

Python Basics Assignment

Theoretical Questions —

Question 1. What is Python, and why is it popular ?

Answer = Python is a Programming Language . Which is used to do almost all things like web development , data visualization , and is also used in AI (Artificial Intelligence).

It is very popular programming language because it is very easy language to learn and have thousands of libraries to minimizes our work .

Question 2. What is an interpreter in Python ?

Answer = In Python, an interpreter is a program that executes Python code line by line, converting it into machine-readable instructions at runtime. Unlike a compiler, which translates the entire code before execution, the interpreter processes each statement sequentially, making Python more flexible and easier for debugging. The most common Python interpreter is CPython, but alternatives like PyPy (with Just-In-Time compilation for speed) .

Question 3. What are pre-defined keywords in Python ?

Answer = In Python There are some predefined keywords which we cant use them as a variable and for any other work . the work of every predefined keyword is fixed like for,while these both are used for loops .

Question 4. Can keywords be used as variable names ?

Answer = No, Keywords in Python can't be used as variable names because they are reserved words that have special meanings and work in the language.

Question 5. What is mutability in Python ?

Answer = Mutability means which can be changed if once it executed like Lists in python .

Question 6. Why are lists mutable, but tuples are immutable ?

Answer = List are mutable because it allows modification in it after its execution . modification means is removing or changing in data . But Tuples dont allows modification in it and we cant do any operation with the executed data of tuples .

Question 7. What is the difference between "==" and "is" operators in Python ?

Answer = the difference between "==" and "is" operator in python is that "==" is a comparison operator and is used to compare any value . and "is" is an identity operator which is used to compare identity of object .

Question 8. What are logical operators in Python ?

Answer = Logical operators in Python are used to combine conditional statements or expressions and return a Boolean value (True or False) based on their evaluation. In python there are three logical operators: and, or, and not.

Question 9. What is type casting in Python ?

Answer = Type Casting is a method by which we convert a data type in another data type like we convert string in integer or we can convert float in string . the format of type casting is a=2

print(str(a)) in this example we are converting a integer in a string format .

Question 10. What is the difference between implicit and explicit type casting ?

Answer = Implicit type casting

it is a type of casting in which there is python automatically understand the type of data by using its feature or sense.

Explicit type casting

it is a type of casting in which we have to tell python the data type when we want to change the data type of python variable . in question 9 i gave a example which is a example of explicit type casting .

Question 11. What is the purpose of conditional statements in Python ?

Answer = There is some conditional statement in python which i used to identify and solve the conditions . example of conditional statement are like 'if' 'else' 'elif' .

Question 12. How does the elif statement work ?

Answer = When we have one or more condition then we use elif statement . we an understand by the code given below.

```
a = input("give any number")
if a==2:
print("number is equal to 2")
elif a==5:
print("number is equal to 3")
else:
print("there is not any number you entered")
```

Question 13. What is the difference between for and while loops ?

Answer = For loop is Used when the number of iterations is known. for loops is used to iterate any sequence . While loop is uesd when when to print any data until the condition become false . these are the major difference between for and while loop.

Question 14. Describe a scenario where a while loop is more suitable than a for loop ?

Answer = Scenario: Counting Down Until Zero If you want to keep decreasing a number until it reaches zero, a while loop is preferred.


```
x = 5
while x > 0:
print(x)
x -= 1
```

Here We don't know in advance how many times the loop will run. It stops only when x reaches zero.

Practical Questions —

Question 1. Write a Python program to print "Hello, World!" ?


```
print ("Hello, World!")
```

 Hello, World!

Question 2. Write a Python program that displays your name and age ?

```
name = input("Enter your name: ")
age = int(input("Enter your age: "))


print("My name is : ", name)
print("My Age is : ", age)
```

 Enter your name: harsh
Enter your age: 20
My name is : harsh
My Age is : 20

Question 3. Write code to print all the pre-defined keywords in Python using the keyword library ?

```
import keyword

print(keyword.kwlist)
```

 ['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'class', 'continue', 'def', 'del', 'elif', 'else', 'ex

Question 4. Write a program that checks if a given word is a Python keyword ?

```
import keyword

word = input("Enter a word: ")

if keyword.iskeyword(word):
    print(f"'{word}' is a Python keyword.")
else:
    print(f"'{word}' is NOT a Python keyword.")
```

```
↵ Enter a word: if
    'if' is a Python keyword.
```

Question 5. Create a list and tuple in Python, and demonstrate how attempting to change an element works differently ?

```
list1 = [20, 12, 25, 36]
tuple1 = ( hi, hello, greeting, etc )

list1[0] = "bye"
print(list1)
```

```
↵ ['bye', 12, 25, 36]
```

Question 6. Write a function to demonstrate the behavior of mutable and immutable arguments ?

```
def modify_list(lst):
    lst.append(4)

my_list = [1, 2, 3]
modify_list(my_list)
print(my_list)
```

```
↵ [1, 2, 3, 4]
```

Question 7. Write a program that performs basic arithmetic operations on two user-input numbers ?

```
first_no = int(input("Enter first number: "))
second_no = int(input("Enter second number: "))
add = first_no + second_no
subtract = first_no - second_no
multiplication = first_no * second_no
division = first_no / second_no

print("add = ", add)
print("subtract = ", subtract)
print("multiplication = ", multiplication)
print("division = 69", division)
```

```
↵ Enter first number: 58
    Enter second number: 69
    add = 127
    subtract = -11
    multiplication = 4002
    division = 0.8405797101449275
```

Question 8. Write a program to demonstrate the use of logical operators.

```
number = int(input("Enter a number: "))

if number > 0 and number < 10:
    print("The number is positive and less than 10.")
else:
    print("conditions are unsatisfied")
```

```
↵ Enter a number: 5
    The number is positive and less than 10.
```

Question 9. Write a Python program to convert user input from string to integer, float, and boolean types ?

```
string_value = input("Enter a string value: ")
integer_value = int(string_value)
float_value = float(string_value)
```

```
boolean_value = bool(string_value)
print(integer_value)
print(float_value)
print(boolean_value)
```

```
Enter a string value: 56
56
56.0
True
```

Question 10. Write code to demonstrate type casting with list elements ?

```
my_list = [1, 2, 3, 4, 5]
string_list = [str(my_list)]
for element in my_list :
    print(string_list)
```

```
['[1, 2, 3, 4, 5]']
['[1, 2, 3, 4, 5]']
['[1, 2, 3, 4, 5]']
['[1, 2, 3, 4, 5]']
['[1, 2, 3, 4, 5]']
```

Question 11. Write a program that checks if a number is positive, negative, or zero ?

```
num = float(input("enter a num :"))
if num >= 0:
    if num == 0:
        print("zero")
    else:
        print("positive number")
else:
    print("negative number")
```

```
enter a num :3.2
positive number
```

Question 12. Write a for loop to print numbers from 1 to 10 ?

```
for num in range(1,11):
    print(num)
```

```
1
2
3
4
5
6
7
8
9
10
```

Question 13. Write a Python program to find the sum of all even numbers between 1 and 50 ?

```
sum = 0
for num in range(2, 51, 2):
    sum += num

print("The sum of even numbers from 1 to 50 is:", sum)
```

```
The sum of even numbers from 1 to 50 is: 650
```

Question 14. Write a program to reverse a string using a while loop ?

```
string = input("Enter a string: ")
reversed_string = ""
index = len(string) - 1

while index >= 0:
    reversed_string += string[index]
    index -= 1

print("Reversed string:", reversed_string)
```

↻ Enter a string: harsh
Reversed string: hsrah

Question 15. Write a Python program to calculate the factorial of a number provided by the user using a while loop ?

```
num = int(input("Enter a number: "))  
factorial = 1  
current = 1  
  
while current <= num:  
    factorial *= current  
    current += 1  
  
print(f"The factorial of {num} is {factorial}")
```

↻ Enter a number: 5
The factorial of 5 is 120