**LAB MANUAL**

**NAME: ABDUL SALAM**

**ROLL NO: BIT-24S-012**

**COURSE: ARTIFICIAL INTELLIGENCE (AI)**

**COURSE INS: MA’AM AQSA UMAR**

**LAB NO: 1**

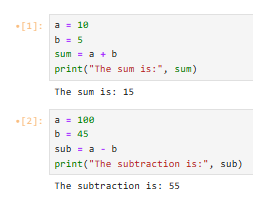
**INTRODUCTION TO PYTHON :**

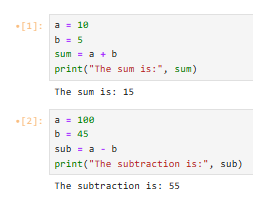
**Python is an easy-to-learn programming language that lets you write code quickly and clearly. It’s used for building websites, analyzing data, creating AI and machine learning models, automating tasks, and much more.**

TASK NO 1: Make 2-2 programs of each datatype**.**

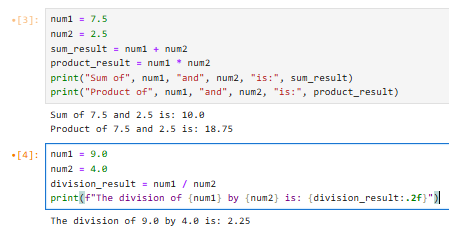
1. **NUMERIC TYPES**

**Integer (int)**

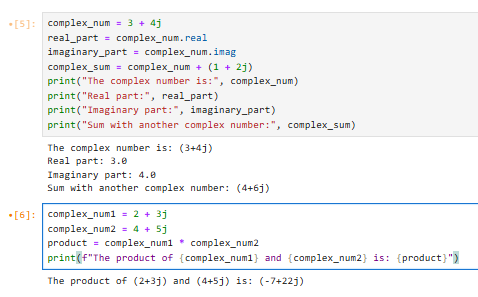
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**Floating-point (float)**

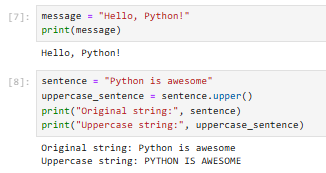
****

**Complex (complex)**

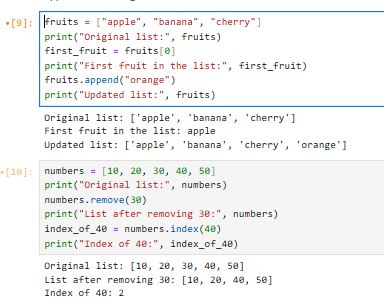
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1. **Sequence Types**

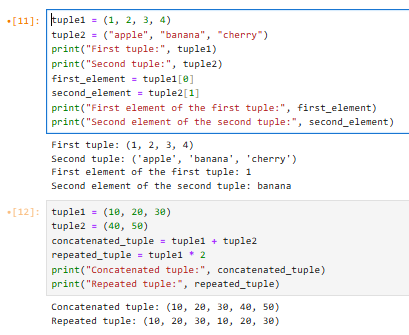
**String (str)**

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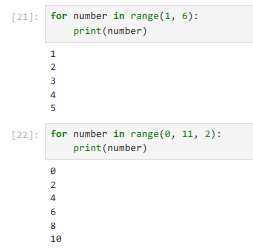
**List (list)**

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**Tuple (tuple)**

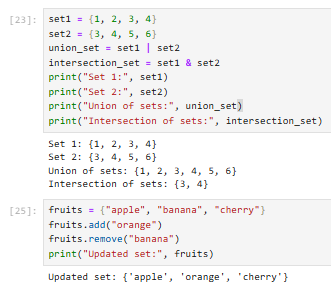
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**Range (range)**

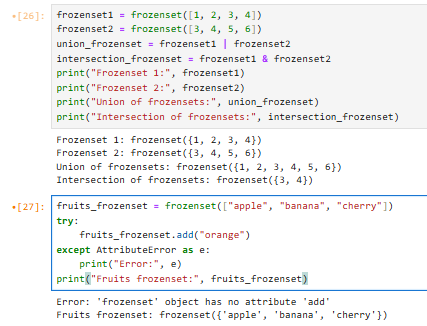
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**3. SET TYPES**

**Set (set)**

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**Frozen Set (frozenset)**

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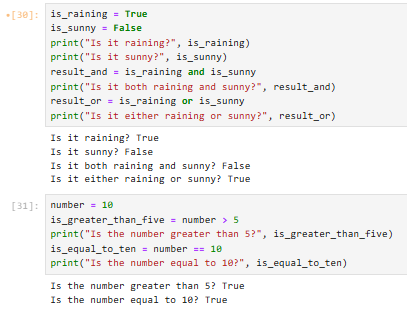
1. **MAPPING TYPE**

**Dictionary (dict)**

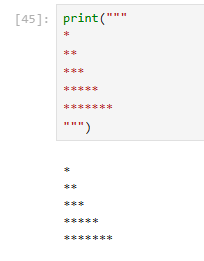
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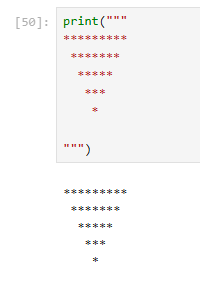
1. **Boolean Type**

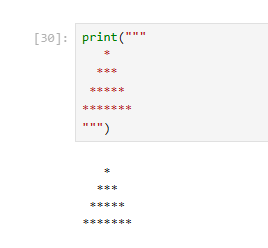
**Boolean (bool)**

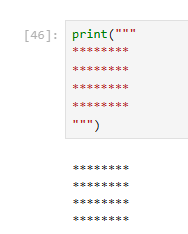
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**TASK NO 2: Make up to 5 Shape programs using \*.**



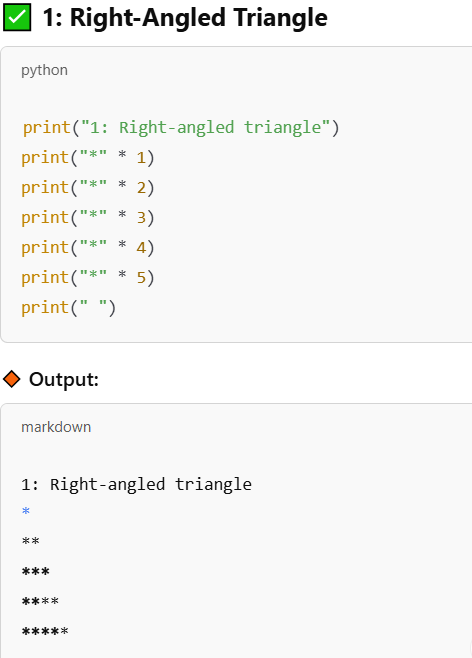


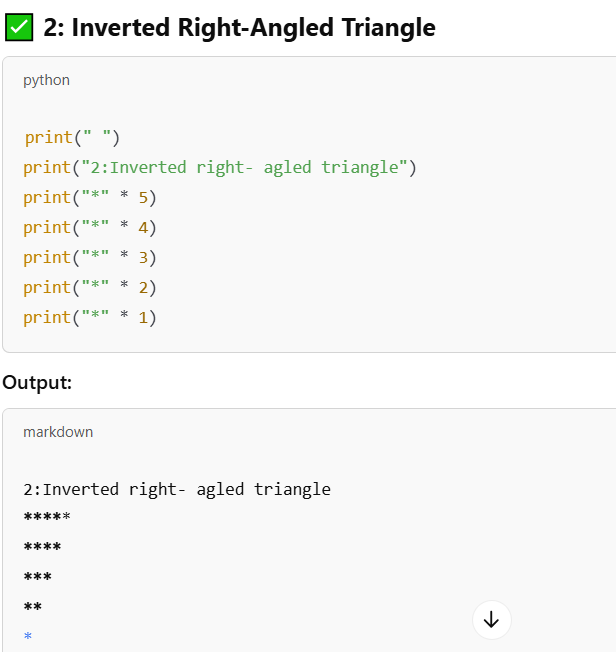


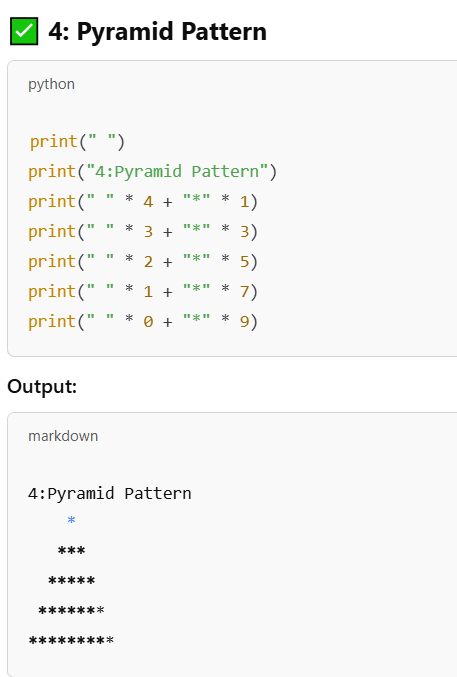
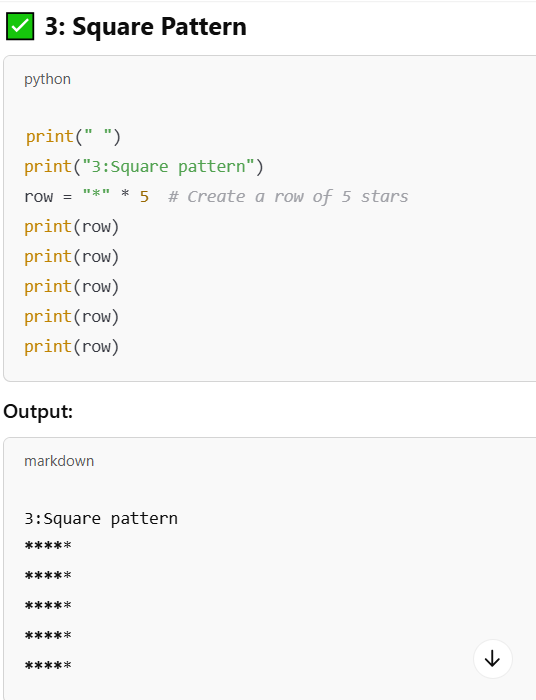


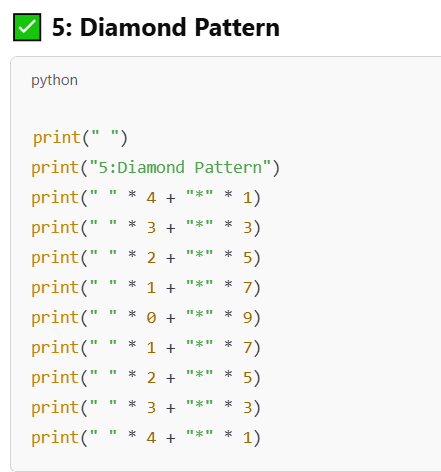


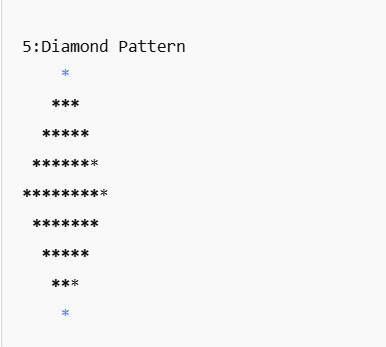
# TASK NO 3: Make same shapes you have made in task 2, using \* mutiple by number.







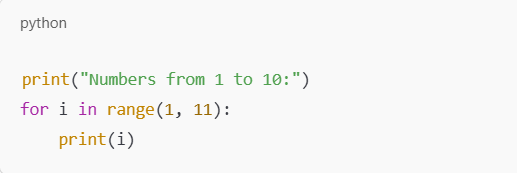


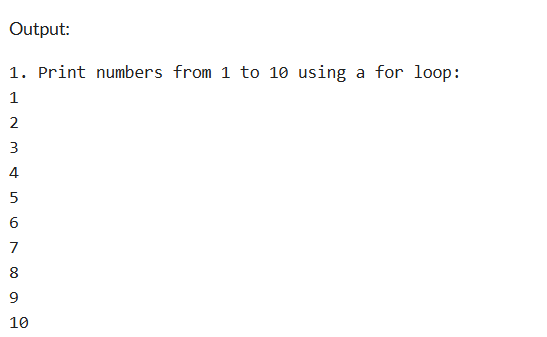


## LAB 02

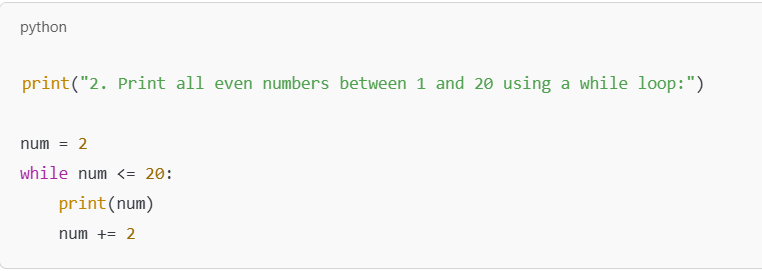
## Python Looping Tasks

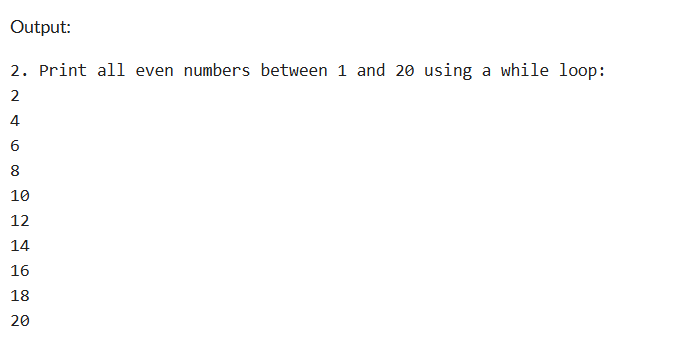
1. **Print numbers from 1 to 10 using a for loop.**

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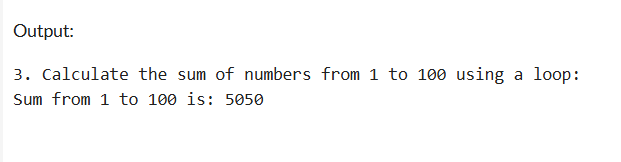
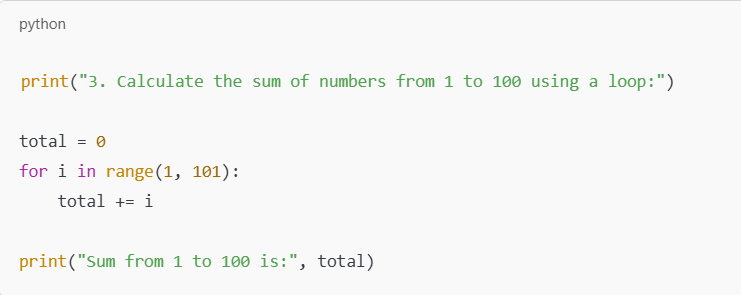
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**2.Print all even numbers between 1 and 20 using a while loop.**

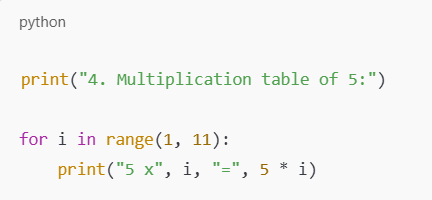
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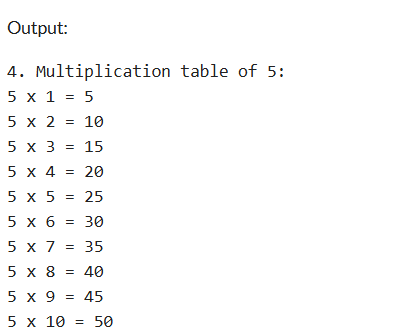
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1. **Calculate the sum of numbers from 1 to 100 using a loop.**

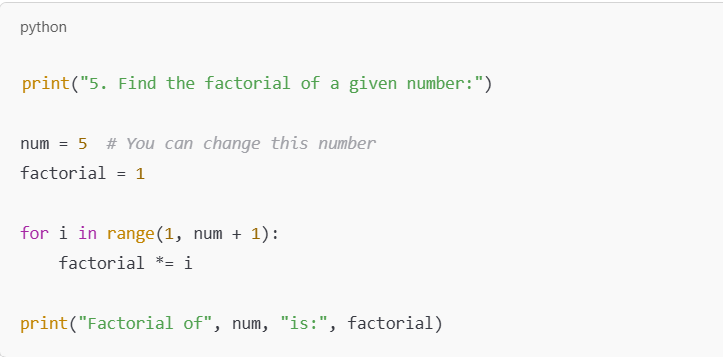
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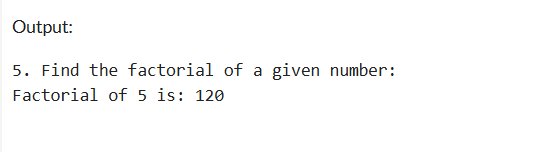
1. **Print the multiplication table of 5 using a loop.**

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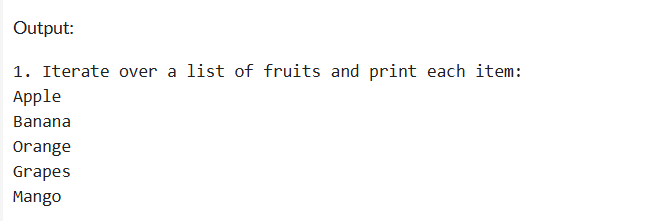
1. **Find the factorial of a given number using a for loop.**



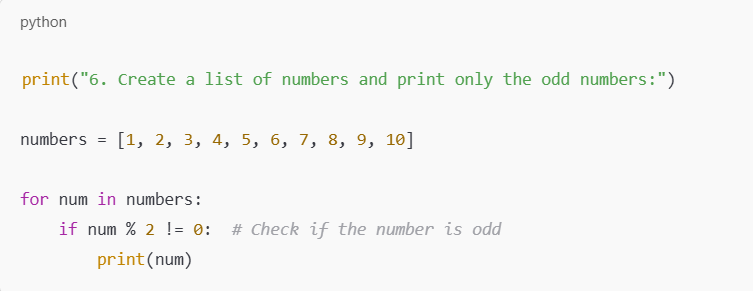


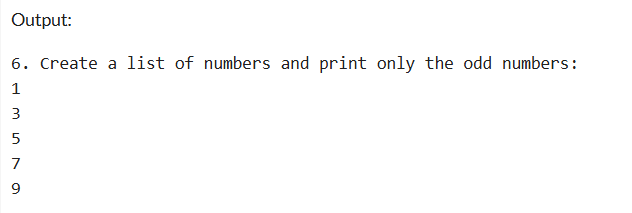
1. **Iterate over a list of fruits and print each item.**





1. **Create a list of numbers and print only the odd numbers using a loop.**





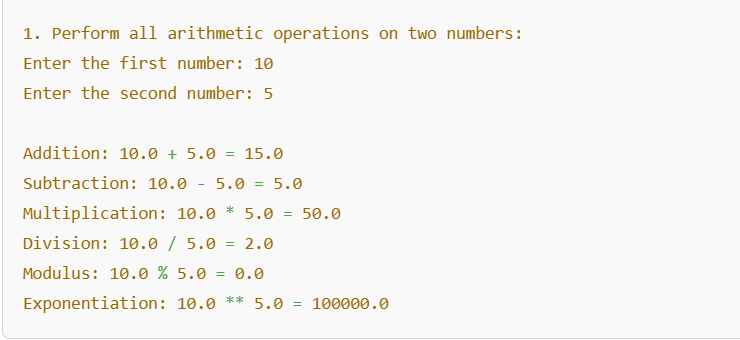
**LAB 03**

**LAB 04**

# Tasks Related to Arithmetic Operators

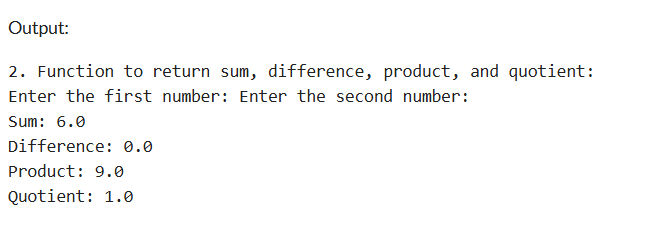
1. Write a Python program to take two numbers as input and perform all arithmetic operations on them.

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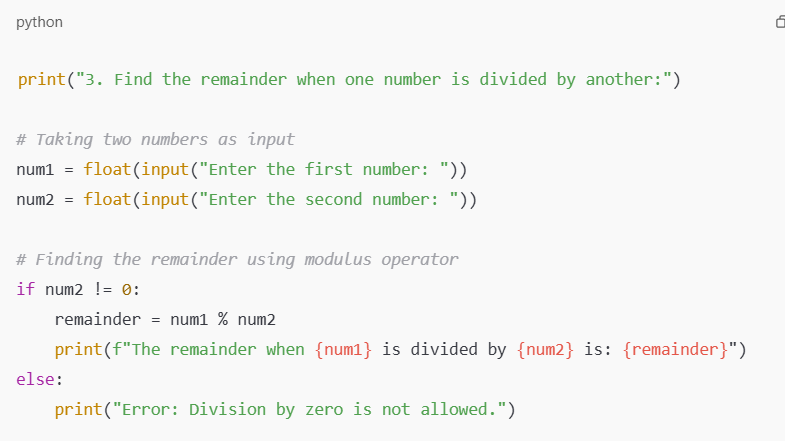
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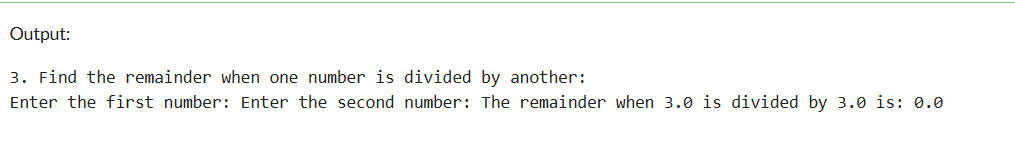
1. Create a function that takes two numbers and returns their sum, difference, product, and quotient.



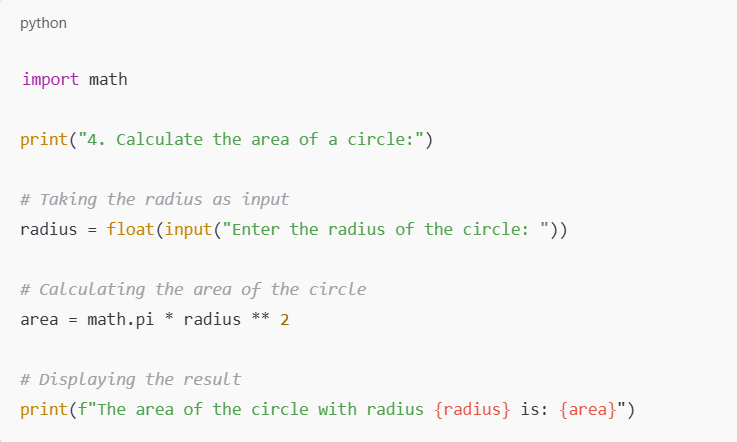


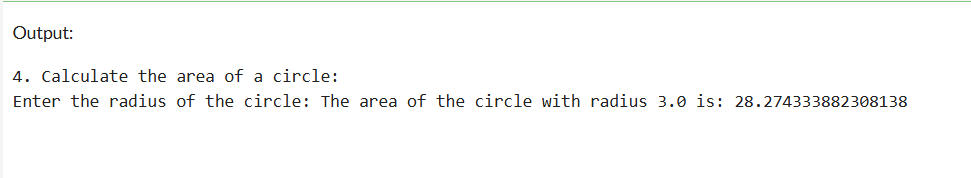
1. Write a Python script to find the remainder when one number is divided by another.



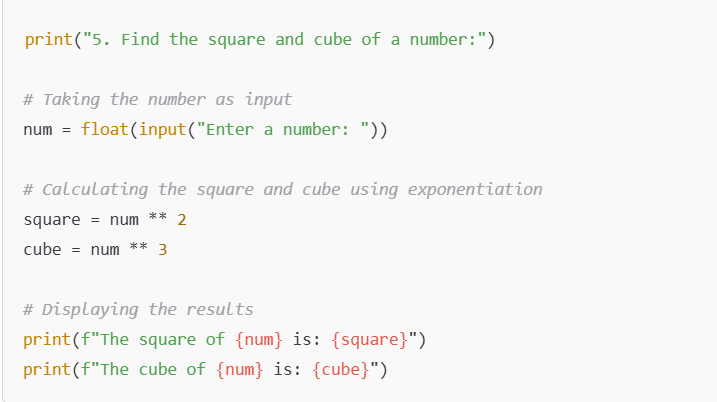


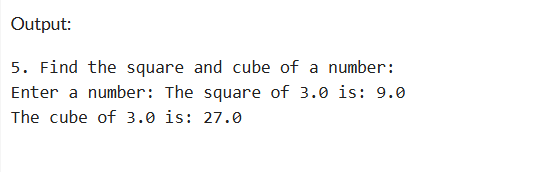
1. Write a program to calculate the area of a circle using the formula: Area = π \* r^2.





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

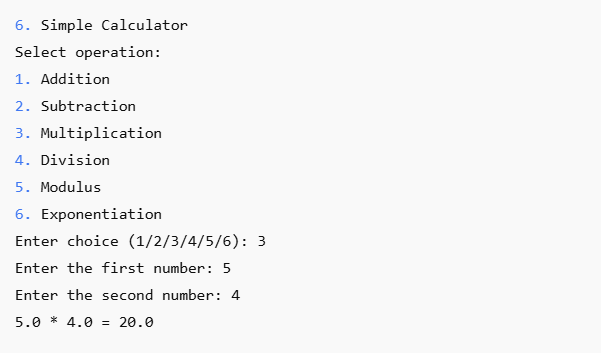




1. Create a simple calculator in Python that allows the user to choose an operation (addition, subtraction, etc.) and inputs two numbers.



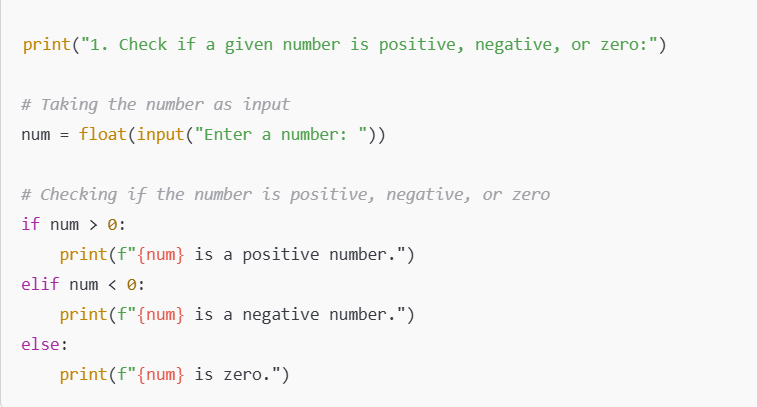


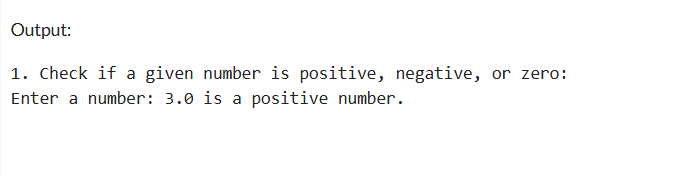


# LAB 05

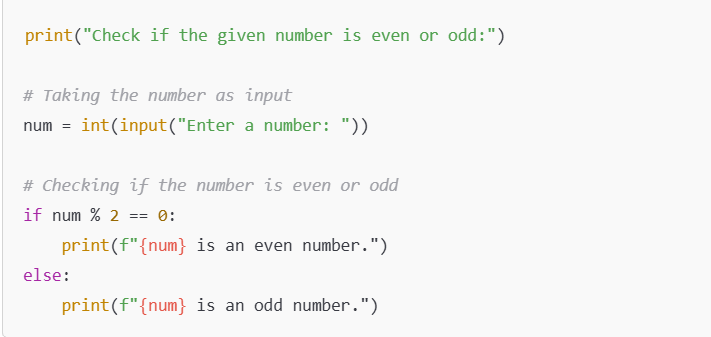
# Python if and else Statements

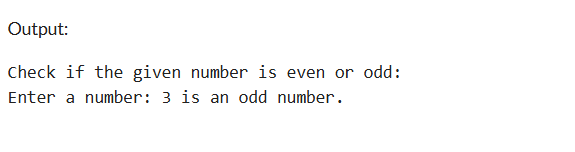
1. **Basic Task:** Write a program that checks if a given number is positive, negative, or zero.





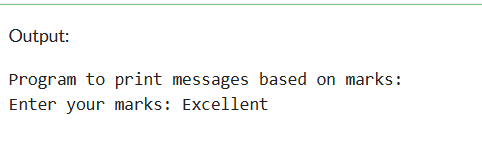
1. **Intermediate Task:** Write a program that takes user input and determines whether it's a even or odd.





1. **Advanced Task:** 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

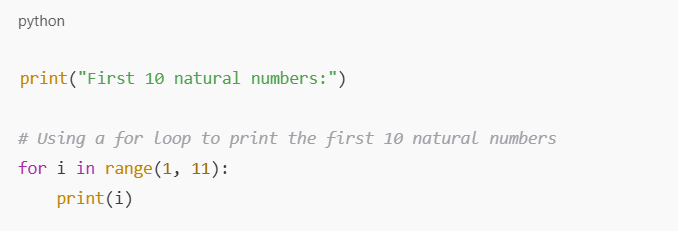


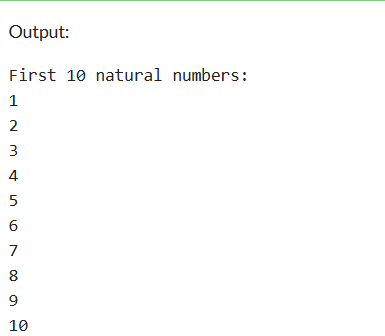


**LAB 06**

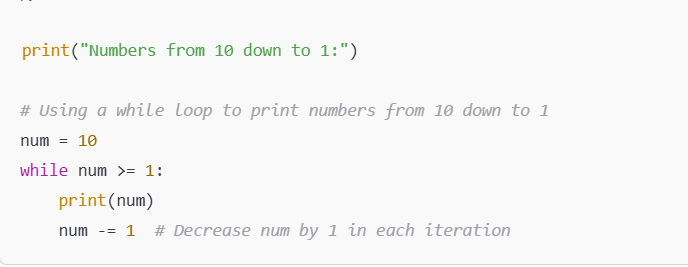
# Python for and while Loops

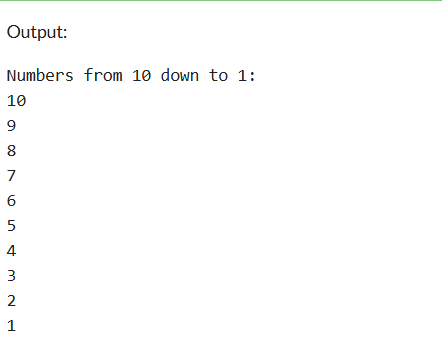
1. **Basic Task:** Write a for loop to print the first 10 natural numbers.



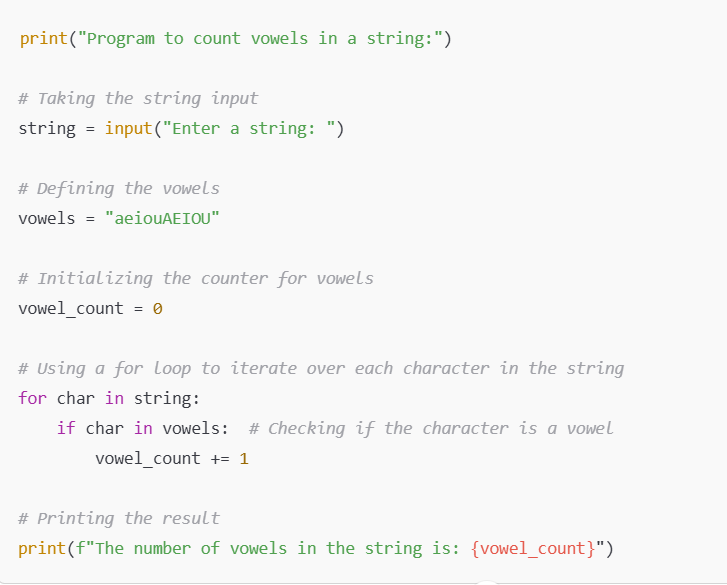


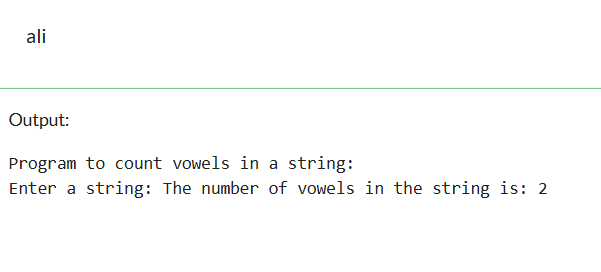
1. **Intermediate Task:** Write a while loop that prints numbers from 10 down to 1.





1. **Advanced Task:** Create a program that uses a for loop to iterate over a string and count the number of vowels.





1. **Challenge Task:** Write a program that prints the Fibonacci series up to n terms using a while loop.

