NAME : SANIYA KUMARI

ROLL NO : BIT \_ 24S \_ 030

COURSE: ARTIFICIAL INTELLIGENCE

DEP : INFORMATION TECHNOLOGY

SUBMITTED TO : MAM AQSA

https://github.com/Aqsa48/AI\_course\_2025:

LAB MANUAL

LAB 4 :

Task 1 :

Write a Python program to take two numbers as input and perform all arithmetic operations on them.

a =  float(input("enter your first number : "))

b =  float(input("enter your second number : "))

print (a + b)

print (a - b)

print (a \* b)

print (a / b)

print (a % b)

print (a \*\* b)

output :

enter your first number : 4

enter your second number : 5

9.0

-1.0

20.0

0.8

4.0

1024.0

PS C:\Users\Dell\Desktop\codepro.onlie>

Task 2 :

Create a function that takes two numbers and returns their sum, difference, product, and quotient.

def calculate\_operations(a, b):

    if b == 0:

        quotient = "Undefined (division by zero)"

    else:

        quotient = a / b

    return {

        "sum": a + b,

        "difference": a - b,

        "product": a \* b,

        "quotient": quotient

    }

# Example usage:

result = calculate\_operations(10, 5)

for operation, value in result.items():

    print(f"{operation.capitalize()}: {value}")

OUTPUT :

Sum: 15

Difference: 5

Product: 50

Quotient: 2.0

Task 3 :

 Write a Python script to find the remainder when one number is divided by another

a = float(input("Enter the dividend: "))

b = float(input("Enter the divisor: "))

# Calculate the remainder

if b != 0:

     remainder = a % b

     print("Remainder:", remainder)

else :

    print("Division by zero is not allowed.")

output :

Enter the dividend: 7

Enter the divisor: 4

Remainder: 3.0

Task 3 :

Write a program to calculate the area of a circle using the formula: Area = π \* r^2.

import math

# Get radius from user

radius = float(input("Enter the radius of the circle: "))

# Calculate area

area = math.pi \* radius \*\* 2

# Display result

print("Area of the circle:", area)

output :

Enter the radius of the circle: 7

Area of the circle: 153.93804002589985

Task 4 :

Implement a program that takes a number as input and returns its square and cube using exponentiation

num = float(input("Enter a number: "))

# # Calculate square and cube using exponentiation

square = num \*\* 2

cube = num \*\* 3

# # Display the results

print("Square:", square)

print("Cube:", cube)

output :

Enter a number: 5

Square: 25.0

Cube: 125.0

Task 5 :

Create a simple calculator in Python that allows the user to choose an operation (addition, subtraction, etc.) and inputs two numbers

print("Select operation:")

print("1. Addition (+)")

print("2. Subtraction (-)")

print("3. Multiplication (\*)")

print("4. Division (/)")

print("5. Modulus (%)")

print("6. Exponentiation (^)")

# Take operation choice from user

choice = input("Enter choice (1/2/3/4/5/6): ")

# Input two numbers

a = float(input("Enter first number: "))

b = float(input("Enter second number: "))

# Perform the chosen operation

if choice == '1':

    print("Result:", a + b)

elif choice == '2':

    print("Result:", a - b)

elif choice == '3':

    print("Result:", a \* b)

elif choice == '4':

    print("Result:", a / b if b != 0 else "Undefined (division by zero)")

elif choice == '5':

    print("Result:", a % b if b != 0 else "Undefined (modulus by zero)")

elif choice == '6':

    print("Result:", a \*\* b)

else:

    print("Invalid choice")

output :

Select operation:

1. Addition (+)

2. Subtraction (-)

3. Multiplication (\*)

4. Division (/)

5. Modulus (%)

6. Exponentiation (^)

Enter choice (1/2/3/4/5/6): 4

Enter first number: 5

Enter second number: 2

Result: 2.5

LAB 5 :

Task 1 :

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

def check\_number():

    try:

       num = float(input("Enter a number: "))

       result = {

           True: "The number is positive.",

          False: "The number is negative.",

           0: "The number is zero."

       }

## Use tuple indexing to avoid if/elif

       print(result[(num > 0) or (num == 0 and 0) or False])

    except ValueError:

      print("Invalid input. Please enter a numeric value.")

# # Run the function

check\_number()

output :

Enter a number: 7

The number is positive.

Task 2 :

Write a program that takes user input and determines whether it's a even or odd

def even\_or\_odd():

    try:

        num = int(input("Enter an integer: "))

        result = "even" if num % 2 == 0 else "odd"

        print(f"The number {num} is {result}.")

    except ValueError:

        print("Invalid input. Please enter an integer.")

# Run the function

even\_or\_odd()

output:

Enter an integer: 9

The number 9 is odd

Task 3:

  Create a program that asks user to print:

"Excellent" if marks are above 80

"Good" if marks are between 60 and 80

"Needs Improvement" if marks are below 60

try:

    marks = float(input("Enter your marks: "))

    if marks > 80:

         print("Excellent")

    elif 60 <= marks <= 80:

        print("Good")

    else:

        print("Needs Improvement")

except ValueError:

     print("Invalid input. Please enter numeric marks.")

output :

Enter your marks: 40

Needs Improvement

LAB 6

Task 1:

Write a for loop to print the first 10 natural numbers.

for i in range(1, 11):

    print(i)

OUTPUT :

1

2

3

4

5

6

7

8

9

10

Task 2:

1. Write a while loop that prints numbers from 10 down to 1.
2. num = 10
3. while num >= 1:
4. print(num)
5. num -= 1

10

9

8

7

6

5

4

3

2

1

Task 3:

Create a program that uses a  loop to iterate over a string and count the number of vowels.

num = 10

while num >= 1:

    print(num)

    num -= 1

output :

10

9

8

7

6

5

4

3

2

1

Task 4:

Write a program that prints the Fibonacci series up to  terms using a  loop.

n = int(input("Enter the number of terms: "))

# Initialize the first two terms

a, b = 0, 1

count = 0

print("Fibonacci sequence:")

# Loop until count reaches n

while count < n:

    print(a)

    a, b = b, a + b  # Update values

    count += 1

output :

Fibonacci sequence:

0

1

1

2

3

5