

1. Write a program to find the GCD of two numbers.

```
a = 23  
b = 43  
while b != 0:  
    a, b = b, a % b  
print("GCD =", a)
```

Output:

GCD = 1

2. Write a function to check if a string is an anagram of another.

```
s1 = input("Enter the first: ")  
s2 = input("Enter the second: ")  
s2 = "silent"  
  
if sorted(s1) == sorted(s2):  
    print("Is also anagram")  
else:  
    print("Is not an anagram")
```

Output:

Is also anagram

4. Find common elements between two lists.

```
n1=[1,5,2,8,6,7]  
n2=[1,8,5,6,15,21]
```

```
c=list(sorted(set(n1) & set(n2)))
print(c)
```

Output:

```
[1, 5, 6, 8]
```

5. Generate a star pattern like a right-angled triangle.

```
n = 5
for i in range(1, n+1):
    print("*" * i)
```

Output:

```
*
**
***
****
*****
```

6. Write a program to find the sum of all even numbers from 1 to 100.

```
total_evens=0
for i in range(1, 101):
    if i % 2 == 0:
        total_evens += 1
        print(i)
print(f"Sum of all even number's is {total_evens}")
```

Output:

2

4

6

8

10

12

14

16

18

20

22

24

26

28

30

32

34

36

38

40

42

44

46

48

50

52

54

56

58

60

62

64

66

68

70

72

74

76

78

80

82

84

86

88

90

92

94

96

98

100

Sum of all even number's is 50

7.Find the maximum occurring character in a string.

```
lst = input("Enter list elements: ").split()
print(lst)
item = input("Enter element to count: ")
print(item)
print("Count =", lst.count(item))

count = 0
for i in lst:
    if i == item:
        count += 1
print("Count =", count)
```

Output:

```
['1', '8', '6', '5', '4', '9', '5', '6', '8']
```

```
8
```

```
Count = 2
```

```
Count = 2
```

8.Write a program to remove punctuation from a given string.

```
import string

s = "I am a good, great person, then WOW!"
for letter in s:
    result = ""
for ch in s:
    if ch not in string.punctuation:
        result += ch
print(result)
```

Output:

I am a good great person then WOW

9.Convert a decimal number to binary, octal, and hexadecimal.

```
n = 25  
print(bin(n))  
print(oct(n))  
print(hex(n))
```

Output:

0b11001

0o31

0x19

10.Count the number of digits in an integer using a loop.

```
n=int(input("Enter a number"))  
  
print(n)  
count = 0  
while n > 0:  
    count += 1  
    n //= 10  
print(count)
```

Output:

485265621

9

11.Find the length of a list without using len() function.

```
lst=[1,5,8,9,4,6,3,75,24,46,55]
```

```
length=0
```

```
for i in lst:
```

```
    length+=1
```

```
print(length)
```

Output:

```
[1, 5, 8, 9, 4, 6, 3, 75, 24, 46, 55]
```

```
11
```

12.Replace all spaces in a string with a specific character.

```
s = "I will do it Diya"
```

```
print(s.replace(" ", " * "))
```

Output:

```
I * will * do * it * Diya
```

13.Reverse a list without using the reverse function.

```
lst = list(map(int, input().split()))
```

```
print(lst)
```

```
rev = []
```

```
for i in range(len(lst)-1, -1, -1):
```

```
    rev.append(lst[i])
```

```
print(rev)
```

Output:

```
[1, 5, 9, 4, 52, 42, 15, 23, 21]
```

```
[21, 23, 15, 42, 52, 4, 9, 5, 1]
```

14. Write a program to check if a year is a leap year.

```
def is_leap_year(year):
    return year % 400 == 0 or (year % 4 == 0 and year % 100 != 0)
year = 2024
if is_leap_year(year):
    print("Leap Year")
else:
    print("Not Leap Year")
```

Output:

Leap Year

15. Find the sum of all elements in a nested list.

```
lst = [[1, 2], [3, 4], [5, 6], [7, 8]]
total = 0
for i in lst:
    for n in i:
        total += n
print(total)
```

Output:

36

'''An electricity company charges users based on their monthly electricity consumption:

First 100 units: ₹3 per unit

Next 200 units (101-300 units): ₹5 per unit

Above 300 units: ₹8 per unit

Additional Charges:

If the bill amount exceeds ₹1000, a 5% surcharge is added.

Senior citizens (above 60 years) get a 10% discount on the total bill before surcharge.

Write a Python program to calculate the final bill amount for a user."

```
units = int(input("Enter units consumed: "))
age = int(input("Enter age: "))
bill = 0
if units <= 100:
    bill = units * 3
elif units <= 300:
    bill = (100 * 3) + ((units - 100) * 5)
else:
    bill = (100 * 3) + (200 * 5) + ((units - 300) * 8)

if age > 60:
    bill = bill - (bill * 0.10)

if bill > 1000:
    bill = bill + (bill * 0.05)

print("Final Electricity Bill = ", round(bill, 2))
```

Output:

Final Electricity Bill = 1911.0

"city enforces the following traffic fines:

Speeding (above 60 km/h but below 80 km/h): ₹500 fine

Excessive Speeding (80+ km/h): ₹1000 fine

Jumping a red light: ₹1500 fine

Not wearing a helmet/seatbelt: ₹300 fine

Additional Conditions:

**If the offender has multiple violations, a 20% additional penalty is applied on the total fine.
If the offender is a first-time violator, a 10% discount is given."**

```
total_fine = 0
violations = []

speed = int(input("Enter vehicle speed (km/h): "))
red_light = input("Jumped red light? (yes/no): ").lower()
helmet = input("Wearing helmet/seatbelt? (yes/no): ").lower()
first_time = input("First time violator? (yes/no): ").lower()

if speed > 60 < 80:
    total_fine += 500
    violations.append("Speeding")
elif speed >= 80:
    total_fine += 1000
    violations.append("Excessive Speeding")

if red_light == "yes":
    total_fine += 1500
    violations.append("Red Light Jump")

if helmet == "no":
    total_fine += 300
    violations.append("No Helmet/Seatbelt")

if len(violations) > 1:
    total_fine += total_fine * 0.20

if first_time == "yes":
    total_fine -= total_fine * 0.10

print("Violations:", violations)
print("Total Fine: ₹", int(total_fine))
```

Output:

Violations: ['Speeding', 'No Helmet/Seatbelt']

Total Fine: ₹ 864