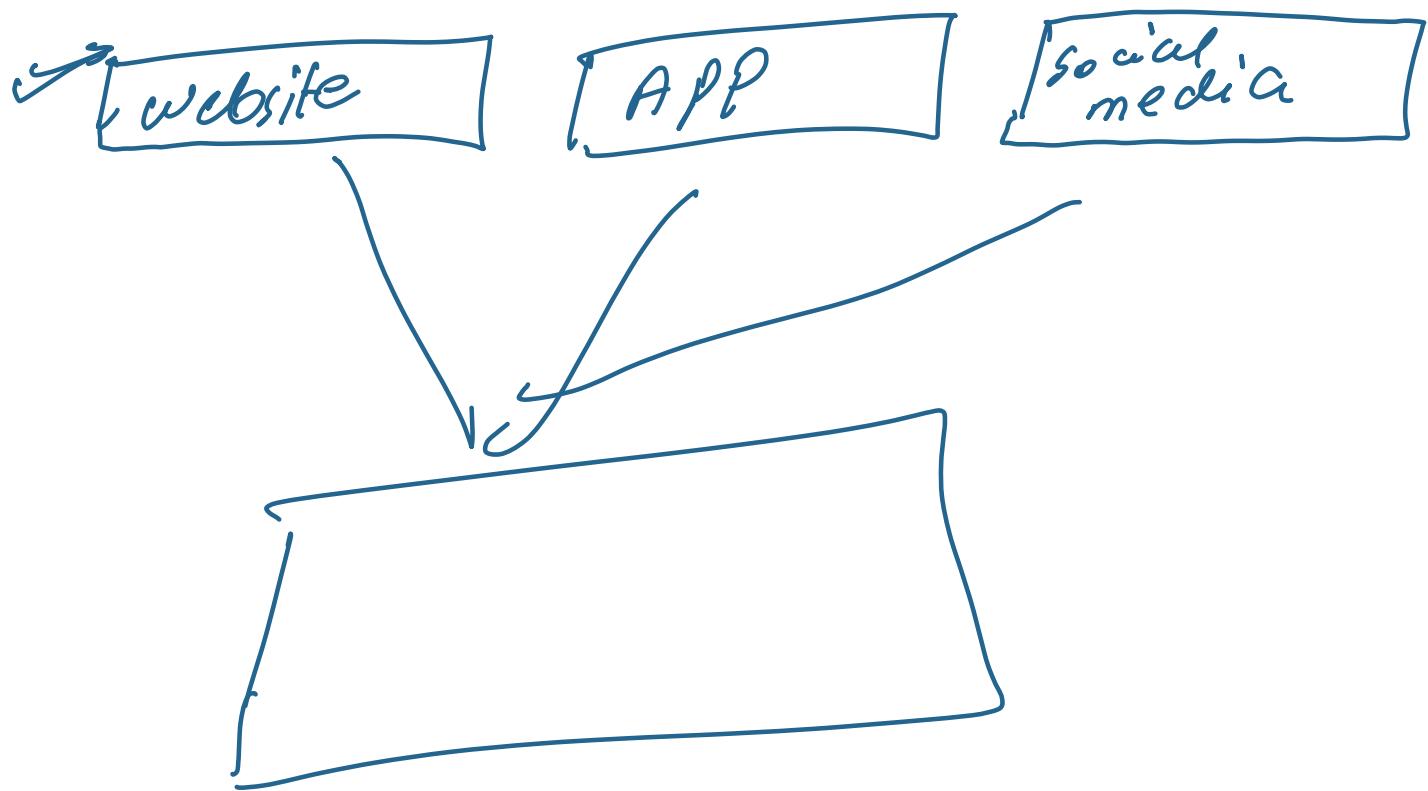


Python

- ① Data Engineer
- ② Data Analytics
- ③ Data Scientist



Data scientist

some

#

Guido Van Rossum

1991

Printing "Hello world"

How to Comment → ~~##~~
 " " " "

* Variables

⇒ Container

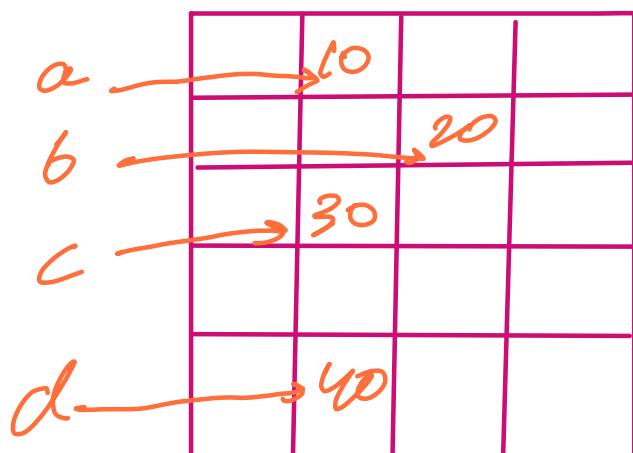
⇒ * Name of memory location
which contains the data

$$a = 10$$

$$b = 20$$

$$c = 30$$

$$d = 40$$



Rules of Naming Variable

① Keywords ✗

② No start w/
symbol start ✗ } Alpha numeric

③ age, Ag AGE

Creating Variables

a = 10

b = "Arun"

Point(a)

Point(b)

a = Arun
b = Sunit
c = Ramegh

x, y, z = " " - " "

$x = \text{Arun}$

$y = \text{Arun}$

$z = \text{Arun}$

$x = y = z = "Arun"$

Data type

Data

String → immutable
String is mutable

text → String

Numeric → integer, float, complex

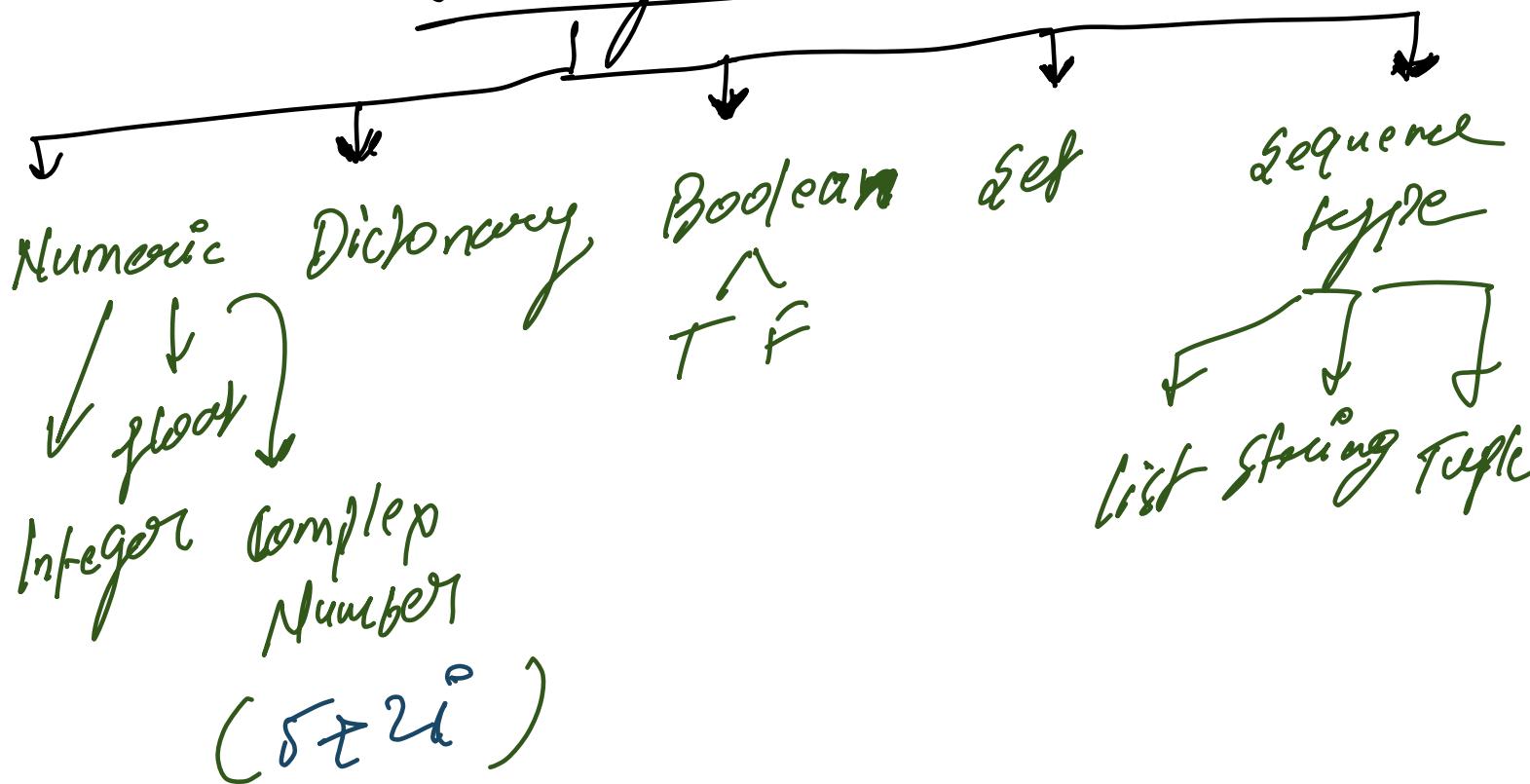
Sequence Type → list, tuple, range

mapping types ⇒ dict

Set

Boolean ⇒ T, F

Data Types



Key → Value

1 → "Akash"

2 → "Abhishek"

3

$x = "Arun"$

$y = "Kumar"$

$z = "Sharma"$

$\text{point}(x, y, z)$



$\text{point}(x)$

$p(y)$

$p(z)$

- (a) Arun Kumar Sharma
- (b) ArunKumarSharma
- (c) Arun
Kumar
Sharma

key : value

String \Rightarrow ; " "

`int a = 10`

`string b = "20"`

Operators

special symbol used
to perform operations
on values &
variables

Operand

$a \oplus b$

if is the value on which the
operator is applied.

Types

- ① Arithmetic operators
- ② Comparison "

- ③ Assignment "
- ④ Logical "
- ⑤ Bitwise "
- ⑥ Identifying operations
And membership
operators

Addition

$a = 5$

$b = 3$

$\text{print}(a + b)$

$a = "Akash"$

$b = "Kumar"$

$\text{print}(a + b) \Rightarrow \text{Concatenation}$

$\text{print}(a - b)$

$\text{print}(a * b)$

$\text{print}(a / b)$

2 \rightarrow 1 \leftarrow 0ms

$$a = 10$$

$$b = 20$$

$$c = a + b$$

point(c)

point(type(c))

$$x = 2.34$$

$$y = 5.67$$

$$x - y$$

$$y - x$$

$$a = 5 + 3j$$

$$b = 2$$

$$\theta(p) \quad j+3j$$

$$a = 5 + 3j$$

$$b = 3 + 2j$$

⇒

$a = 10 \cdot 3$

$$b = 2$$

$$c = 5 + 3j$$

$$\text{Result} ((a+b) \pm c)$$

$a =$ "Agecum"
 $b =$ "Shortuey"
 $(a - b)$

~~#~~ Moduloces

\hookrightarrow remainder

① $15 \% \textcircled{3} =$

$15 \% 4 =$

$12 \% 5 =$

$6 \% 5 =$

$$19\%_3 =$$

$$a \sqrt[3]{N} = \boxed{ob(N-1)}$$

$$11\%_3 \Rightarrow 2 \quad 11\%_5 \Rightarrow ①$$

$$12\%_3 \Rightarrow 0 \quad 0$$

$$13\%_3 \Rightarrow 1 \quad 1$$

$$14\%_3 \Rightarrow 2 \quad 1 \\ 2$$

$$15\%_3 \Rightarrow 0 \quad 0$$

$$16\%_3 \Rightarrow 1 \quad \text{1}$$

$$12^{\circ}/4 = 0$$

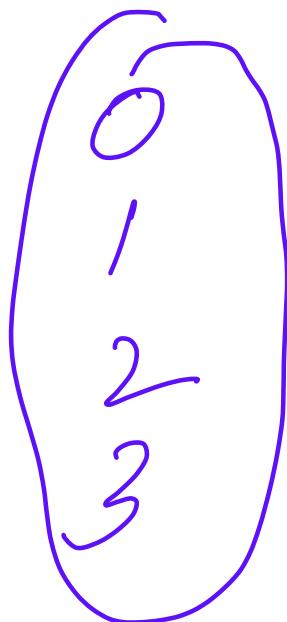
$$0-(N-1)$$

$$13^{\circ}/4 = 1$$

$$14^{\circ}/4 = 2$$

$$15^{\circ}/4 = 3$$

$$16^{\circ}/4 = 0$$



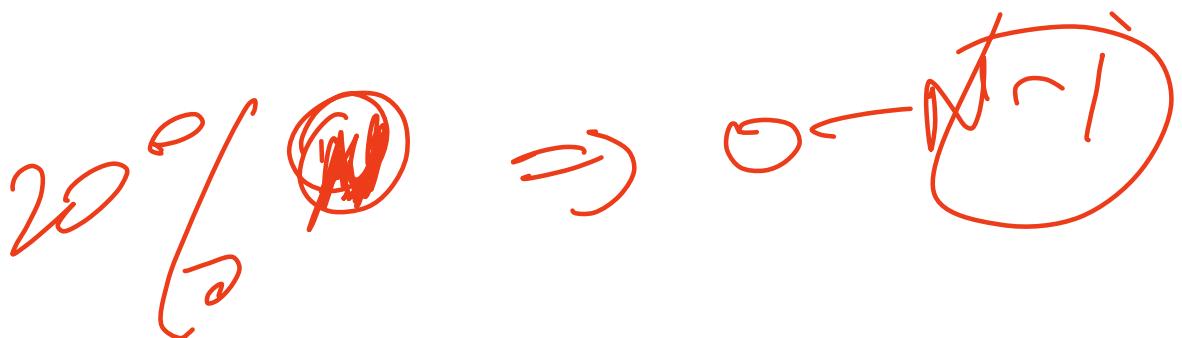
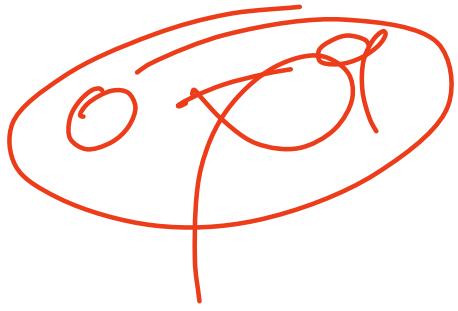
$$0-(4-1)$$

$$0-(N-1)$$

$$17^{\circ}/4 = 1$$

$$18^{\circ}/4 = 2$$

3
0



Exponent

— 126

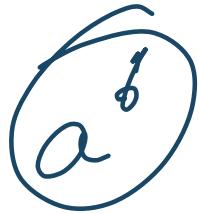
2387

$\delta^4 \Rightarrow \star\star$

Point($\delta \times \star^4$)

$$a = 12.79$$

$$b = 5$$

Point($a \neq b$) \Rightarrow 

*

$$a = \text{true}$$

$$b = \text{false}$$

Point(type(a))

Point(type(b))

Q) find the perimeter of a square with side 6 cm

⑥ find the area of the same square

Q2(a) find the area of
the rectangle with

$$l = 6 \text{ cm}, b = 4 \text{ cm}$$

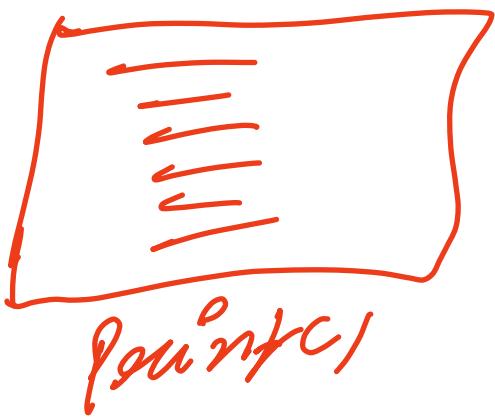
⑥ find the perimeter

DAY-2

Functions \Rightarrow Behaviour

Point C \rightarrow 10

\rightarrow Code Reusability



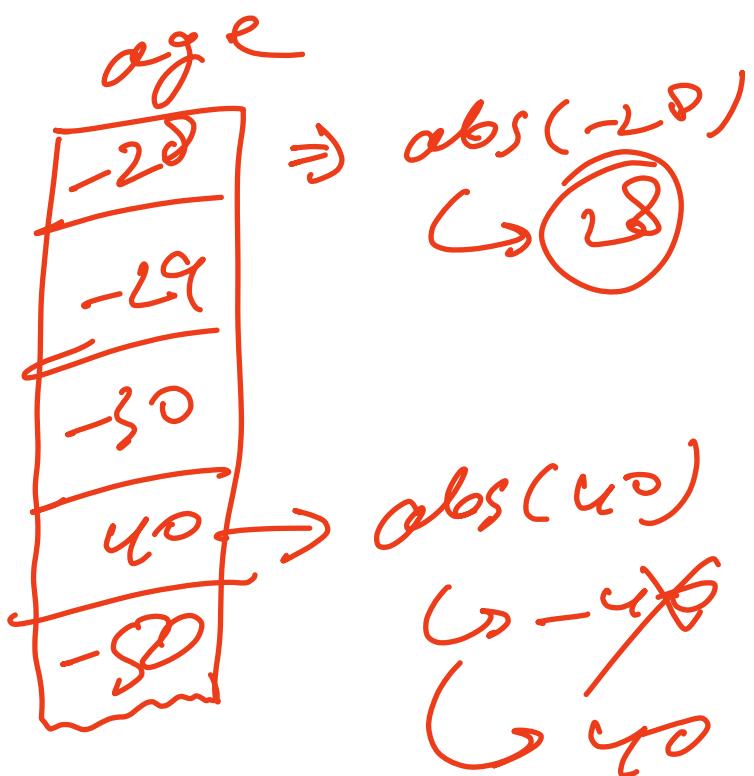
Types

① Built-in function

→ print()

→ ~~abs~~ Built-in function

- abs()
- max()
- int()
- str()
- float?



① $\text{abs}(c)$

② $\text{bin}(c)$

\hookrightarrow Binary Number

$\Rightarrow 13$
 110

$$\begin{array}{r} 4 \quad 13 \\ \hline 2 \quad 6 \quad 0 \\ 2 \quad 3 \quad 1 \\ \hline 1 \end{array}$$

110

③ ~~byte~~

bytes(c)

④ $\text{chr}(c)$

ASCII

a
 $\hookrightarrow 97$

A $\rightarrow 65$

? 32

16

⑤ Complex

$$x = \text{complex}(3, 5)$$

$$\Rightarrow 3 + 5j$$

$$x = \text{complex}(\underline{\underline{3.56}}, \underline{\underline{2.59}})$$

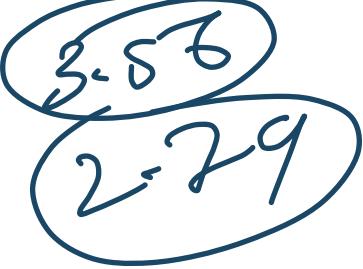
$$\Rightarrow 3.56 + 2.59j$$

$$x = \text{complex}(3)$$

$$\Rightarrow 3j \quad (@)$$

$$\Rightarrow 3 \quad (@)$$

$$\Rightarrow 3 + 0j \quad (@) \quad \checkmark$$

⑥ $\text{float}(c)$
↳ decimal


$$x = \text{float}(5)$$
$$= 5.0$$

$$y = \text{float}("3.5000")$$
$$= 3.5^{\checkmark}$$
$$= 3.5000$$

⑦ $\text{format}(c)$
 $x = \text{format}(65, 'c')$
 $\text{print}(x)$

$x = \text{format}(0.7, "%")$
 $= 70%$

⑧ int()

String str = "12"

x = int("12")

print(x) \Rightarrow 12
12

type(str)
type(x)

⑨ str()

⑩ help(print)

1

.

.

68

- ② Python Recursive function
- ③ Python Lambda function
- ④ user-defined function

⑤ (input)

```
x = input("Enter your std-id")  
print(x)
```

```
x = input("Enter your name")  
print("Hello " + x)
```

\Rightarrow $\zeta \Rightarrow \text{Lab}^2 S$

$\Rightarrow \text{Lab} 1 \Rightarrow \text{inf}$

$\text{Lab} 2 \quad ..$

$\text{Lab} 3 \quad ..$

$\text{Lab} 4 \quad ..$

$\text{Lab} 5 \quad ..$

① Avg

② %-age

a = input ($\leftarrow \rightarrow$)

~~b~~ = input ($\leftarrow \leftarrow$)

c

d

e

sum = a + b + c + d + e

avg = sum / 5

$$\% \text{ age} = \frac{\text{sum}}{500} \times 100$$

① Get input from the user
maths = input("Enter your Math score")

[70]

English = input(" ")

H = "

Sci = "

SST = "

$$\text{avg} = \frac{maths + English + H + Sci + SST}{5}$$

$$\text{percentage} = \frac{\text{sum}}{\text{Total sum}} \times 100$$

Control flow statements in Python

① if

if (condition) :

 print(\longleftrightarrow)
 \longleftrightarrow

i = 20

if (i \geq 15) :
 print(" i is greater
 than 15)

 print(\longleftrightarrow)

if attendance $\geq 80 \Rightarrow$ green mark

if attendance ≥ 50 but $< 80 \Rightarrow$ yellow

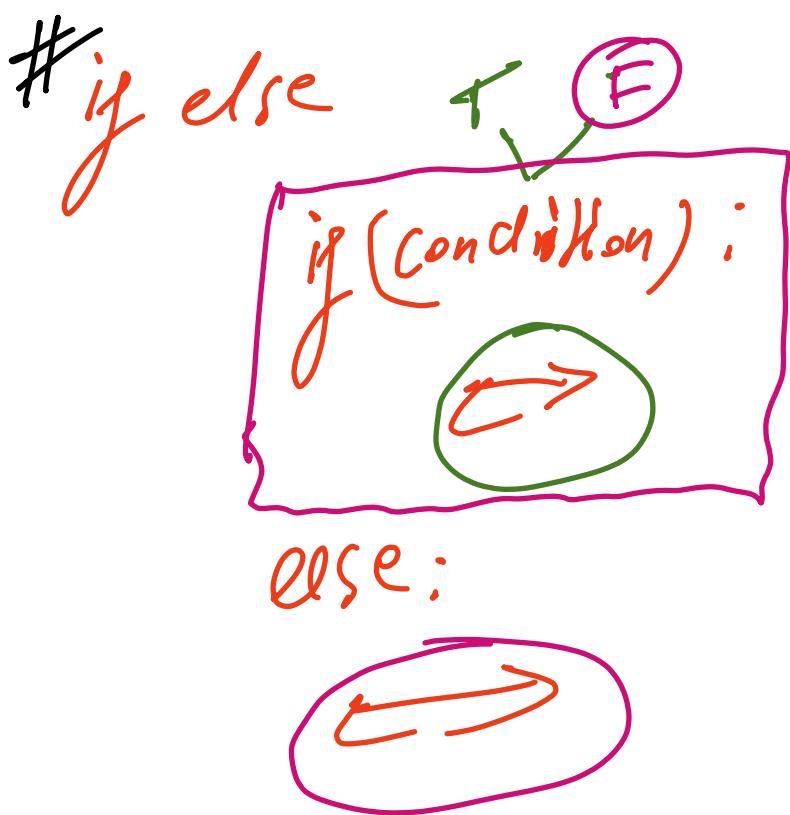
if attendance $0 \leq 50 \Rightarrow$ red

$a = \text{int}(\text{input}(\text{"enter your attendance"})$)

if $a \geq 80 :$
 print("green")

if $a \geq 50$ and $a < 80 :$
 print("yellow")

if $a > 0$ and $a < 50 :$
 print("Red")



age = 22

if age ≥ 18 :

 Print("you are eligible")

else :

 Print("you cannot vote")

if-elif-else

if (condⁿ) :



elif condⁿ :



else condⁿ:



else :



score = input

score $\geq 90 \Rightarrow A$

score $70-89 \Rightarrow B$

score $50-69 \Rightarrow C$

score $30-49 \Rightarrow D$

Others $\Rightarrow E$

a = int(input("Enter your score"))

if a ≥ 90 :

 print("A grade")

elif a ≥ 70 and a < 90 :

 print("B grade")

elif a ≥ 50 and a < 70

 print("C grade")

:

else :

 print("wrong input")



if condition :

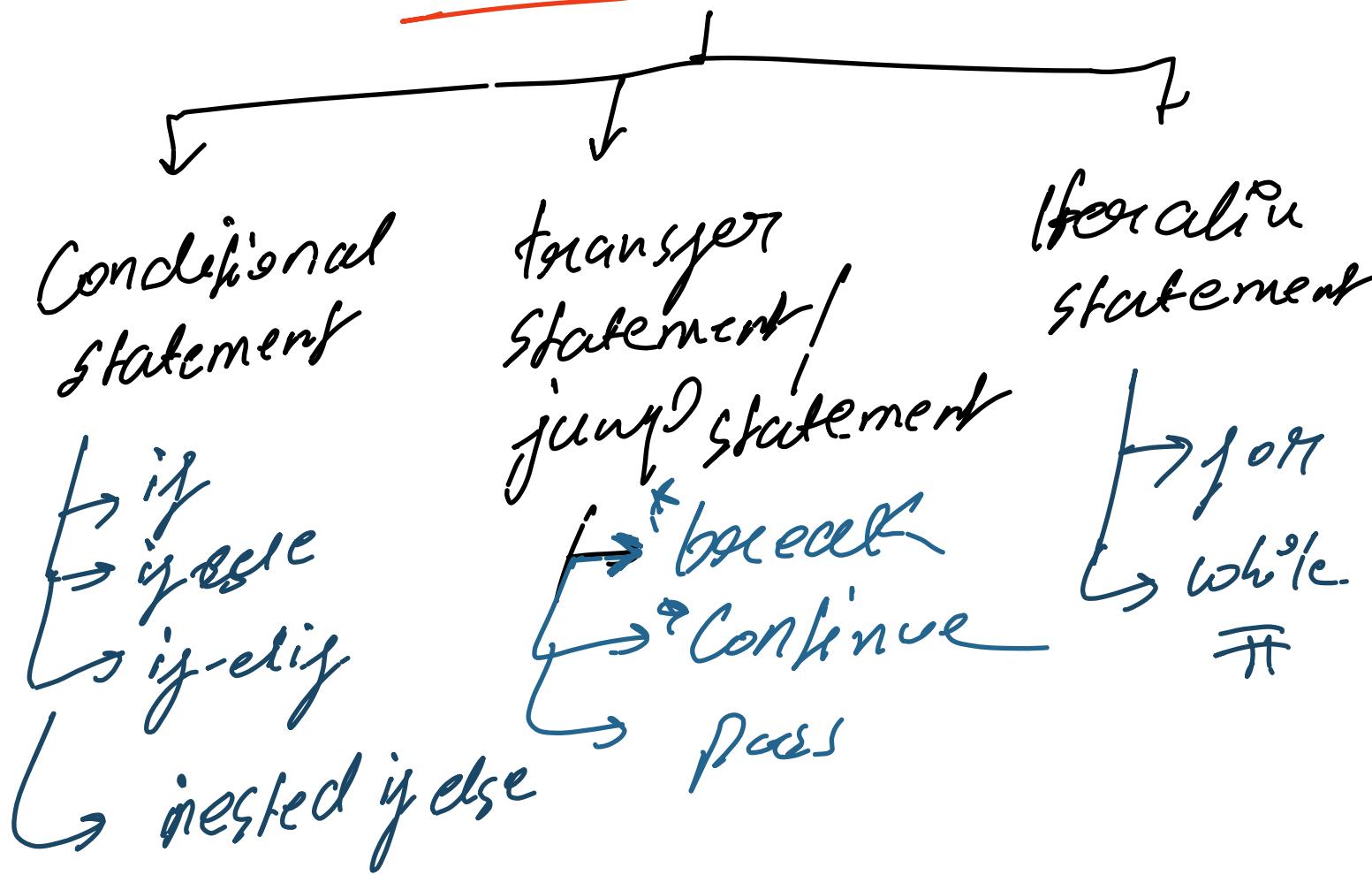
 Statement 1
 Statement 2

if (T/F)
 Statement

else

if-else

Flow Control



if (condition):

 if (cond):

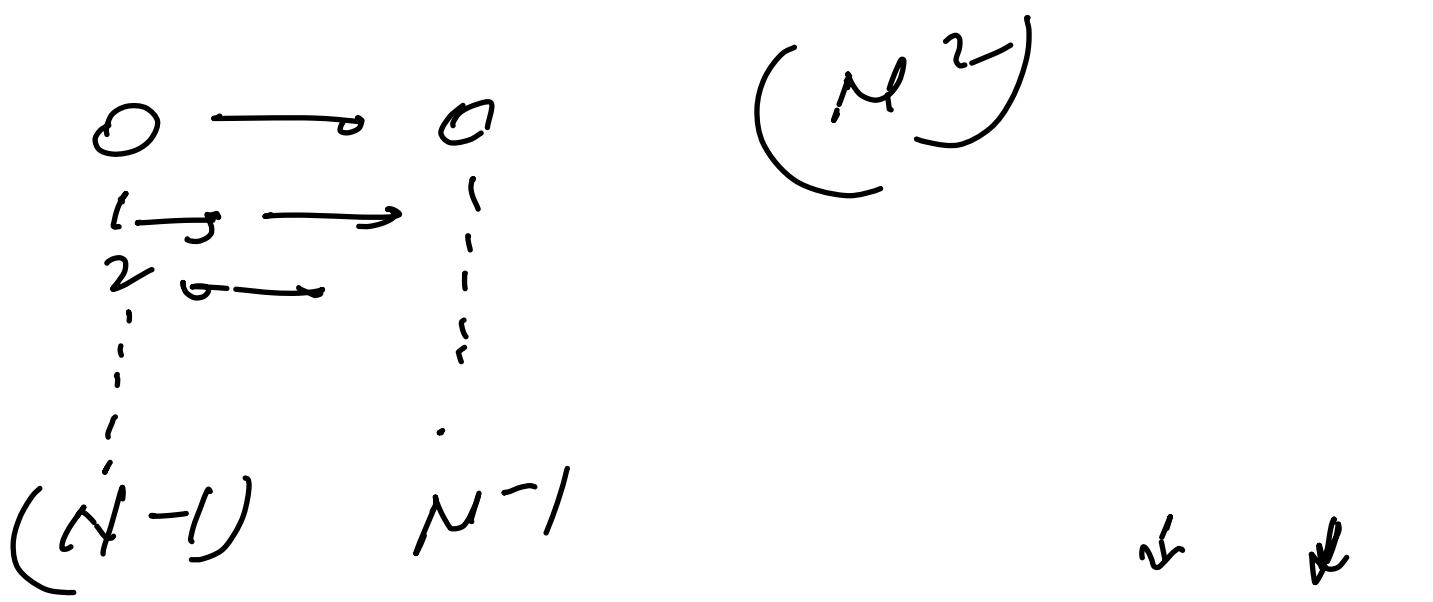


 else:



for $(0 \rightarrow n-1)$:

for $(0 - n-1)$:



$T_C \Rightarrow O(N^2) \Rightarrow (N) (N^2)$

$S_C \Rightarrow \Rightarrow (N) O$

for 0 to ($n-1$) {

 → ($i = 5$)

 → break



$i = 5$

Continue

3

4

5

6

7

8

9

10

Loop in Python

for
if I know
how many times
the loop iterate

while
+

when no of
iterations are
not fixed

1 4 7
2 5 8
3 Statement
4 Statement
5 i = 1
6 i = i + 1
7 Python

while (cond):

statements

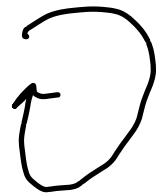
i = i + 1

i = 1

False

10 10

Point()



Point(2)

:

Point(10)

$i^{\circ} = 1$

, $n = 10$

while $i^{\circ} \leq n$: $i^{\circ} = 1 \leq 10$

Point(i°) \rightarrow

$i^{\circ} = i^{\circ} + 1 \rightarrow$

$i^{\circ} = 5$

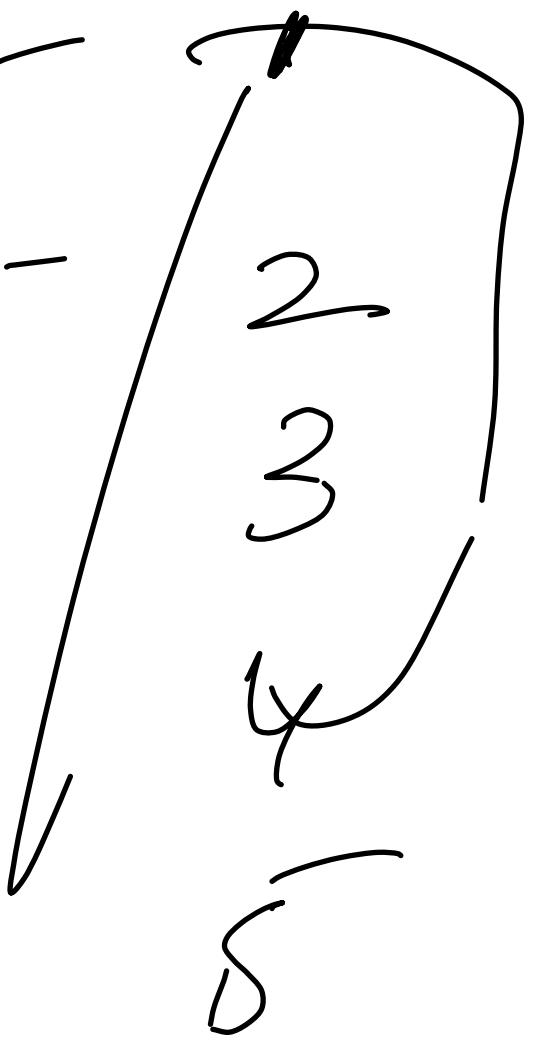
$\Gamma^{\partial} = C$, $\Gamma^{\partial} = S$

$C^{\partial} = n$

$C^{\partial} = 5$

$C^{\partial} = 5$

$C^{\partial} = x, 2, \beta, y, z$



Print the table of 8

8×1	$= 8$
8×2	$= 16$
\vdots	\vdots
8×10	$= 80$

$n = \text{int}(\text{input}(\text{"enter the no")})$

$i = 1 \rightarrow \text{initialization}$

while $i <= 10:$ // $i \neq 3$

$\text{print}(n * i) // 8 \times 1, 8 \times 2, 8 \times 3$

$i = i + 1 // \neq 3$

8 \times 1
8 \times 2
8 \times 3
8 \times 4

$$1^3 \Rightarrow 1$$

① while

$$2^3 \Rightarrow 8$$

②

i ≠ 3

$$3^3 \Rightarrow 27$$

$$4^2 = 64$$

125 -

1

1

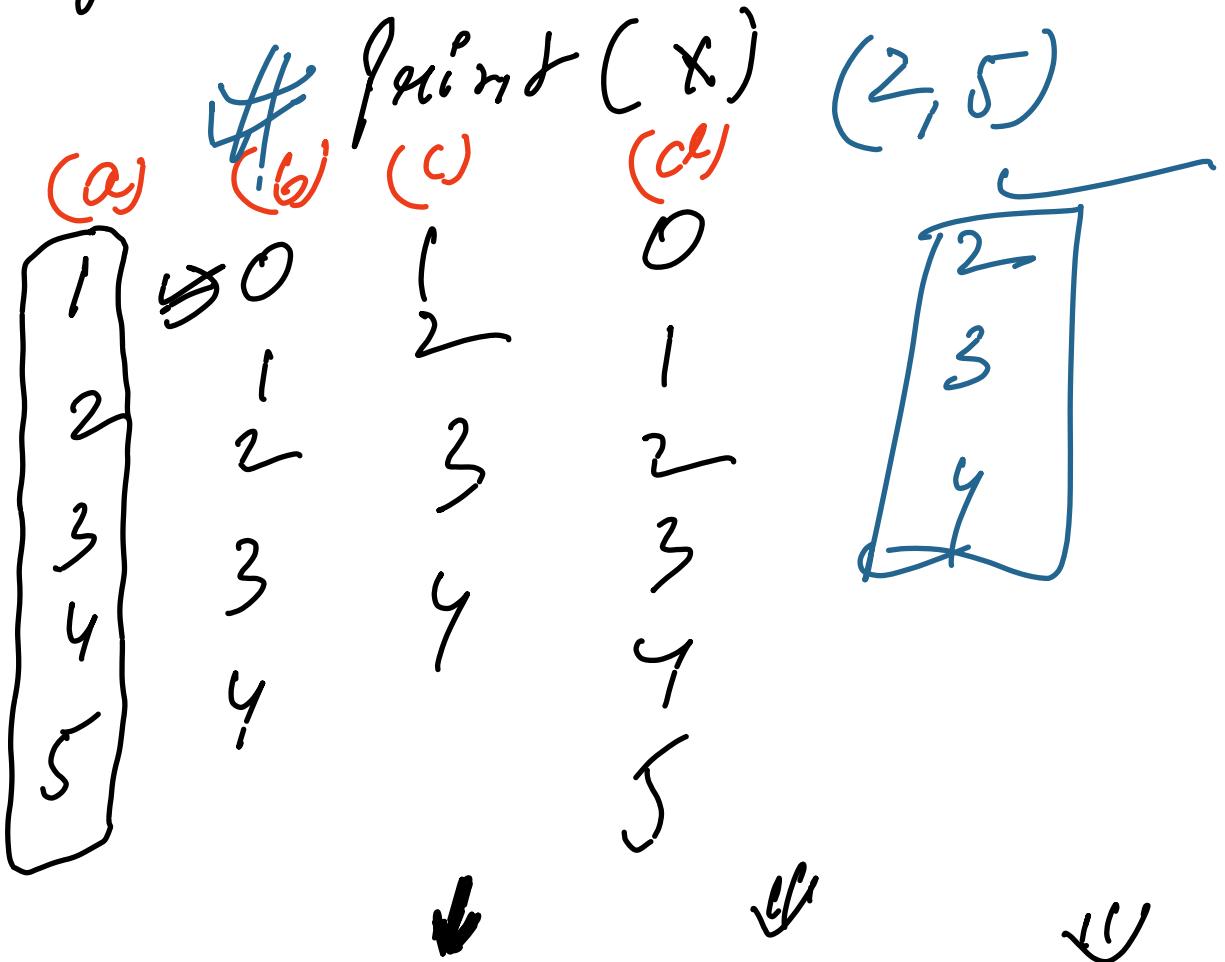
1

1

8

for loop

for x in range(5):
 \downarrow



names = ["Akshat", "Tushar", "manish"] +

for x in names:

print(x) \Rightarrow

for a in "Arun Kumar Sharma":

print(a)

=> Arun Kumar Sharma

=>
A
r
u
n
K
u
m
a
r
s
h
a
r
m
a

```
for i in "Arun Kumar Sharma":  
    print(i)  
else:  
    print("Its over")
```

Q3 Print the square of all the
numbers 40 // 15

append

names → list

names.append("append")

list = {}

for i in range
list.append(i)

print(list)

Q: odd even

$$A = \{2, 7, 3, 4, \textcircled{9}, \textcircled{9}, 12, 13\}$$

odd list \Rightarrow

even list \Rightarrow

odd number = 1, 3, 5, 7 - .

even number = 2, 4, 6, 8

$$\boxed{N \% 2 == 0} \Rightarrow \text{even}$$

else
odd