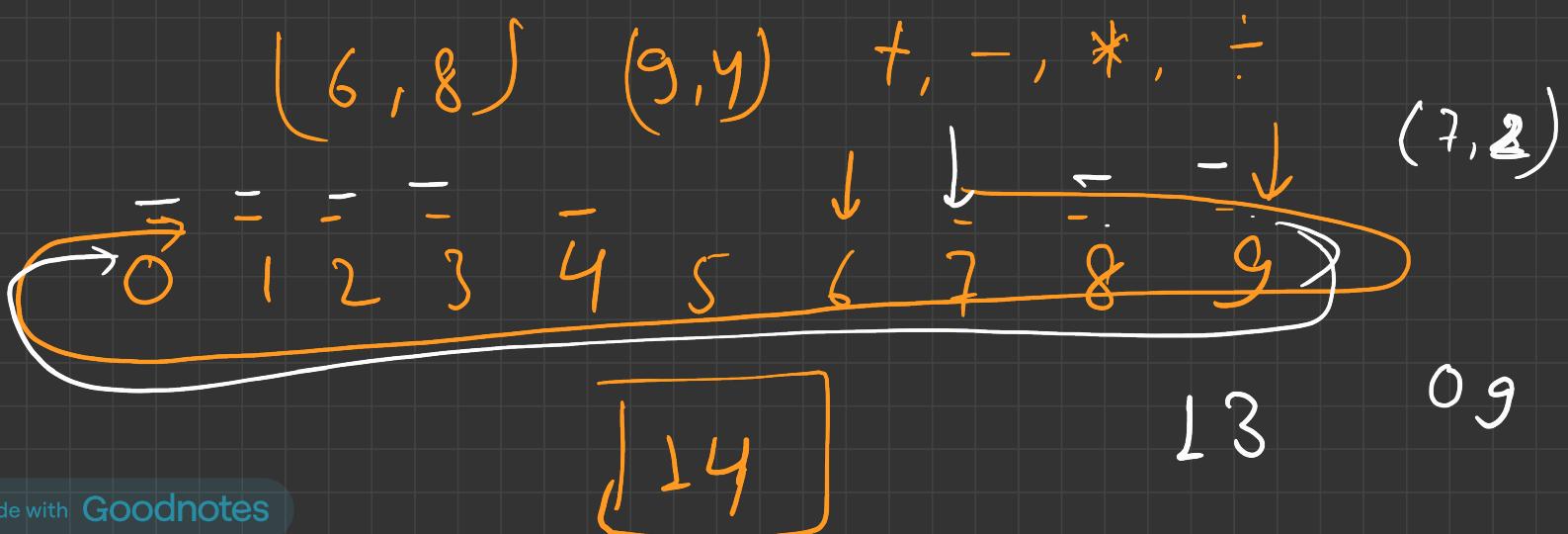
Number System

Base 60
Egypt

Base 10

Indian

$\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$



<u>Import</u>		<u>Export</u>
300		312
250		100
289	↓	99
512	↓	71

1000
Pages
accuracy
fast

Computer → 
To calculate

0 1 2 3 4 5
9 8 7 6

0 1 2 3 4 5
9 8 7 6

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

Accuracy ✓ ↑

Fast X

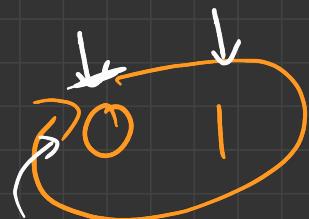
Transistor

Bulb

off
on



Base₂



$$\frac{1}{2}X$$

A hand-drawn diagram of a diode symbol, similar to the one above, but with a different orientation. It consists of a semi-circle with an arrow pointing upwards through its center. To the left of the semi-circle is a small circle with a wavy line through it, representing a power source. To the right of the semi-circle is a vertical rectangle with a small circle at its top, representing a load or bulb.

$$+ \quad 10$$

Binary NY

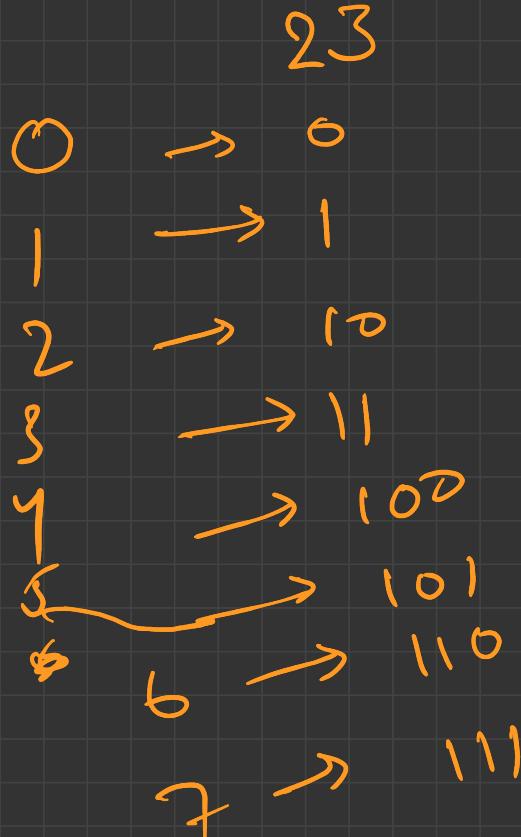
$$\begin{array}{r} 0 \\ + 1 \\ \hline 1 \end{array}$$
$$\begin{array}{r} 0 \\ 0 \\ \hline 0 \end{array}$$
$$\begin{array}{r} 0 \\ 0 \\ \hline 1 \end{array}$$

$$\begin{array}{r}
 10 \\
 + 1 \\
 \hline
 11
 \end{array}$$

$$\begin{array}{r}
 100 \\
 + 1 \\
 \hline
 101
 \end{array}$$

$$\begin{array}{r}
 101 \\
 + 1 \\
 \hline
 110
 \end{array}$$

Decimal



23

		8	
2	23	Rem	
2	11	1	
2	5	1	
2	2	1	
1	1	0	

$$23 = 1011$$

$$\begin{array}{ccccccc} & | & 0 & | & 1 & | & \rightarrow \\ & \searrow & \nearrow & \searrow & \nearrow & \searrow & \\ 1 \times 2^4 & + & 1 \times 2^2 & + & 1 \times 2^1 & + & 1 \times 2^0 \\ 0 \times 2^3 + & \cancel{\underline{1}} & + & 0 & + & \cancel{\underline{4}} & + \cancel{\underline{2}} + \cancel{\underline{1}} \\ & \searrow & & & & & \\ & & & & & & 23 \end{array}$$

$$5+5 = 12$$

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

8	23	Rem
8	2	7
0	2	↑

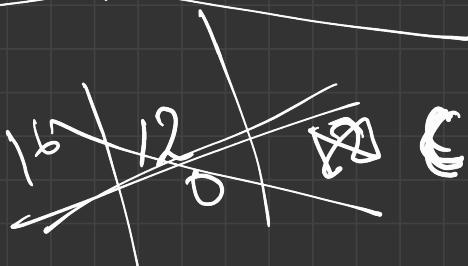
$$27 \rightarrow 2 \times 8^1 + 7 \times 8^0 \\ - 16 + 7 = 23$$

{ hexa }
hexa

use in IP Add

[0, 1, 2, 3, 4, 5, 6, 7, 8, 9,
A, B, C, D, E, F]
↑

(10, 11, 12, 13, 14, 15)

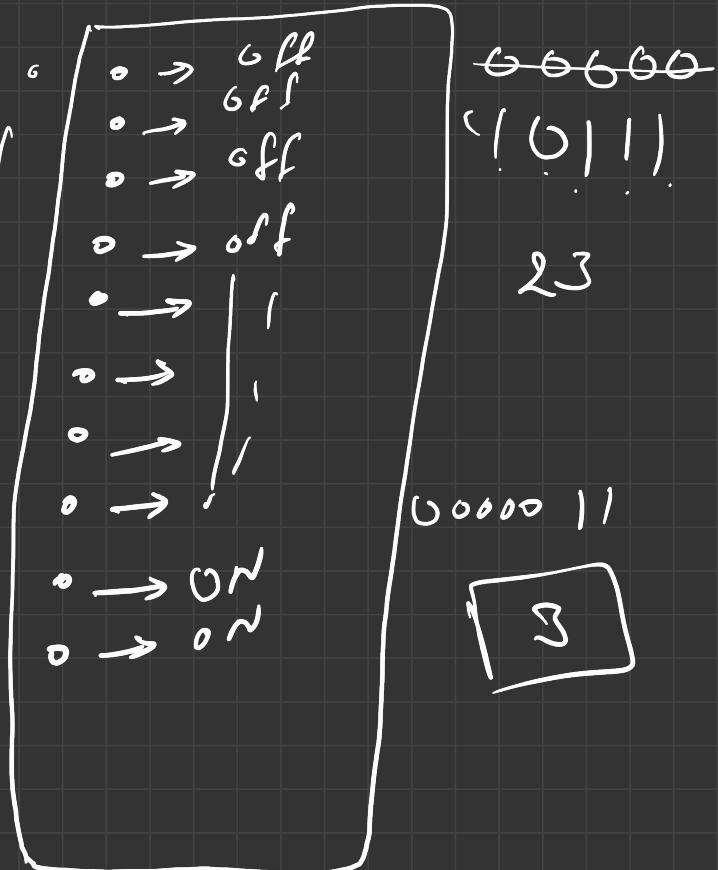
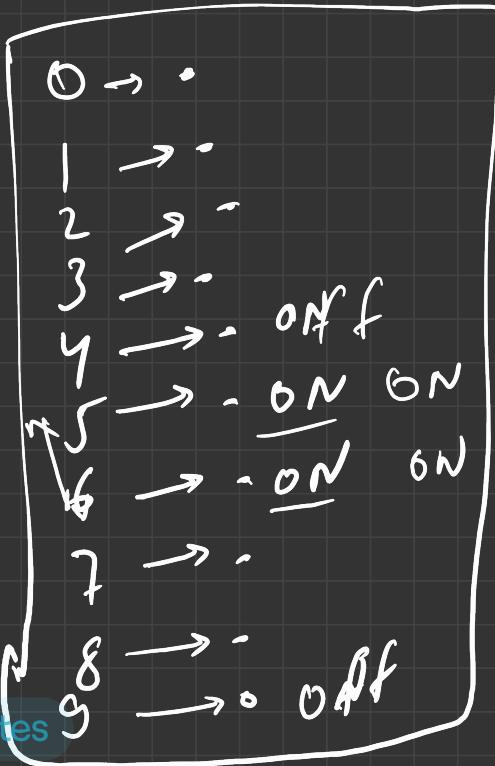


$$\begin{array}{r} 12 \\ \downarrow \\ 1 \times 16^1 + 2 \times 16^0 \\ = 16 + 2 = 18 \end{array}$$

$$\begin{array}{r} 16 \\ - 1 \\ \hline 15 \\ | \\ 18 \\ - 1 \\ \hline 17 \\ | \\ 2 \\ - 1 \\ \hline 1 \end{array}$$

bulb

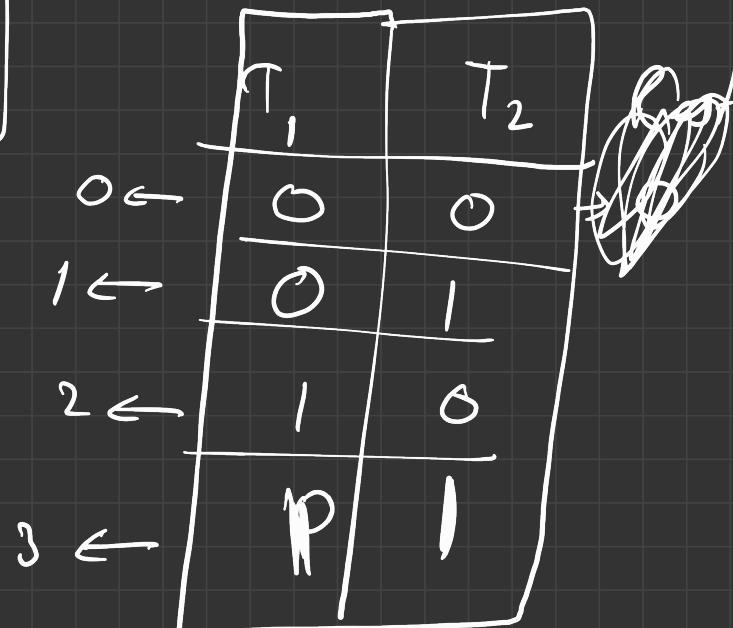
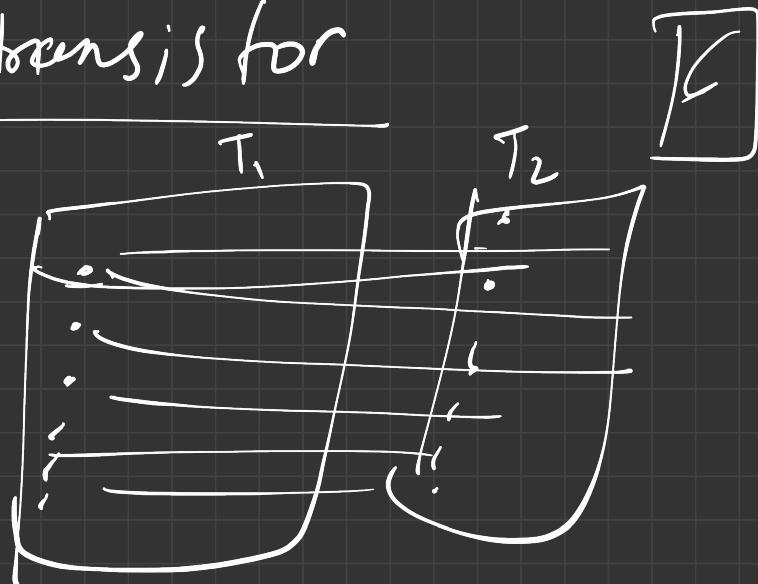
$$23 \Rightarrow 10111$$



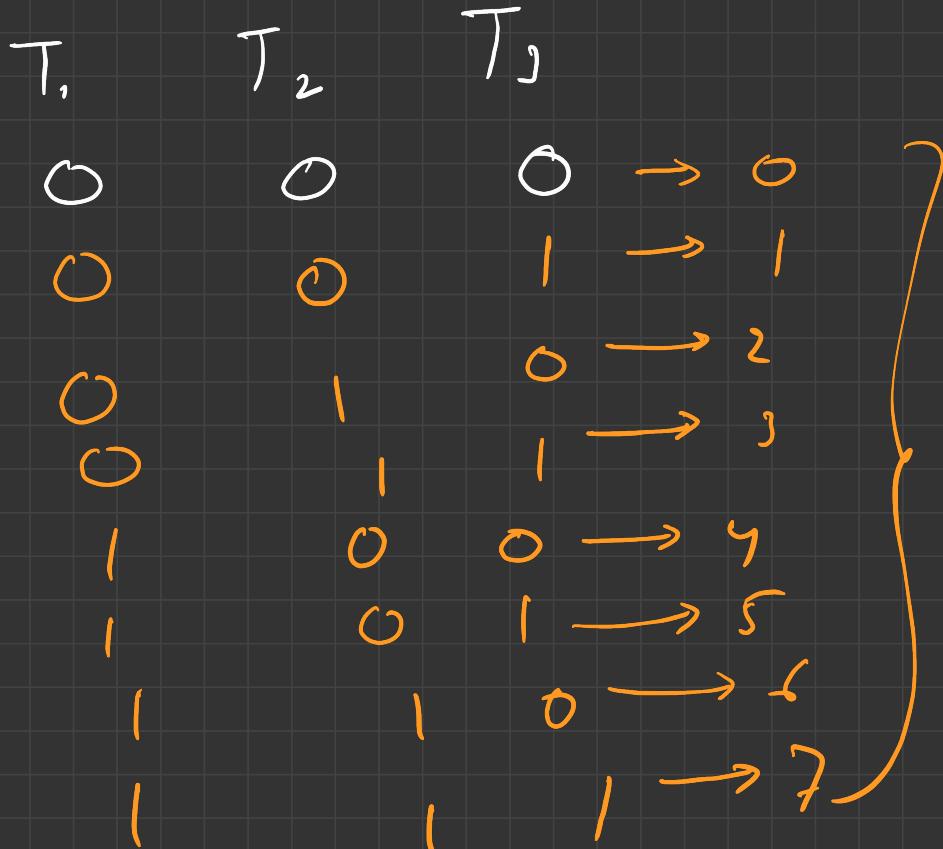
Computer



2 transistors for



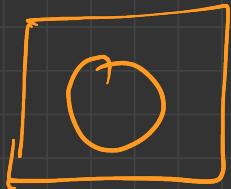
3 Transistor



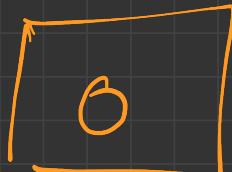
Moore Law

2^x

? 1965



10Gb



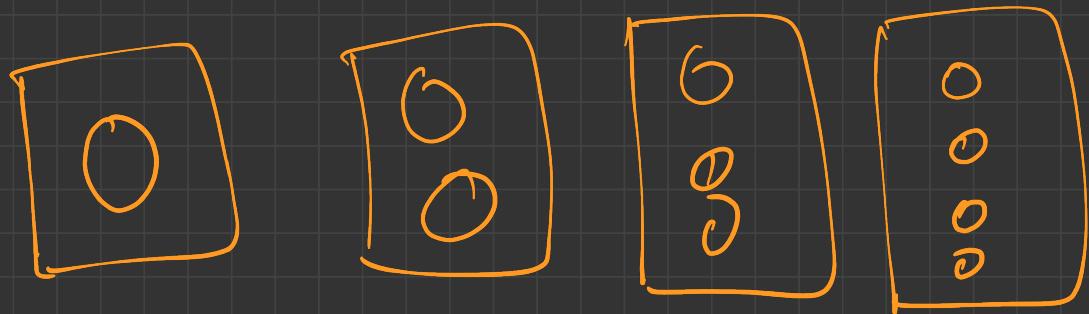
20Gb



40Gb

Capacity ↑

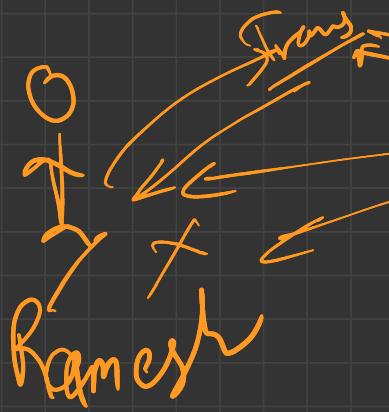
Size ↓



Machine Language

0, 1

196 + 168 + 144



German

01 AD
19'96

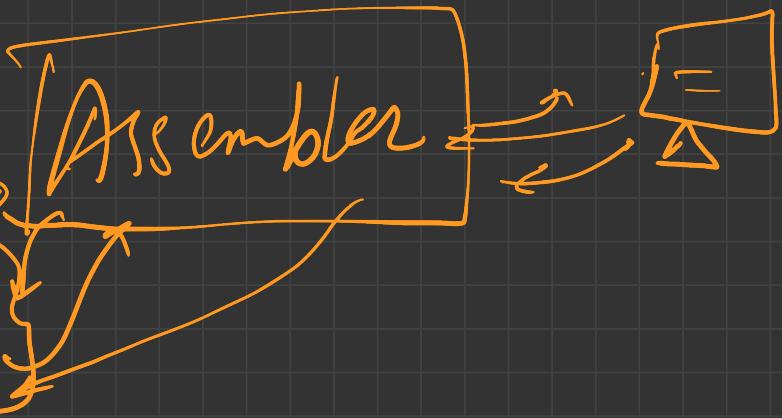
A hand-drawn diagram showing a document icon with the word "German" written below it. To the right of the document is a date "01 AD 19'96". Below the document is a small, illegible signature.

Hindi

Translater

{ ADD
SUB

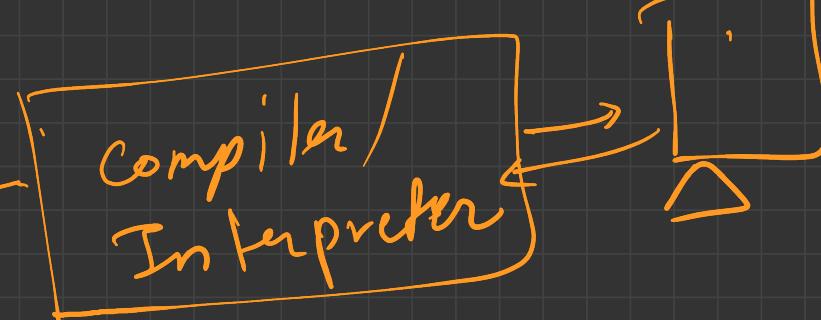
96 6
24 96



high level language (HLL)

Python

$$2+5 = 7$$



Maching lang >>

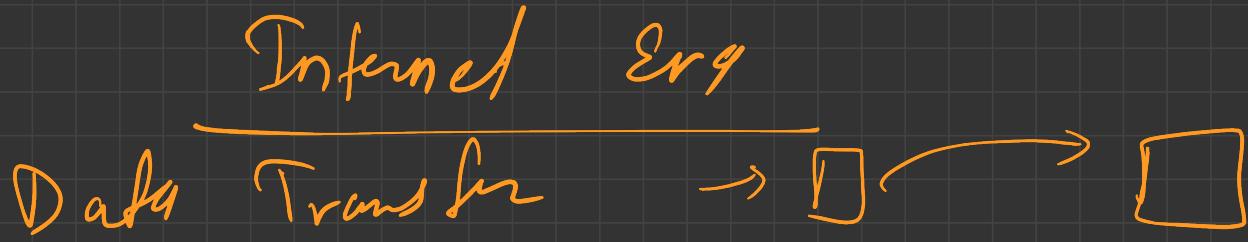
Very fast

Assembler

fast

>> HLL

Slow



Cloud

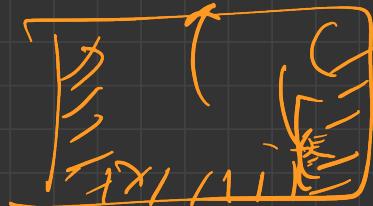
Data

Store / fetch

Take less Storage

Take less time

DSA



2, 8, 6, 10, 5, 14, 11, 12, 1

0, 1, 2, 6, 8, 10, 11, 12

14

200 natural add

$$\begin{array}{r} 0 + \\ - 2 \\ \hline \end{array}$$

A

10000

$$\begin{array}{r} 1+2+3 \\ +4+5 \\ \hline 15 \end{array}$$

$$\frac{n(n+1)}{2}$$

$$= \frac{2}{2} = 1$$

1

X

10000

Algorithm M

to - IS LPA

