PYTHON WORKBOOK – SECTION 3

Control Flow (If–Else, Loops)

Programmer's Hub – by CodeWithVivek
https://www.youtube.com/@code-with-vivek

3.1 Introduction to Control Flow

This decision-making or repetition ability comes from **control flow**, mainly using:

1. **Conditions**

2. **Loops**

These allow your Python programs to think, repeat, and respond intelligently to different situations.

Your Turn:

Which statement is used for:

Condition testing: _____

Loops or Repetition: _____

3.2 If–Else

Quick Explanation

Control flow lets your program make decisions.

Basic structure:

if condition:

   # do something

else:

   # do something else

Example:

num = 10

if num > 5:

   print("Greater than 5")

else:

   print("5 or less")

💡 *Try This:*

Write a program that checks if a number is **positive**, **negative**, or **zero**.

Write here:

Debug This:

What is wrong with this?

```
if x > 10

    print("Big")
```

Your answer: _____

_____

Nested Conditions

Explanation

Conditions can be placed inside other conditions.

```
age = 25

if age > 18:

    if age < 60:

        print("Adult")
```

Try This:

Write a program to classify age:

- 0–12 → Child

- 13–19 → Teen

- 20+ → Adult

Write here:

Logical Conditions: and, or, not

Example

score = 80

if score >= 60 and score <= 100:

    print("Pass")

if city == "Delhi" or city == "Mumbai":

    print("Metro City")

if not raining:

    print("Go outside")

Your Turn:

Write a condition that checks:

A number is between 10 and 50 (inclusive):

Write condition here:

3.3 Loops

For Loop

Looping Over a Range

```
for i in range(1, 6):

    print(i)
```

Looping Over a List

```
fruits = ["apple", "banana", "mango"]

for f in fruits:

    print(f)
```

Try This:

Print all even numbers from 1 to 20.

```
# Write code here:
```

Debug This:

```
for i in range(5):

print(i)
```

What's wrong? _____

_____

While Loop

Explanation

Runs as long as a condition is True.

count = 1

while count <= 5:

   print(count)

   count += 1

Be careful to avoid **infinite loops**.

Try This:

Write a while loop that prints numbers from 10 down to 1.

Write here:

Debug This:

x = 1

while x < 5:

   print(x)

What mistake will this cause? _____

_____

Loop Control Statements

break – stop the loop

```
for i in range(10):

    if i == 5:

        break
```

continue – skip current iteration

```
for i in range(10):

    if i % 2 == 0:

        continue

    print(i)
```

pass – placeholder

```
if condition:

    pass
```

Try This:

Print numbers 1–10 but skip 7.

```
# Write here:
```

Practice Problems

Problem 1

Write a program to print the multiplication table of a number.

Write here:

Problem 2

Count how many numbers between 1 and 50 are divisible by 3.

Write here:

Problem 3

Write a program that keeps asking for a password until the correct one is entered.

Write code here:

Section Summary

✓ If–else handles decision-making

✓ Nested conditions check multiple levels

✓ Logical operators combine conditions

✓ For loops repeat a fixed number of times

✓ While loops repeat until a condition changes

✓ Loop control keywords manage flow (break, continue, pass)

✓ Control flow is the backbone of logic in programs

Mini Assignment

Create a program that:

1. Asks for a number

2. Prints whether it is prime or not

3. Uses a loop

4. Uses at least one break

5. Includes comments

Write your draft here: