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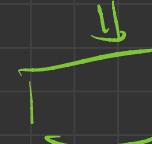
④

Course! →

[L R - 4 vs R] ✓

Real world

client



eas

Jml

→ Consistency: ✓

Habit: Routine:

Schedule ✓ ✓

✓ g-10  
✓

10 - 10 :  
10 : 30 - 11 : 20 PM

→ Notes ✓

LinkedIn | twitter → update

→ GitHub ✓

↓  
accountability

Resume :-  
Project

\* [Rules & Regulation]

1 →

2 → Live class mein doubt

[TA's]

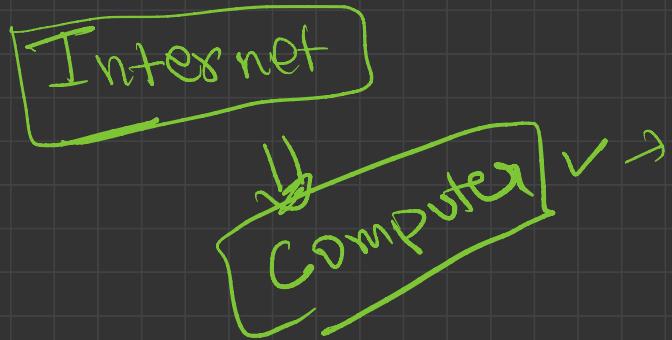
③ After live class doubt  khud ↴

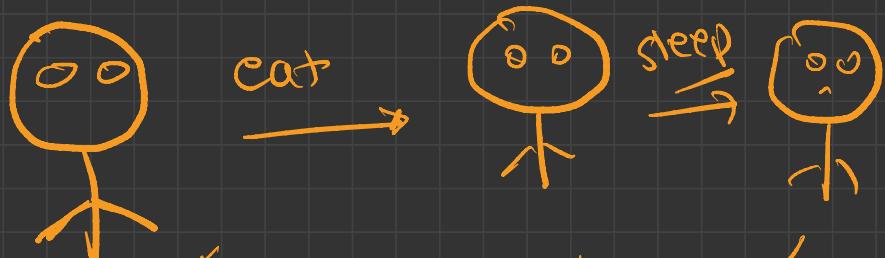
↳ khud se → Chatopt  
→ Stackoverflow

+ TA ↴

Course start

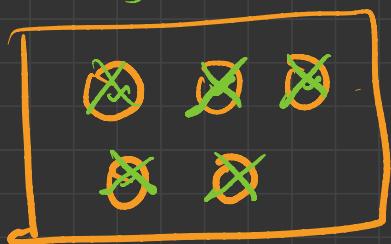
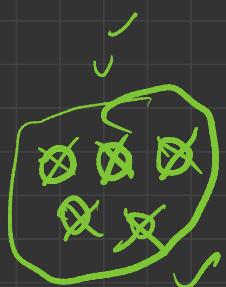
zero





Repeat

domestic



Tally mark

4

27

38



1000 → Count

Tally mark ✓

Counting

Language

Number system ✓

\* Base<sub>60</sub>: ✓ 60 unique ↗ Computer: complex

⊕ Base<sub>10</sub>: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9] ↴ ↴

Indian

$$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array} \quad \checkmark$$

$$\begin{array}{r} 7 \\ + 6 \\ \hline 13 \end{array}$$

[||||| | | | | |]

[13] ✓

★

Home

1800+

Century

Trade

Regist.

100 - Bhk

80rs a day

90 → Bhk

calculation

Full bharī ✓

Profit ✓



Computer! To compute

To calculate ✓

Accuracy  
slow -

0 1 2 3 4  
9 8 7 6 5 ✓

0 1 2 3 4  
9 8 7 6 5 ✓

Room

Physical computer

calculate ✓

\* 1950 :

Transistor



ON

Bulb

OFF

# \* Binary No System

Base<sub>2</sub>

{ 0, 1 }

$$\begin{array}{r} \text{Bin} \\ 0 \\ + 0 \\ \hline 0 \end{array}$$

Decimal 0

$$\begin{array}{r} 1 \\ + 0 \\ \hline 1 \end{array}$$
  
$$\begin{array}{r} 1 \\ + 1 \\ \hline 10 \end{array}$$

Binary 2

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

11

3 Decimal

0

1

2

3

4

5

6

7

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

100

8 binary

0

1

10

11

100

101

110

111

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

52



Base of  
numb.

27  $\Rightarrow$  Binary :

base 2

$$\begin{array}{r} 13 \\ 2 \sqrt{27} \\ -26 \\ \hline 1 \end{array}$$

27	27		
2	13		
2	6	1	
2	3	0	
2	1	1	
2	0	1	

$$\begin{array}{r} 0 \\ 2 \sqrt{1} \\ -0 \\ \hline 1 \end{array}$$

$$\begin{array}{r|rrr|r} & 2 & 5 & 7 & \\ \hline & 2 & 28 & & 1 \\ & 2 & 14 & & 0 \\ & 2 & 7 & & 0 \\ & 2 & 3 & & 1 \\ & 2 & 1 & & 1 \\ & 2 & 0 & & 1 \end{array}$$

Binary

111001

Decimal  $\rightarrow$  Binary

Binary  $\rightarrow$  Decimal

Base, ✓

$$386 \Rightarrow \underbrace{3 \times \underline{10^2} + 8 \times \underline{10^1} + 6 \times \underline{10^0}}_{\text{386}}$$

1 1 0 1  
↓ ↓ ✓ ↓  
→

Decimal

386

$$1 \times \underline{2^3} + 1 \times \underline{2^2} + 0 \times \underline{2^1} + 1 \times \underline{2^0}$$
$$8 + 4 + 0 + 1$$

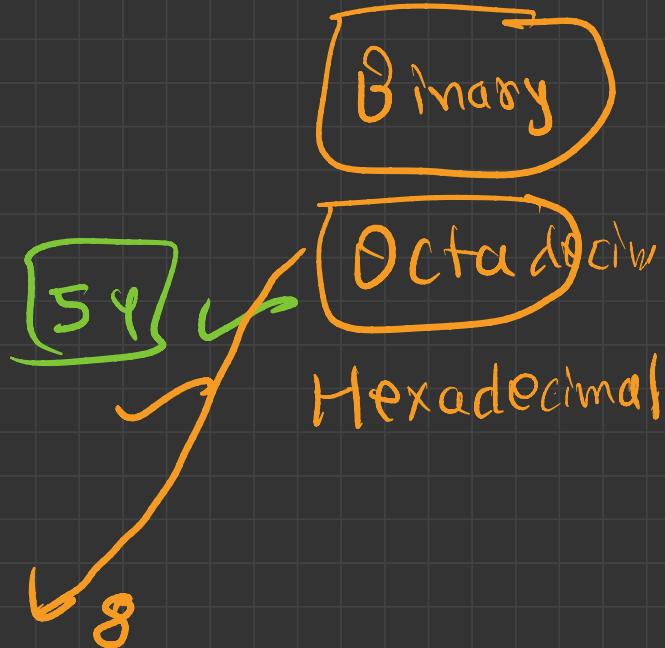
13 ✓

$$\begin{array}{r}
 \downarrow \quad | \quad \text{D} \quad | \quad | \quad \text{D} = \\
 2^5 \quad 2^4 \quad 2^3 \quad 2^2 \quad 2^1 + 2^0 \\
 \hline
 32 + 16 + 0 + 4 + 2 + 0
 \end{array}$$

Decimal  $\rightarrow$  Octal ✓

$\{ 0, 1, 2, 3, 4, 5, 6, 7 \}$  ✓

8 unique



Base of number

$$\begin{array}{c|cc|c}
 & 8 & 37 & \\
 \hline
 & 8 & 4 & 5 \\
 & 0 & 4 & \\
 & & & 4 \\
 & & & \downarrow \\
 & & & \text{decimal}
 \end{array}$$

Octal equivalent

$\boxed{45}$

$\downarrow$

$4 \times 8^1 + 5 \times 8^0$

$32 + 5 = \underline{\underline{37}}$

Hexadecimal

Base<sub>16</sub> ✓

10 11 12 13  
A B C D E F

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

Hexadecimal	16   38	2   6	0   2	E, F	0
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$$\begin{array}{rcl} \underline{1} & \underline{0} & \Rightarrow \text{Decimal} \\ 1 \times 16^1 + 0 \times 16^0 & \Rightarrow & 16 \\ \underline{10} \times 16^0 & \Rightarrow & 10 \end{array} \quad \checkmark$$

$$\begin{aligned} & 2 \times 16^1 + 6 \times 16^0 \\ & 32 + 6 = \boxed{38} \end{aligned} \quad \checkmark$$

Number system

Base 2s

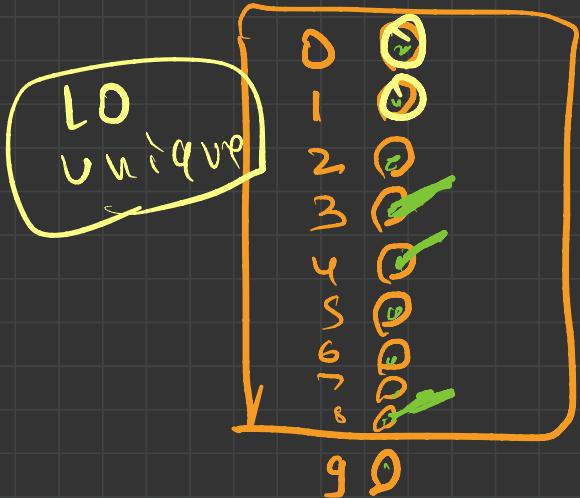
2s unique  
char

[

].



# Transistor



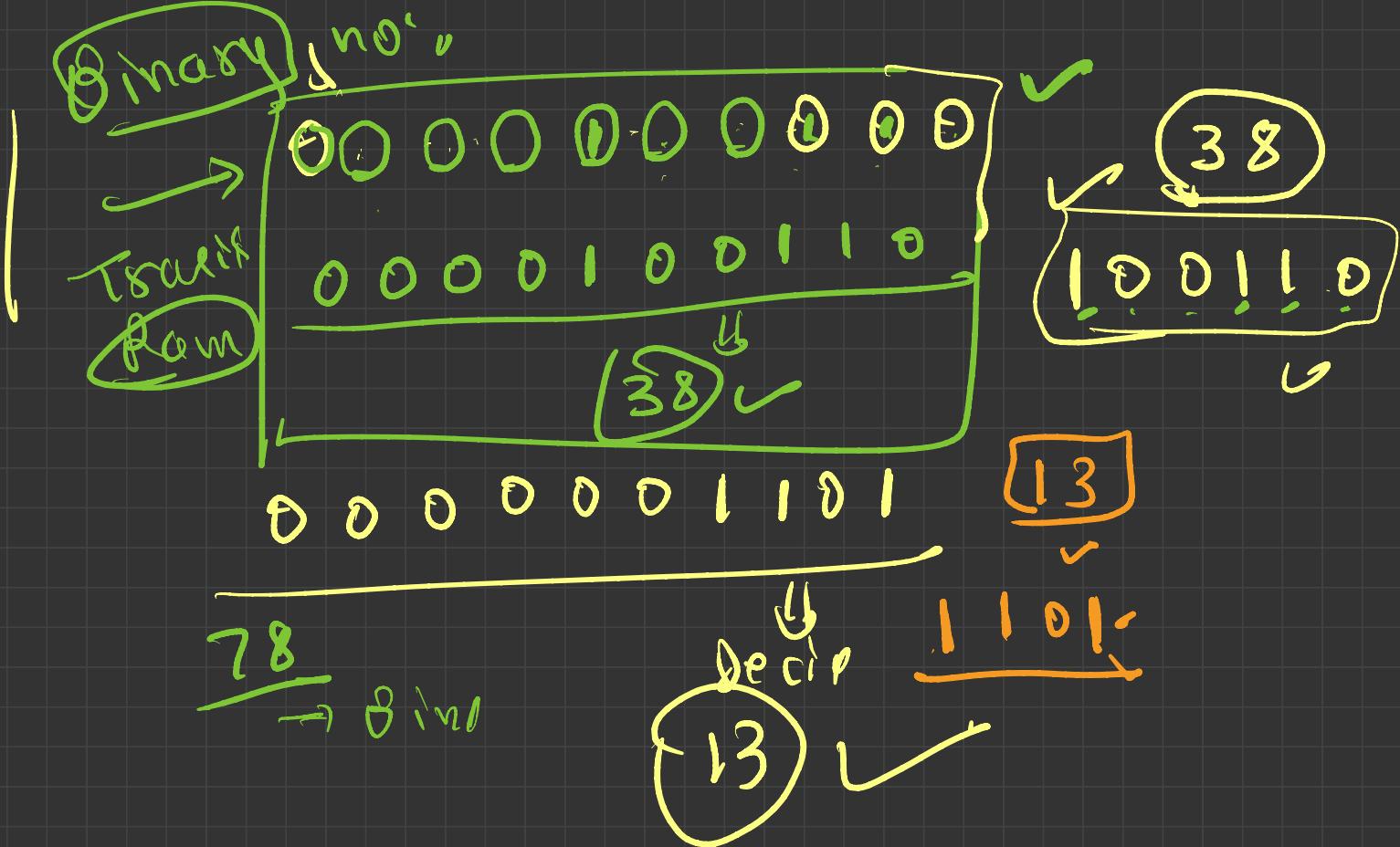
4 0 10

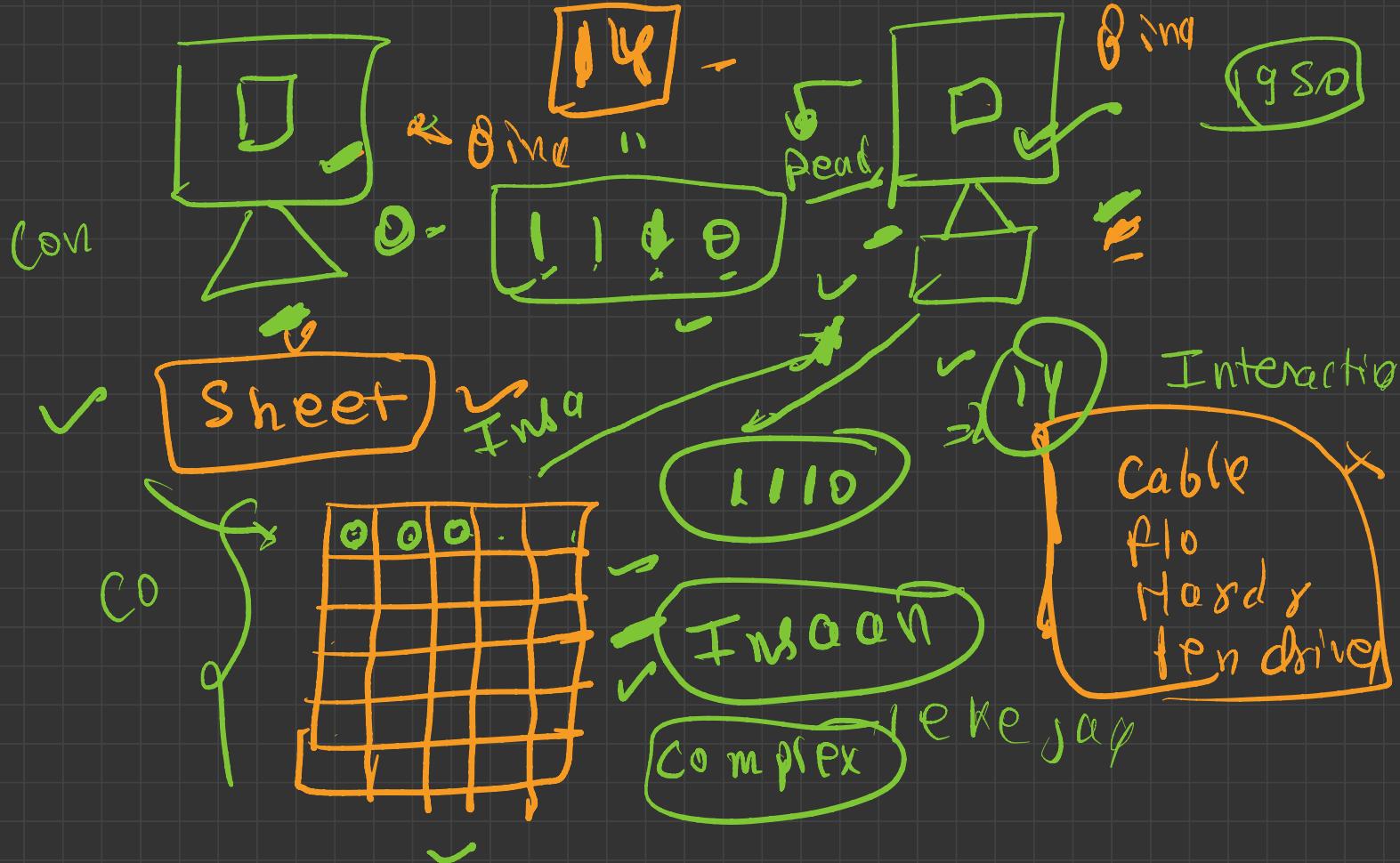


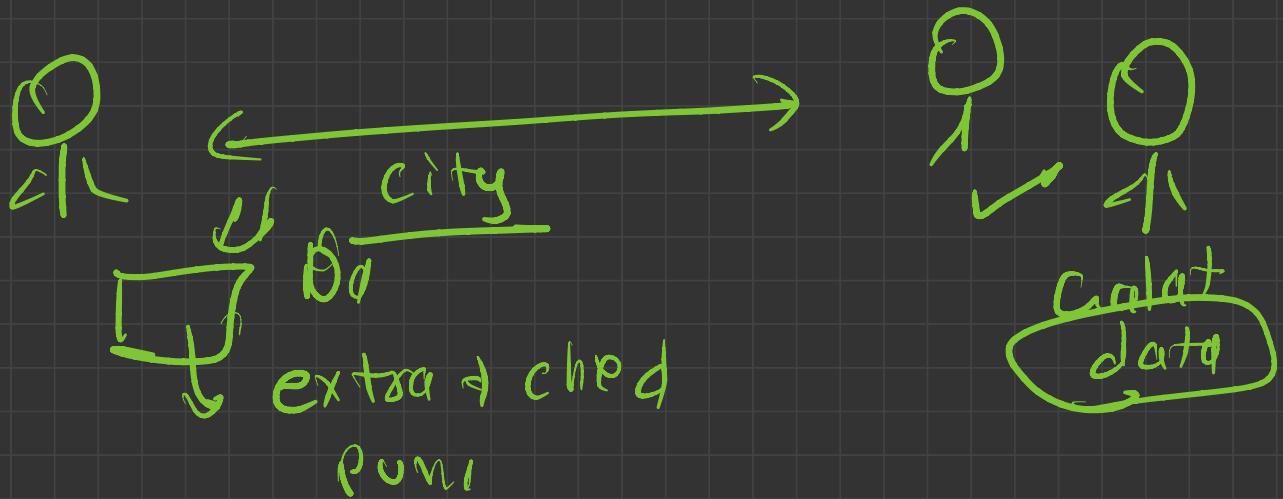
14

38

83







Next  
Telephone → establish  
US - RUSSIAN → Internet