Lesson Plan: If-Else Statements in Python

Duration: 3 sessions (45 minutes each)
Target Audience: Beginner Python learners
Objective: Students will understand and implement if-else conditional statements in Python.

Session 1: Introduction to If-Else Statements

Time: 45 minutes

Materials: Whiteboard, laptops, Python code editor

Learning Outcomes:

1. Understand the basic syntax of if-else statements.
2. Practice writing simple conditional logic.

Activities:

1. **Introduction (10 minutes):**
   - Explain the purpose of if-else statements (decision-making in code).
   - Show example: `if condition: print("Condition is true") else: print("Condition is false")`.
2. **Code Example (15 minutes):**
   - Write a simple program to check if a number is even or odd.

```
number = int(input("Enter a number: "))
if number % 2 == 0:
    print(f"{number} is even.")
else:
    print(f"{number} is odd.")
```

3. **Practice (10 minutes):**
   - Students write code to determine if a student passed (score ≥ 60) or failed (score < 60).
   - Teacher circulates to provide feedback.

Session 2: Advanced If-Else Logic

Time: 45 minutes

Learning Outcomes:

1. Use if-else statements with multiple conditions.

2. Apply logic to real-world scenarios (e.g., comparing values).

Activities:

1. **Concept Review (10 minutes):**
   - Discuss how to combine conditions (e.g., `if a > b and a < c`).
   - Example: `if (age >= 18) and (score >= 80): print("Eligible for voting")`.
2. **Code Example (15 minutes):**
   - Write a program to determine if a person is eligible to vote (age ≥ 18 and score ≥ 80).

```
age = int(input("Enter age: "))
score = int(input("Enter score: "))
if age >= 18 and score >= 80:
    print("Eligible for voting.")
else:
    print("Not eligible.")
```

3. **Practice (10 minutes):**
   - Students create a program to check if a fruit is a fruit (e.g., "apple" or "banana") or a vegetable (e.g., "carrot").
   - Teacher provides examples for edge cases (e.g., "grape" is a fruit).

Session 3: Application & Real-World Use Cases

Time: 45 minutes

Learning Outcomes:

1. Apply if-else statements to solve real-world problems.
2. Debug and test code for logical errors.

Activities:

1. **Real-World Scenario (10 minutes):**
   - Example: A simple "Grade Calculator" that assigns grades based on scores (A: 90–100, B: 80–89, etc.).
   - Code:

```
score = int(input("Enter score: "))
if 90 <= score <= 100:
    print("A")
elif 80 <= score <= 89:
    print("B")
elif 70 <= score <= 79:
    print("C")
```

```
else:
    print("D")
```

2. **Practice (15 minutes):**
    - Students code a program to check if a user is in a specific age group (e.g., "adult" or "teen").
    - Example:

```
age = int(input("Enter age: "))
if age >= 18:
    print("Adult")
else:
    print("Teenager")
```

3. **Debugging (10 minutes):**
    - Students identify and fix logical errors in provided code (e.g., incorrect conditionals or missing `else` clauses).

Teacher Notes

- Encourage students to test code with sample inputs.
- Use visual aids (e.g., whiteboard) to demonstrate code step-by-step.
- Provide feedback on code structure and readability.

Assessment:

- Code correctness and logical reasoning in practice exercises.
- Participation and ability to apply knowledge to real-world scenarios.

Printed Format Summary:

- Session 1: Basic syntax, number checks.
- Session 2: Advanced logic, real-world scenarios.
- Session 3: Application, debugging, and real-world problem-solving.