Predictive Analysis Lab

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Batch-4(AIML-NH)

Lab 1:

Q1):

**Write a Python program to perform basic arithmetic operations (addition, subtraction, multiplication, division, and modulus) on two numbers.**

* + Prompt the user to enter two numbers.
  + Perform the arithmetic operations and print the results.
  + Use appropriate operators and print formatting for clear output.

Code:-

num1 = float(input("Enter the first number: "))

num2 = float(input("Enter the second number: "))

addition = num1 + num2

subtraction = num1 - num2

multiplication = num1 \* num2

division = num1 / num2 if num2 != 0 else "undefined (division by zero)"

modulus = num1 % num2 if num2 != 0 else "undefined (division by zero)"

print(f"\nResults:")

print(f"Addition:        {num1} + {num2} = {addition}")

print(f"Subtraction:     {num1} - {num2} = {subtraction}")

print(f"Multiplication:  {num1} \* {num2} = {multiplication}")

print(f"Division:        {num1} / {num2} = {division}")

print(f"Modulus:         {num1} % {num2} = {modulus}")

Output:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques1.py"

Enter the first number: 10

Enter the second number: 20

Results:

Addition: 10.0 + 20.0 = 30.0

Subtraction: 10.0 - 20.0 = -10.0

Multiplication: 10.0 \* 20.0 = 200.0

Division: 10.0 / 20.0 = 0.5

Modulus: 10.0 % 20.0 = 10.0

Q2): **Create variables of different data types (integer, float, string, boolean) and perform basic operations on them.**

* + Assign values to variables of different data types.
  + Perform arithmetic operations on numeric data types.
  + Concatenate strings using the + operator.
  + Use logical operators to evaluate boolean expressions.

Code:-

integer\_var = 10

float\_var = 5.5

string\_var = "Hello"

boolean\_var = True

sum\_result = integer\_var + float\_var

difference\_result = integer\_var - float\_var

product\_result = integer\_var \* float\_var

division\_result = integer\_var / float\_var

print("Sum:", sum\_result)

print("Difference:", difference\_result)

print("Product:", product\_result)

print("Division:", division\_result)

concatenated\_string = string\_var + " World"

print("Concatenated String:", concatenated\_string)

and\_result = boolean\_var and False

or\_result = boolean\_var or False

not\_result = not boolean\_var

print("Boolean AND result:", and\_result)

print("Boolean OR result:", or\_result)

print("Boolean NOT result:", not\_result)

Output:-

Concatenated String: Hello World

Boolean AND result: False

Boolean OR result: True

Boolean NOT result: False

Q3): **Write a program to take user input, process it, and display the result.**

* + Prompt the user to enter their name.
  + Greet the user using their name.
  + Calculate and print the user's age based on their birth year.

Code:-

name = input("Please enter your name: ")

print("Hello, " + name + "!")

birth\_year = int(input("Please enter your birth year: "))

current\_year = 2024

age = current\_year - birth\_year

print(f"{name}, you are {age} years old.")

OUTPUT:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques3.py"

Please enter your name: HARSH BHARTIA

Hello, HARSH BHARTIA!

Please enter your birth year: 2004

HARSH BHARTIA, you are 20 years old.

Q4): **Write a program to check if a number is even or odd.**

* + Prompt the user to enter a number.
  + Use the modulus operator to determine if the number is even or odd.
  + Print the appropriate message.

CODE:-

number = int(input("Please enter a number: "))

if number % 2 == 0:

    print(f"{number} is an even number.")

else:

    print(f"{number} is an odd number.")

OUTPUT:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques4.py"

Please enter a number: 2004

2004 is an even number.

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques4.py"

Please enter a number: 1233

1233 is an odd number.

Q5): **Write a program to print the numbers from 1 to 10 using both for and while loops.**

* + Use a for loop to iterate through a range of numbers.
  + Use a while loop with a counter variable.

CODE:-

print("Using for loop:")

for i in range(1, 11):

    print(i)

print("\nUsing while loop:")

counter = 1

while counter <= 10:

    print(counter)

    counter += 1

OUTPUT:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\tempCodeRunnerFile.py"

Using for loop:

1

2

3

4

5

6

7

8

9

10

Using while loop:

1

2

3

4

5

6

7

8

9

10

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1>

Q6): **Create a list, access elements, modify elements, and perform list operations.**

* + Create a list of fruits.
  + Access elements using indexing.
  + Modify elements in the list.
  + Add and remove elements from the list.
  + Find the length of the list.
  + Sort the list in ascending and descending order.

CODE:-

fruits = ["apple", "banana", "cherry", "date", "elderberry"]

print("First fruit:", fruits[0])

print("Third fruit:", fruits[2])

fruits[1] = "blueberry"

print("Modified list:", fruits)

fruits.append("fig")

print("List after adding 'fig':", fruits)

fruits.remove("date")

print("List after removing 'date':", fruits)

length\_of\_list = len(fruits)

print("Length of the list:", length\_of\_list)

fruits.sort()

print("List in ascending order:", fruits)

fruits.sort(reverse=True)

print("List in descending order:", fruits)

OUTPUT:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques6.py"

First fruit: apple

Third fruit: cherry

Modified list: ['apple', 'blueberry', 'cherry', 'date', 'elderberry']

List after adding 'fig': ['apple', 'blueberry', 'cherry', 'date', 'elderberry', 'fig']

List after removing 'date': ['apple', 'blueberry', 'cherry', 'elderberry', 'fig']

Length of the list: 5

List in ascending order: ['apple', 'blueberry', 'cherry', 'elderberry', 'fig']

List in descending order: ['fig', 'elderberry', 'cherry', 'blueberry', 'apple']

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1>

Q7): **Manipulate strings using various built-in functions.**

* + Create a string variable and find the length of the string.
  + Convert the string to uppercase and lowercase.
  + Check if a substring exists in the string.
  + Split the string into a list of words.

OUTPUT:-

my\_string = "Hello, welcome to the world of Python!"

string\_length = len(my\_string)

print("Length of the string:", string\_length)

uppercase\_string = my\_string.upper()

print("String in uppercase:", uppercase\_string)

lowercase\_string = my\_string.lower()

print("String in lowercase:", lowercase\_string)

substring = "Python"

if substring in my\_string:

    print(f"'{substring}' is found in the string.")

else:

    print(f"'{substring}' is not found in the string.")

word\_list = my\_string.split()

print("List of words:", word\_list)

OUTPUT:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques7.py"

Length of the string: 38

String in uppercase: HELLO, WELCOME TO THE WORLD OF PYTHON!

String in lowercase: hello, welcome to the world of python!

'Python' is found in the string.

List of words: ['Hello,', 'welcome', 'to', 'the', 'world', 'of', 'Python!']

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1>

Q8): **Write a program to find the largest and smallest number in a list.**

CODE:-

numbers = [23, 1, 56, 78, 12, 9, 100, 34]

largest\_number = max(numbers)

smallest\_number = min(numbers)

print("Largest number in the list:", largest\_number)

print("Smallest number in the list:", smallest\_number)

OUTPUT:-

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1> python -u "c:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1\ques8.py"

Largest number in the list: 100

Smallest number in the list: 1

PS C:\Users\harsh\Desktop\Predictive Analysis Lab\Lab 1>