DAY-1

1. **Given a string s containing just the characters '(', ')', '{', '}', '[' and**

**']', determine if the input string is valid using Stack.**

stack = []

mapping = {")": "(", "}": "{", "]": "["}

# Taking input from the user

s = input("Enter a string containing only parentheses, curly brackets, and square brackets: ")

for char in s:

if char in mapping:

top\_element = stack.pop() if stack else '#' # Pops the top element from stack if not empty, else assigns '#'

if mapping[char] != top\_element:

print("Invalid string")

break

else:

stack.append(char)

else:

if not stack:

print("Valid string")

else:

print("Invalid string")

2. **Find the year of the given Anniversary is leap year or not. If leap year then print the**

**next Anniversary, if not leap year then print the previous Anniversary.**

y = input("Enter the year (YYYY): ")  
a = y.split("/")  
b = a[-1]  
c = int(b)  
  
if (c % 400 == 0) or (c % 100 != 0 and c % 4 == 0):  
 print("Leap year")  
 na = str(int(b) + 4)  
else:  
 na = str(int(b) + 1)  
  
print("Next anniversary = " + na)

3. **Write a program to print all the Non-Prime numbers between A and B?**

a=int(input("enter a: "))  
b=int(input("enter b: "))  
print("non prime numbers: ")  
for i in range(a+1,b):  
 count=0  
 for j in range(1,i+1):  
 if(i%j==0):  
 count+=1  
 if count!=2:  
 print(i," ")

4. **Print the pattern**

**1**

**1 2**

**1 2 3**

**1 2 3 4**

**1 2 3 4 5**

n=int(input("enter the number of rows: "))  
for i in range (1,n+1):  
 for j in range(1,i+1):  
 print(j,end=" ")  
 print()

5. **Write a program to print the total amount available in the ATM machine with the conditions applied.**

notes=[2000,500,200,100]  
n=[]  
sum=0  
for i in range(0,len(notes)):  
 print("enter the number of ",notes[i]," :")  
 a=int(input())  
 n.append(a)  
 sum=sum+a\*notes[i]  
print("total amount = ",sum)

6. **Write a Python program to find the maximum of three numbers entered by the user.**

a=int(input("enter the first number: "))  
b=int(input("enter the second number: "))  
c=int(input("enter the third number: "))  
d=max(a,b,c)  
print("maximum of ",a," ",b," ",c," = ",d)

7. **Write a Python program to find the Nth Fibonacci number. The program should take the value of N as input where n=8**

n=int(input("enter the number:"))

a=0

b=1

print("fibonacci numbers : ",a,b,end=" ")

i=3

while i < n+1:

c = a + b

print(c,end=" ")

a=b

b=c

i+=1

8. **Write a Python program to create a basic calculator that can perform addition, subtraction, multiplication, and division using functions.**

a=int(input("enter the first number: "))  
b=int(input("enter the second number: "))  
o=input("enter the operator: ")  
if o == "+":  
 print("sum = ",a+b)  
elif o == "-":  
 print("difference = ",a-b)  
elif o == "\*":  
 print("multiplication = ",a\*b)  
elif o =="/":  
 print("division = ",a/b)  
else:  
 print("invalid operator")  
  
9. **Write a program to find whether the person is eligible for vote or not. And if that**

**particular person is not eligible, then print how many years are left to be eligible.**

age=int(input("Enter your age: "))  
if age>=18:  
 print("you are elgible to vote")  
else:  
 print("you need ",18-age," years more to vote");

10. **Write a program to reverse a word using loop?(Not to use inbuilt functions)**

s = input("Enter the string: ")  
for i in range(len(s)-1, -1, -1):  
 print(s[i],end="")

11. **Find the LCM and GCD of n numbers?**

a=int(input("enter the first number: "))

b=int(input("enter the second number: "))

gcd=1

for i in range(1,min(a,b)+1):

if a%i==0 and b%i==0:

gcd=i

lcm=(a\*b)//gcd

print("LCM = ",lcm)

print("GCD = ",gcd)

12. **Write a program to convert Decimal number equivalent to Binary number and octal numbers?**

a=int(input("enter the decimal number: "))

b=bin(a)

c=oct(a)

print("Binary number :",b)

print("Octal number :",c)

13. **Print the pattern**

**2**

**2 4**

**2 4 6**

**2 4 6 8**

**2 4 6 8 10**

a=int(input("enter the number of rows: "))  
for i in range(1,a+1):  
 for j in range(1,i+1):  
 print(j\*2,end=" ")  
 print( )

14. **Write a Python Program to remove duplicates from the sorted array**

**Sample Input: Array = {15, 14, 25, 14, 32, 14, 31} Sample Output: Sorted Array = {14, 15, 25, 31, 32}**

n=int(input("enter the size of the array:"))  
a=[]  
print("enter the array: ")  
for i in range(n):  
 b=int(input())  
 a.append(b)  
for i in range(n):  
 for j in range(i+1,n):  
 if a[i]==a[j]:  
 for k in range(j,n-1):  
 a[k]=a[k+1]  
 n-=1  
print("array with duplicates removed:")  
for i in range(n):  
 print(a[i],end=" ")

15. **Write a program to find the number of special characters in the given statement**

special\_characters = "!@#$%^&\*()-+?\_=,<>/ "  
count = 0  
s = input("Enter the string: ")  
for char in s:  
 if char in special\_characters:  
 count += 1  
print("Number of special characters:",count)

16. **Write a program to count all the prime and composite numbers entered by the user. Sample Input:**

**Enter the numbers 4 , 54 29 71 7 59 98 23**

**Sample Output:**

**Composite number:3 Prime number:5**

n = int(input("Enter the number of elements: "))  
print("Enter the elements: ")  
a = []  
for i in range(n):  
 b = int(input())  
 a.append(b)  
for i in range(n):  
 count = 0  
 for j in range(1, a[i] + 1):  
 if a[i] % j == 0:  
 count += 1  
 if count == 2:  
 print("Prime:", a[i])  
 else:  
 print("Composite:",a[i])

17. **Write a program to print the numbers from M to N by skipping K numbers in between?**

m=int(input("enter the value of m: "))  
n=int(input("enter the value of n: "))  
k=int(input("enter the value of k: "))  
for i in range(m,n,k):  
 print(i,end=" ")

18. **Write a program for matrix addition?**

r = int(input("Enter the number of rows: "))  
c = int(input("Enter the number of columns: "))  
matrix1 = [[0 for j in range(c)] for i in range(r)]  
matrix2 = [[0 for j in range(c)] for i in range(r)]  
print("Enter the elements of matrix-1")  
for i in range(r):  
 for j in range(c):  
 matrix1[i][j] = int(input())  
print("Enter the elements of matrix-2")  
for i in range(r):  
 for j in range(c):  
 matrix2[i][j] = int(input())  
result\_matrix = [[0 for j in range(c)] for i in range(r)]  
for i in range(r):  
 for j in range(c):  
 result\_matrix[i][j] = matrix1[i][j] + matrix2[i][j]  
print("Resultant Matrix:")  
for i in range(r):  
 for j in range(c):  
 print(result\_matrix[i][j], "\t", end="")  
 print()

19. **Write a program that would sort a list of names in alphabetical order Ascending or Descending, choice get from the user?**

n = int(input("Enter the number of elements: "))  
a = []  
print("Enter the elements: ")  
for i in range(n):  
 b = input()  
 a.append(b)  
a.sort()  
print("Sorted list of elements:")  
for i in range(n):  
 print(a[i], end=" ")

20. **Write a program to print the multiplication table of number m up to n.**

m=int(input("enter m: "))  
n=int(input("enter n: "))  
for i in range(1,n+1):  
 print(i,"\*",m,"=",i\*m)