**Class 04: Control Flow and Looping Constructs**

1. What is Control Flow?

Ans: Control flow is **the order in which the instructions in a program are executed**. It’s like the “traffic rules” for your code — deciding *which road* the program takes next.

Without control flow, code would just run line by line from top to bottom.  
With control flow, the program can:

* **Make decisions** (if, else)
* **Repeat actions** (for, while)
* **Jump out or skip steps** (break, continue)

**2.** Types of Condition Apply

- If Statements

Example-

marks=90  
if marks>=80:  
 print ("A+")

- Else Statements

Example-

marks=60  
if marks>=80:  
 print ("A+")  
else:  
 print ("Not A+. Can be B+")

- Elif Statements/ Ladder

Example-

marks=85  
if marks>=80 and marks<=100:  
 print("A+")  
elif marks>=70 and marks<=80:  
 print("A-")  
elif marks>=60 and marks<=70:  
 print("B+")  
elif marks>=50 and marks<=60:  
 print("B-")  
elif marks>=40 and marks<=50:  
 print("C+")  
elif marks>=33 and marks<=40:  
 print("D")  
else :  
 print("F")

- Nested If else

Example-

age=30

permission=True

if age>=20:

    if permission==True:

        print("You can join with us")

    else:

        print("You can't join with us")

else:

    print("You are under aged")

**3.** Use Case of If else

- **User Authentication**

👉 Checking if the username & password are correct.

Example-

username = "tonmoy"

password = "1234"

if username == "tonmoy" and password == "1234":

print("✅ Login Successful")

else:

print("❌ Wrong username or password")

**- Form Validation**

👉 Making sure the form is filled properly.

Example-

name = ""

if name == "":

print("❌ Name cannot be empty")

else:

print("✅ Name accepted")

- **Payment Processing**

**👉** Checking if you have enough money.

Example-

balance = 500

price = 300

if balance >= price:

print("✅ Payment Successful")

else:

print("❌ Not enough money")

**- Data Filtering**

👉 Showing only the data you need.

Example-

age = 15

if age >= 18:

print("✅ Allowed to watch movie")

else:

print("❌ Not allowed")

**- Weather Forecasting**

👉 Checking weather condition.

Example-

weather = "rain"

if weather == "rain":

print("☔ Take an umbrella")

else:

print("😎 Enjoy the sunshine")

**- Inventory Management**

👉 Checking if items are in stock.

Example-

stock = 0

if stock > 0:

print("✅ Item available")

else:

print("❌ Out of stock")

**- Personalization**

👉 Showing things based on user choice.

Example-

language = "Bangla"

if language == "Bangla":

print("👋 হ্যালো!")

else:

print("👋 Hello!")

4. What is Loop?

A loop is a way to make the computer repeat something again and again until a condition is met.

5. Types of Loop

- for Loop in Python (Entry Control Loop)

Example-

girls=["Diya","Shreya","Mohona","Tresha"]

# 0,1,2,3---->

for gf in girls:

    print(gf)

- while loop in python (Entry Control Loop)

Example-

girls=["Diya","Shreya","Mohona","Tresha"]

while chokkor<len(girls):

    print(girls[chokkor])

    chokkor=chokkor+1

- do while loop (X) (Exit Control Loop)

Example-

girls = ["Diya", "Shreya", "Mohona", "Tresha"]

chokkor = 0

while True:

print(girls[chokkor])

chokkor = chokkor + 1

if not (chokkor < len(girls)): # stop when condition is false

break

- break statement

Example-

girls = ["Diya", "Shreya", "Mohona", "Tresha"]

for gf in girls:

    if gf=="Mohona":

        break

    print(gf)

- continue statement

Example-

girls = ["Diya", "Shreya", "Mohona", "Tresha"]

for gf in girls:

    if gf=="Shreya":

        continue

    print(gf)

6. Use case of Loop

- Data Processing

- Reports

- Automating task

- User Interfaces

- Loop Over List,Map,Set

7. Logical Operator in Python

- and

Example-

age=19

permission=True

if age>=18 and permission==True:

    print("Welcome")

- or

Example-

age=10

permission=True

if age>=18 or permission==True:

    print("Welcome")

- not

Example-

age=10

permission=True

if not age>18:

    print("Not Welcome")

8. Comparison Operators

- age>18

- age<18

- age==18

- age<=18

- age>=18

- age!=18

9. Use case of Operators

- Condition

- loop

- searching

- sorting

10. SMS Shooter -> Each 5Second Internal