**Day1 Python Programs**

1)**Palindrome**

def is\_palindrome(s):

s = s.replace(" ", "").lower()

return s == s[::-1]

test\_string = "A man a plan a canal Panama"

if is\_palindrome(test\_string):

print(f'"{test\_string}" is a palindrome.')

else:

print(f'"{test\_string}" is not a palindrome.')

2)**Factorial**

def factorial(n):

if n==0:

return 1

else:

return n \* factorial(n-1)

number=5

result=factorial(number)

print(f"The factorial of {number} is {result}")

3**)Fibonacci**

def fibonacci(n):

series = [0, 1]

for i in range(2, n):

next\_term = series[-1] + series[-2]

series.append(next\_term)

return series

num\_terms = 10

fib\_series = fibonacci(num\_terms)

print(f"The first {num\_terms} terms of the Fibonacci series are: {fib\_series}")

4**Sum of the digits**

def sum\_of\_digits(n):

return sum(int(digit) for digit in str(n))

number = 12345

result = sum\_of\_digits(number)

print(f"The sum of the digits of {number} is {result}")

5) **Leap Year**

def is\_leap\_year(year):

if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):

return True

else:

return False

year = 2024

if is\_leap\_year(year):

print(f"{year} is a leap year.")

else:

print(f"{year} is not a leap year.")

6) **Multiplication table**

def multiplication\_table(n, up\_to=10):

for i in range(1, up\_to + 1):

print(f"{n} x {i} = {n \* i}")

number = 5

multiplication\_table(number)

7)**LCM and GCD**

def gcd(a, b):

while b:

a, b = b, a % b

return a

def lcm(a, b):

return a \* b // gcd(a, b)

num1 = 12

num2 = 18

gcd\_result = gcd(num1, num2)

lcm\_result = lcm(num1, num2)

print(f"The GCD of {num1} and {num2} is {gcd\_result}")

print(f"The LCM of {num1} and {num2} is {lcm\_result}")

8) **Prime number in a given range**

def is\_prime(num):

if num <= 1:

return False

for i in range(2, int(num\*\*0.5) + 1):

if num % i == 0:

return False

return True

def prime\_numbers\_in\_range(start, end):

primes = []

for num in range(start, end + 1):

if is\_prime(num):

primes.append(num)

return primes

start\_range = 10

end\_range = 50

primes = prime\_numbers\_in\_range(start\_range, end\_range)

print(f"Prime numbers between {start\_range} and {end\_range} are: {primes}")

9) **Tech number**

def is\_tech\_number(num):

str\_num = str(num)

length = len(str\_num)

if length % 2 != 0:

return False

mid = length // 2

first\_half = str\_num[:mid]

second\_half = str\_num[mid:]

sum\_first\_half = sum(int(digit) for digit in first\_half)

sum\_second\_half = sum(int(digit) for digit in second\_half)

return sum\_first\_half == sum\_second\_half

number = 3025

if is\_tech\_number(number):

print(f"{number} is a Tech number.")

else:

print(f"{number} is not a Tech number.")

10) **Prime number**

def is\_prime(num):

if num <= 1:

return False

if num <= 3:

return True

if num % 2 == 0 or num % 3 == 0:

return False

i = 5

while i \* i <= num:

if num % i == 0 or num % (i + 2) == 0:

return False

i += 6

return True

number = 29

if is\_prime(number):

print(f"{number} is a prime number.")

else:

print(f"{number} is not a prime number.")