Assignments

1. Accept a char input from the user and display it on the console.

Code of the program & screenshot of the output.

2. Accept two inputs from the user and output its sum.

Variable	Data Type
Number 1	Integer
Number 2	Float
Sum	Float

Code of the program & screenshot of the output.

3. Write a program to find the simple interest.

   a. Program should accept 3 inputs from the user and calculate simple interest for the given inputs. Formula: SI=(P*R*n)/100)

Variable	Data Type

Principal amount (P)	Integer
Interest rate (R)	Float
Number of years (n)	Float
Simple Interest (SI)	Float

Code of the program & screenshot of the output.

4. Write a program to check whether a student has passed or failed in a subject after he or she enters their mark (pass mark for a subject is 50 out of 100).

   a. Program should accept an input from the user and output a message as "Passed" or "Failed"

Variable	Data type
mark	float

Code of the program & screenshot of the output.

5. Write a program to show the grade obtained by a student after he/she enters their total mark percentage.
   a. Program should accept an input from the user and display their grade as follows

Mark	Grade
> 90	A
80-89	B
70-79	C
60-69	D
50-59	E
< 50	Failed

Variable	Data type
Total mark	float

Code of the program & screenshot of the output.

6. Using the 'switch case' write a program to accept an input number from the user and output the day as follows.

Input	Output
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday
Any other input	Invalid Entry

Code of the program & screenshot of the output.

7. Write a program to print the multiplication table of given numbers.
   a. Accept an input from the user and display its multiplication table

   Eg:

   Output: Enter a number

   Input: 5

   Output:

   1 x 5 = 5

2 x 5 = 10

3 x 5 = 15

4 x 5 = 20

5 x 5 = 25

6 x 5 = 30

7 x 5 = 35

8 x 5 = 40

9 x 5 = 45

10 x 5 = 50

Code of the program & screenshot of the output.

8. Write a program to find the sum of all the odd numbers for a given limit

    a. Program should accept an input as limit from the user and display the sum of all the odd numbers within that limit

    For example if the input limit is 10 then the result is 1+3+5+7+9 = 25

    Output: Enter a limit

    Input: 10

    Output: Sum of odd numbers = 25

Code of the program & screenshot of the output.

9. Write a program to print the following pattern (**hint**: use nested loop)

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

Code of the program & screenshot of the output.

10. Write a program to interchange the values of two arrays.

    a. Program should accept an array from the user, swap the values of two arrays and display it on the console

    Eg: **Output**: Enter the size of arrays

    Input: 5

    Output: Enter the values of Array 1

    Input: 10, 20, 30, 40, 50

    Output: Enter the values of Array 2

    Input: 15, 25, 35, 45, 55

    Output: Arrays after swapping:

    Array1: 15, 25, 35, 45, 55

    Array2: 10, 20, 30, 40, 50

Code of the program & screenshot of the output.

11. Write a program to find the number of even numbers in an array
   a. Program should accept an array and display the number of even numbers contained in that array

   Eg: **Output**: Enter the size of an array

   Input: 5

   Output: Enter the values of array

   Input: 11, 20, 34, 50, 33

   Output: Number of even numbers in the given array is 3

Code of the program & screenshot of the output.

12. Write a program to sort an array in descending order
   a. Program should accept and array, sort the array values in descending order and display it

   Eg: **Output**: Enter the size of an array

   Input: 5

   Output: Enter the values of array

   Input: 20, 10, 50, 30, 40

   Output: Sorted array:

   50, 40, 30, 20, 10

Code of the program & screenshot of the output.

13. Write a program to identify whether a string is a palindrome or not
   a. A string is a palindrome if it reads the same backward or forward eg: MALAYALAM

Program should accept a string and display whether the string is a palindrome or not

Eg: **Output**: Enter a string

Input: MALAYALAM

Output: Entered string is a palindrome

Eg 2: **Output**: Enter a string

Input: HELLO

Output: Entered string is not a palindrome

Code of the program & screenshot of the output.

---

14. Write a program to add to two dimensional arrays

    a. Program should accept two 2D arrays and display its sum

    Eg: **Output**: Enter the size of arrays

    Input: 3

    Output: Enter the values of array 1

    Input:

    1 2 3

    4 5 6

    7 8 9

    Output: Enter the values of array 2

    Input:

    10 20 30

    40 50 60

70 80 90

Output: Sum of 2 arrays is:

11 22 33

44 55 66

77 88 99

Code of the program & screenshot of the output.

---

15. Write a program to accept an array and display it on the console using functions

    a. Program should contain 3 functions including main() function

    main()

        1. Declare an array
        2. Call function getArray()
        3. Call function displayArray()

    getArray()

        1. Get values to the array

    displayArray()

        1. Display the array values

Code of the program & screenshot of the output.

---

16. Write a program to check whether a given number is prime or not

    a. Program should accept an input from the user and display whether the number is prime or not

    Eg: **Output**: Enter a number

    Input: 7

Output: Entered number is a Prime number
Code of the program & screenshot of the output.

17. Write a menu driven program to do the basic mathematical operations such as addition, subtraction, multiplication and division (**hint**: use if else ladder or switch)
    a. Program should have 4 functions named addition(), subtraction(), multiplication() and division()
    b. Should create a class object and call the appropriate function as user prefers in the main function

Code of the program & screenshot of the output.

18. Grades are computed using a weighted average. Suppose that the written test counts 70%, lab exams 20% and assignments 10%.
 	
If Arun has a score of
 	
Written test = 81
 	
Lab exams = 68
 	
Assignments = 92
 	
Arun's overall grade = (81x70)/100 + (68x20)/100 + (92x10)/100 = 79.5
 	
Write a program to find the grade of a student during his academic year.
 	
    a. Program should accept the scores for written test, lab exams and assignments
    b. Output the grade of a student (using weighted average)
 	
Eg:
 	
Enter the marks scored by the students

Written test = 55

Lab exams = 73

Assignments = 87

Grade of the student is 61.8

Code of the program & screenshot of the output.

---

19. Income tax is calculated as per the following table

Annual Income	Tax percentage
Up to 2.5 Lakhs	No Tax
Above 2.5 Lakhs to 5 Lakhs	5%
Above 5 Lakhs to 10 Lakhs	20%
Above 10 Lakhs to 50 Lakhs	30%

Write a program to find out the income tax amount of a person.

a. Program should accept annual income of a person

Output the amount of tax he has to pay

Eg 1:

Enter the annual income

495000

Income tax amount = 24750.00

Eg 2:

Enter the annual income

500000

Income tax amount = 25000.00

Code of the program & screenshot of the output.

20. Write a program to print the following pattern using for loop

1

2   3

4   5   6

7   8   9   10

Code of the program & screenshot of the output.

21. Write a program to multiply the adjacent values of an array and store it in an another array
   a. Program should accept an array
   b. Multiply the adjacent values
   c. Store the result into another array

   Eg:

   Enter the array limit

   5

   Enter the values of array

   1   2   3   4   5

   Output

2 6 12 20	

Code of the program & screenshot of the output.

22. Write a program to add the values of two 2D arrays

    a. Program should contains 3 functions including the main function

main()

    1. Call function getArray()

    2. Call function addArray()

    3. Call function displayArray()

getArray()

    1. Get values to the array

getArray()

    1. Add array 1 and array 2

displayArray()

    1. Display the array values

Eg:

Enter the size of array

2

Enter the values of array 1

1   2

3   4

Enter the values of array 2

5   6
7   8
Output:
Sum of array 1 and array 2:
6   8
10   12

Code of the program & screenshot of the output

23. Write an object oriented program to store and display the values of a 2D array

    a. Program should contains 3 functions including the main function

<u>main()</u>

    1. Declare an array
    2. Call function getArray()
    3. Call function displayArray()

<u>getArray()</u>

    1. Get values to the array

<u>displayArray()</u>

    1. Display the array values

Eg:

Enter the size of array

3

Enter the array values

1   2   3

4	5	6
7	8	9

Array elements are:

1	2	3
4	5	6
7	8	9

Code of the program & screenshot of the output

---

24. Write a menu driven program to calculate the area of a given object.
    a. Program should contain two classes
        i. Class 1: MyClass
        ii. Class 2: Area
    b. Class MyClass should inherit class Area and should contain the following functions
        i. main()
        ii. circle()
        iii. square()
        iv. rectangle()
        v. triangle()
    c. Class Area should contain the following functions to calculate the area of different objects
        i. circle()
        ii. square()
        iii. rectangle()
        iv. triangle()

    Class MyClass extends Area{

```java
        public static void main(string args[]){

        }

        circle() {

        }

        square() {

        }

        rectangle() {

        }

        triangle() {

        }

    }

Class Area{

        circle(){

        }

        square(){

        }

        rectangle() {

        }

        triangle() {

        }
```

```
}
```

Eg 1:

Enter your choice

1. Circle
2. Square
3. Rectangle
4. Triangle

2

Enter the length

2

Output

Area of the square is: 4

Eg 2:

Enter your choice

1. Circle
2. Square
3. Rectangle
4. Triangle

1

Enter the radius

3

Output
Area of the circle is: 28.26
Code of the program & screenshot of the output
25. Write a class Student with name and age, make 3 students without using constructor.
Code of the program & screenshot of the output.
26. There is an issue in the following code. If the user inputs any non integer element it goes into error. Do handle this error. Code:- num = int(input("enter the number"))
Code of the program & screenshot of the output.
27. Write a Python program to square and cube every number in a given list of integers using Lambda.
Code of the program & screenshot of the output.
28. Write a Python program to count the number of characters (character frequency) in a string.
Code of the program & screenshot of the output.
29. Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '$', except the first char itself.
Code of the program & screenshot of the output.
30. Write a Python program to count the number of lines in a text file..
Code of the program & screenshot of the output.
31. Write a Python program that matches a string that has been followed by one or more b's.
Code of the program & screenshot of the output.

32. Write a Python program to sort the following list of dictionaries using Lambda with respect to age.

[{'name':'John','age':10}, {'name':'Doe','age':20}, {'name':'Michael','age':15}]

Code of the program & screenshot of the output.