**PYTHON BASICS  
  
What is Python, and why is it popular**

High-level, easy to learn, versatile language.

Example: print("Hello, Python!")

**What is an interpreter in Python**

Runs code line-by-line.

Example: Typing code directly in Python shell.

**What are pre-defined keywords in Python**

Reserved words like if, else, import.

Example: if x > 0: print("Positive")

**Can keywords be used as variable names**

No, it's a syntax error.

Example: def = 5 ❌ (invalid)

**What is mutability in Python**

Ability to change an object after creation.

**Example:**

**list1 = [1,2,3]**

**list1.append(4) # list changes**

**Why are lists mutable, but tuples are immutabl**e

Lists allow change; tuples are fixed for safety.

**Example:**

**list1[0] = 10 # OK**

**tuple1 = (1,2,3)**

**tuple1[0] = 10 # ❌ Error**

**What is the difference between "==" and "is" operators in Python**

== compares values, is compares memory.

**Example:**

**a = [1,2]**

**b = a**

**print(a == b) # True**

**print(a is b) # True**

**What are logical operators in Python**

and, or, not for combining conditions.

**Example:**

**if a > 0 and b > 0:  
 print("Both positive")**

**What is type casting in Python**

Converting data types.

**Example: int("5") # becomes 5**

**What is the difference between implicit and explicit type casting**

Implicit: automatic; Explicit: manual.

**Example:**

**# Explicit**

**float\_num = float(5)**

**What is the purpose of conditional statements in Python**

To control flow based on conditions.

**Example:**

**if score > 50:**

**print("Pass")**

**How does the elif statement work**

Checks next condition if previous if is False.

**Example:**

**if x > 0:**

**print("Positive")**

**elif x == 0:**

**print("Zero")**

**What is the difference between for and while loops**

for runs over a sequence, while runs until a condition is False.

**Example:**

**for i in range(3):**

**print(i)**

**while x > 0:**

**x -= 1**

**Describe a scenario where a while loop is more suitable than a for loop**

When we don't know how many times we need to repeat.

**Example:**

**while user\_input != "exit":**

**user\_input = input("Type 'exit' to quit: ")**