CS & IT ENGINEERING

DISCRETE MATHS
SET THEORY

Lecture No. 1

By- SATISH YADAV SIR

01 Basics of Functions

02 Terms in Functions

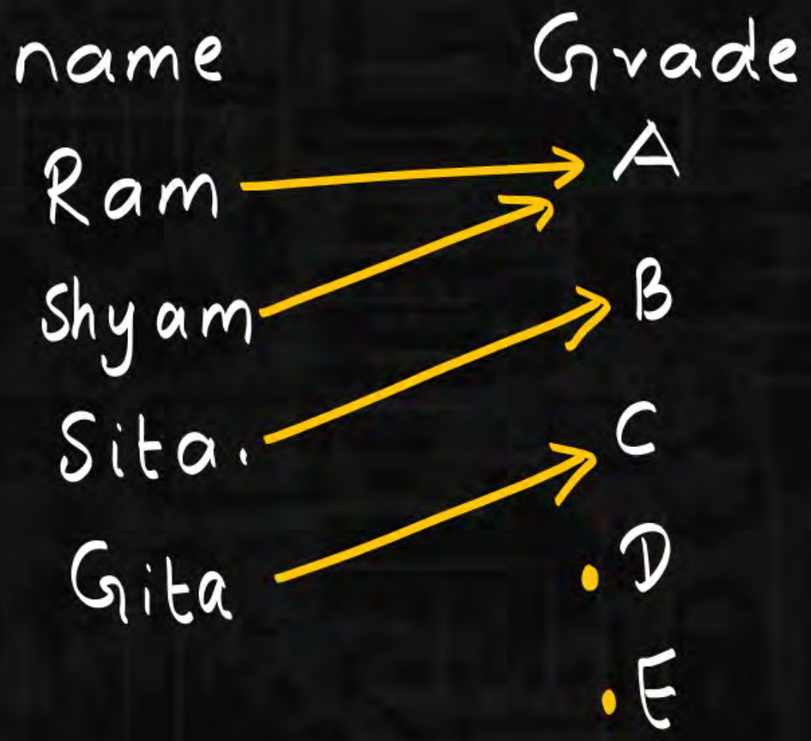
03 Number of Functions

04 Types of Functions

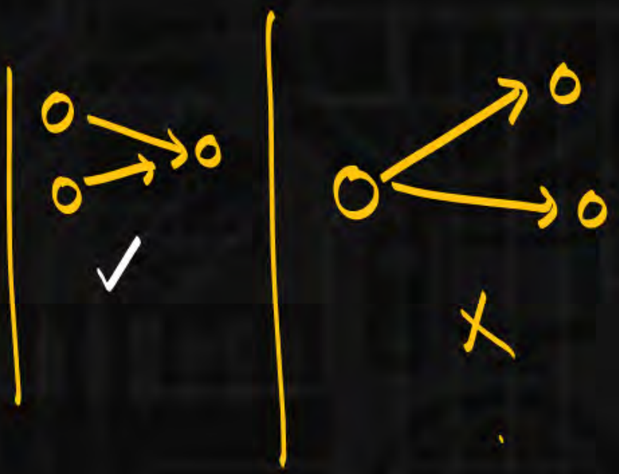
05 Various Examples in Functions

Functions

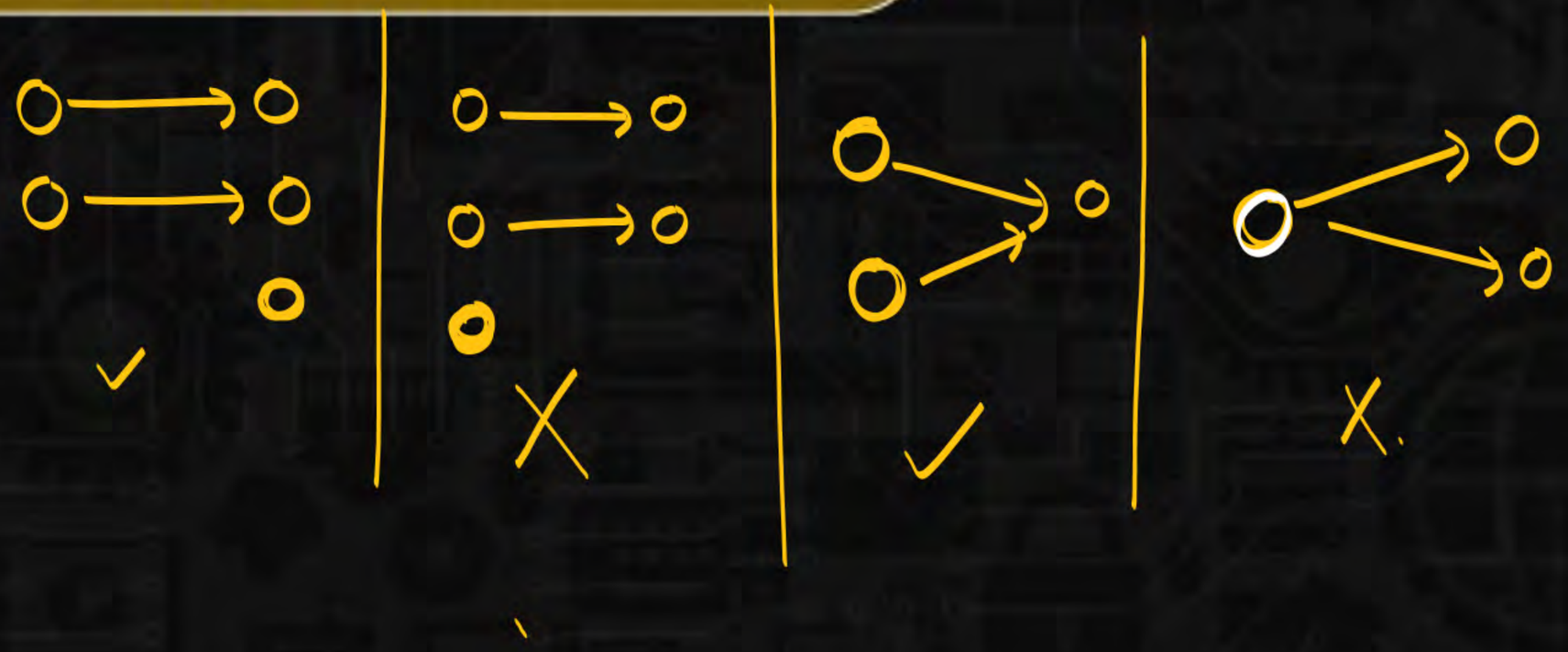
Function: / assignment / mapping / transformation.



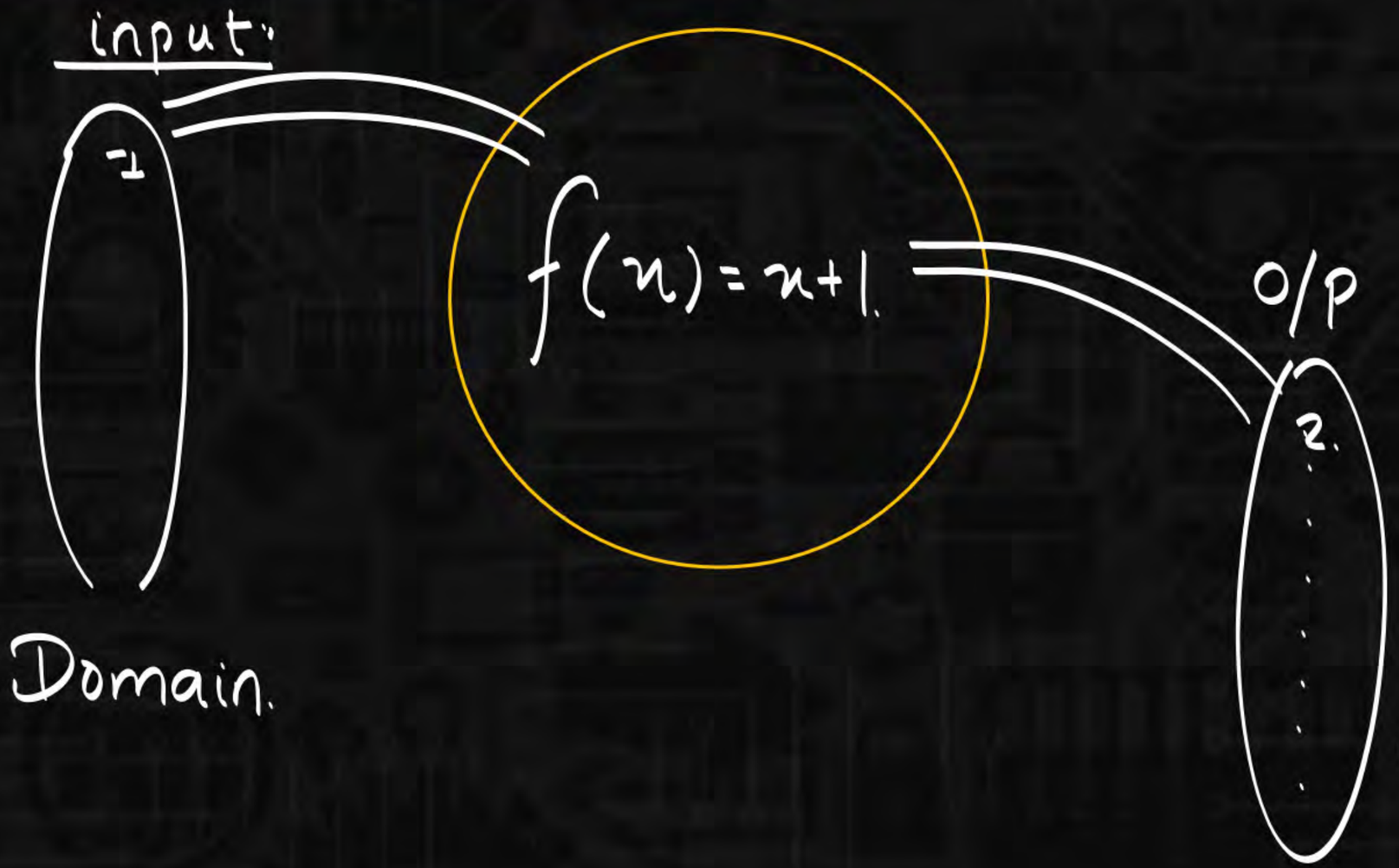
Set 1 → set 2.



Functions



Functions



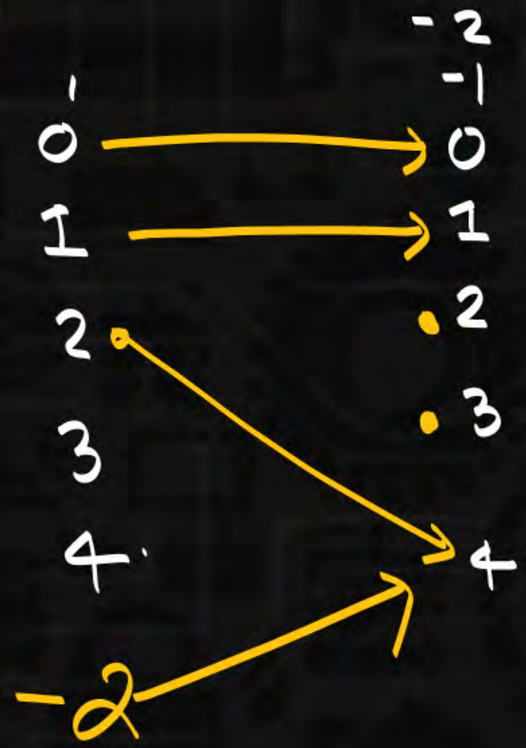
$f : set1 \to set2.$

$$\begin{cases} f : z \to z. \\ f(x) = x+1. \end{cases}$$

Functions

$f(x) = x^2$

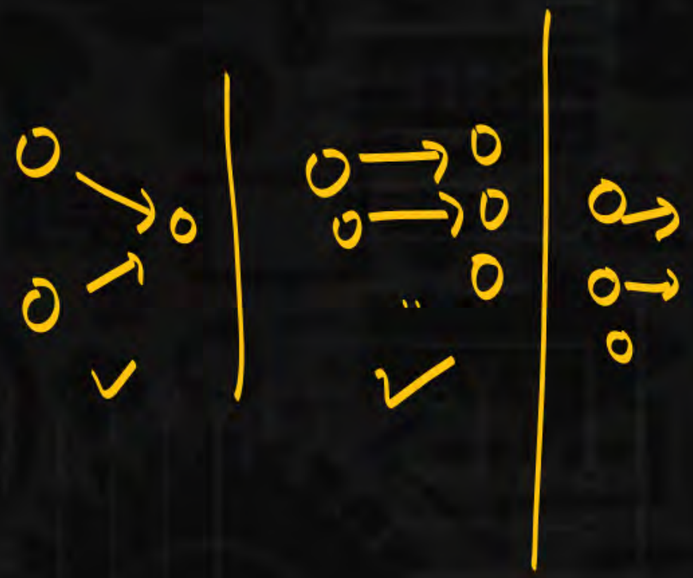
$f : \mathbb{Z} \to \mathbb{Z}$



$f(x) = x^2$

$x = 0$

$f(0) = 0$



Functions

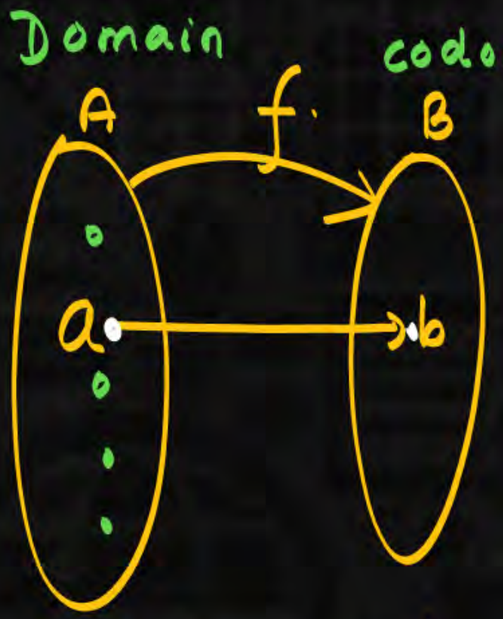
f

$f : A \to B$

A, B are non empty set

→ all elements of A must point to some elements of B

→ one element of left side must not point to 2 or more elements at same time.



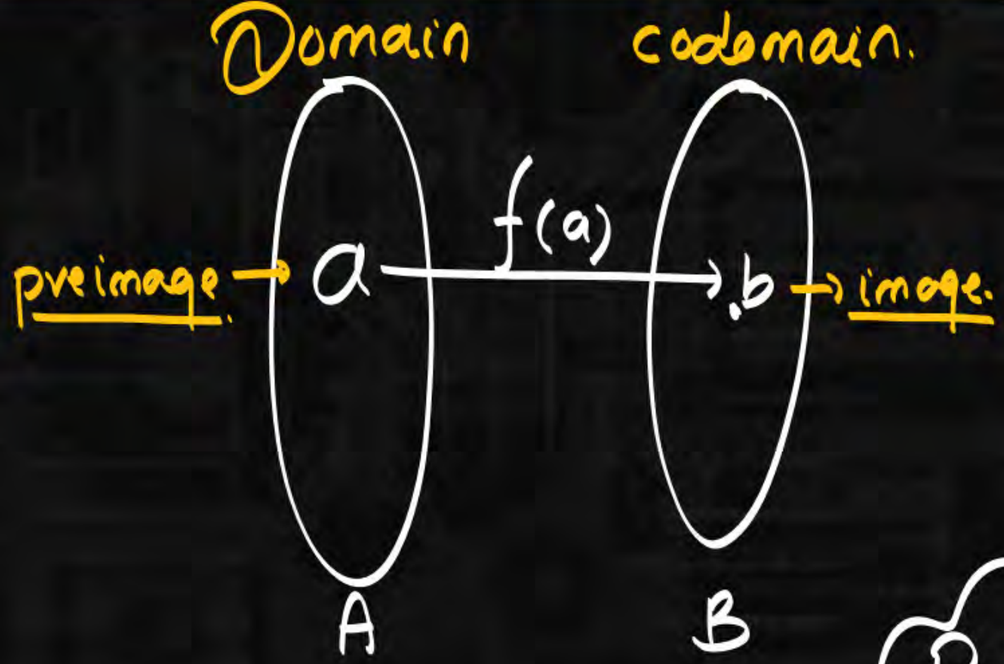
→ $f : A \to B$

→ $f(a) = b$

$f : z \to z$

$f(n) = n+1$

Functions

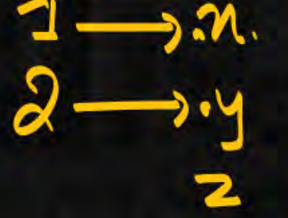


$f(a) = b$.

b is called image of a.

a is pre image of b.

Range $\subseteq$ codomain



Range = {x, y}.

Codomain: {x, y, z}.

Range:

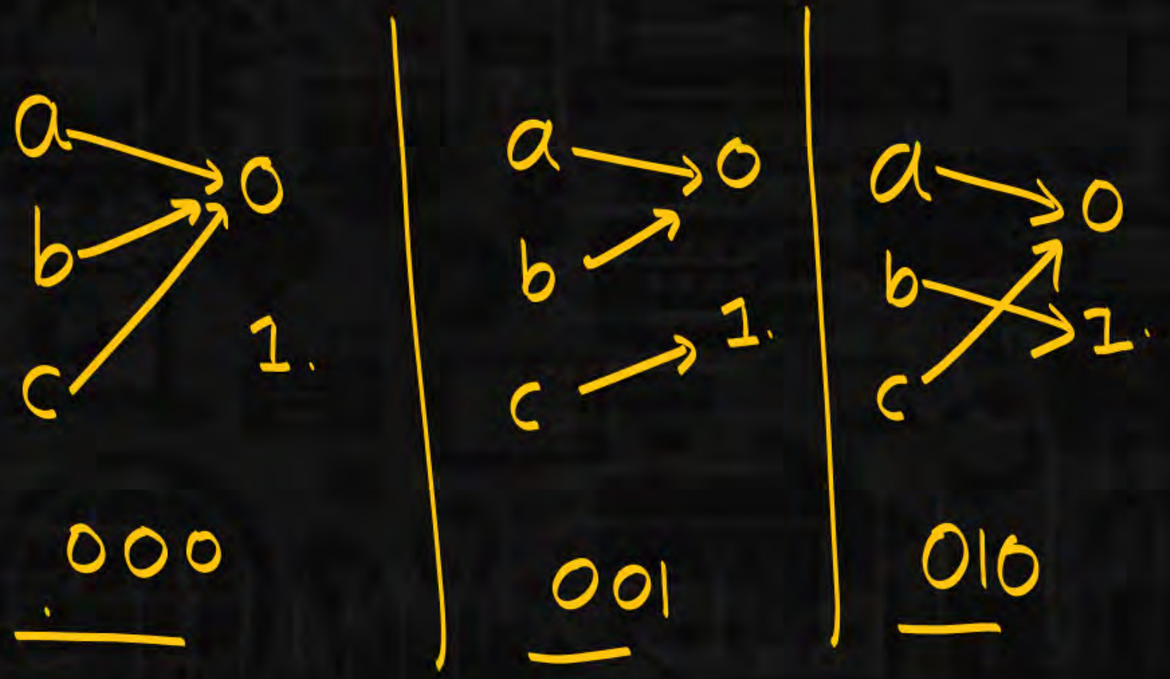
collection of images.

Functions

$f: A \to B$.

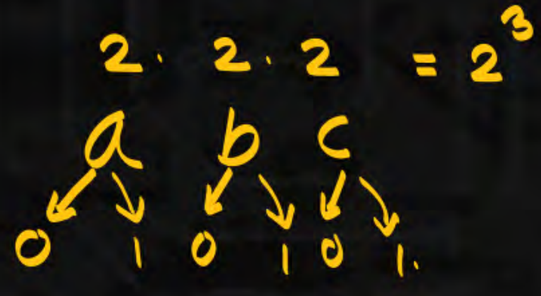
$|A| = 3 \quad |B| = 2$.

Total no of functions = Total diff. arrows repvesentn



000 001 010 011 100 ..... 111.

Functions



8 Functions { 000 ... 111

$= 2^3$

$= (R \cdot S)^{L \cdot S}$

Total no. of functions $= (R \cdot S)^{L \cdot S}$

Functions

$f: X \to Y$ Total no of functions $= 97$.

A) $|X| = 97$ $|Y| = 1$. $(1)^{97} = 1$.

B) $|X| = 1$ $|Y| = 97$ $(97)^1 = 97$.

C) $|X| = 97$ $|Y| = 97$. $(97)^{97} =$

D) nota

A)


THANK YOU GW
SOLDIERS !