DAY 2

Functions

1 write a python function to list even and odd numbers in a list

In [4]:
```
def list_even_odd_numbers(numbers):
    even = []
    odd = []

    for num in numbers:
        if num % 2 == 0:
            even.append(num)
        else:
            odd.append(num)

    return even, odd

list = [34, 12, 3, 42, 75, 16, 7, 88, 69, 1]
even, odd = list_even_odd_numbers(list)

print("Even numbers:", even)
print("Odd numbers:", odd)
```

```
Even numbers: [34, 12, 42, 16, 88]
Odd numbers: [3, 75, 7, 69, 1]
```

In [21]:
```
# 2 Write and run a Python program that asks the user to enter 8 integers (one at c
# and then prints out  how many of those integers were even numbers.
#For example, if the user entered 19, 6,  9,  20,  13,  7,  6,  and  1,
#then  your  program  should  print  out  3  since  3  of  those  numbers  were ]
count = 0
for i in range(8):
    user_input = input("Enter integers separated by commas: ")
    numbers = user_input.split(',')
    if user_input.split % 2 == 0:
        even_count += 1
print(f"Number of even numbers entered: {even_count}")
```

```
Enter integers separated by commas: 19,6,7,1
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[21], line 11
      9     num = int(num_str)
     10     if num % 2 == 0:
---> 11         even_count += 1
     12 except ValueError:
     13     print(f"Invalid integer: {num_str}")

NameError: name 'even_count' is not defined
```

In [14]:
```
#3 Write a Python program where you take any positive integer n, if n is even, divi
# If n is odd, multiply it by 3 and add 1 to obtain 3n + 1. Repeat the process unti
def collatz(n):
    sequence = [n]
    while n != 1:
```

```
        if n % 2 == 0:
            n = n // 2
        else:
            n = 3 * n + 1
        sequence.append(n)
    return sequence

num = int(input("Enter a positive integer: "))
print(collatz(num))
```

```
Enter a positive integer: 6
[6, 3, 10, 5, 16, 8, 4, 2, 1]
```

In [7]:
```
#4 Write a Python program to compute the sum of all the multiples of 3 or 5 below50
sum = 0
for i in range(1, 500):
    if i % 3 == 0 or i % 5 == 0:
        sum += i

print("Sum of multiples of 3 or 5 below 500:",sum)
```

```
Sum of multiples of 3 or 5 below 500: 57918
```

In [8]:
```
# 5 first n prime numbers

def prime(num):
    if num <= 1:
        return False
    elif num <= 3:
        return True
    elif 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

def fnp(N):
    primes = []
    num = 2
    while len(primes) < N:
        if prime(num):
            primes.append(num)
        num += 1
    return primes


N = int(input("Enter the value of N: "))

prime_numbers = fnp(N)
print(f"The first {N} prime numbers are: {prime_numbers}")
```

```
Enter the value of N: 10
The first 10 prime numbers are: [2, 3, 5, 7, 11, 13, 17, 19, 23, 29]
```

In [1]:
```
# 6 matrix multiplication
def matrix_multiplication(A, B):
    n = len(A)
    m = len(A[0])
    p = len(B[0])
    C = [[0 for i in range(p)] for j in range(n)]
    for i in range(n):
        for j in range(p):
```

```
            for k in range(m):
                C[i][j] += A[i][k] * B[k][j]
    return C


A = [[1, 2, 3], [4, 5, 6]]
B = [[7, 8], [9, 10], [11, 12]]

C = matrix_multiplication(A, B)

print(C)
```

```
[[58, 64], [139, 154]]
```

In [20]:

```
# 7 to Count number of vowels in a String in Python
string1 = "Count number of vowels in a String in Python"
count = 0
i = 0
for i in range(len(string1)):
    if (
        (example[i] == "a")
        or (example[i] == "e")
        or (example[i] == "i")
        or (example[i] == "o")
        or (example[i] == "u")
    ):
        count += 1

print("No of vowels in the given string is: ", count)
```

```
No of vowels in the given string is:  12
```

In [15]:

```
# 8 factorial of a number using recursive function

def fact(n):
   if n == 1:
       return n
   else:
       return n*fact(n-1)

num = 4
print("The factorial of", num, "is",fact(num))
```

```
The factorial of 4 is 24
```

In [9]:

```
#9 Write a python Function for generating the Fibonacci series using thefunction
def fib(n):
    fibs = [0, 1]
    for i in range(2, n):
        fibs.append(fibs[i - 1] + fibs[i - 2])
    return fibs

print(fib(10))
```

```
[0, 1, 1, 2, 3, 5, 8, 13, 21, 34]
```

In [5]:

```
# 10 Python program to display the given integer in reverse order using the functio
def rev(n):
    revno = 0
    while n:
        revno = revno * 10 + n % 10
        n //= 10
    return revno
```

```
n = 12345
revno = rev(n)
print(revno)
```

```
54321
```

In [18]:
```
#11 Write a Python Function to display all integers within the range 200-300 whose
def is_sum_of_digits_even(number):
    digit_sum = sum(map(int, str(number)))
    return digit_sum % 2 == 0

def integers_with_even_digit_sum(start, end):
    result = []
    for num in range(start, end + 1):
        if is_sum_of_digits_even(num):
            result.append(num)
    return result

# Example usage:
start_range = 200
end_range = 300

even_digit_sum_integers = integers_with_even_digit_sum(start_range, end_range)
print("Integers with an even digit sum:", even_digit_sum_integers)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[18], line 16
     13 start_range = 200
     14 end_range = 300
---> 16 even_digit_sum_integers = integers_with_even_digit_sum(start_range, end_ra
nge)
     17 print("Integers with an even digit sum:", even_digit_sum_integers)

Cell In[18], line 8, in integers_with_even_digit_sum(start, end)
      6 result = []
      7 for num in range(start, end + 1):
----> 8     if is_sum_of_digits_even(num):
      9         result.append(num)
     10 return result

Cell In[18], line 2, in is_sum_of_digits_even(number)
      1 def is_sum_of_digits_even(number):
----> 2     digit_sum = sum(map(int, str(number)))
      3     return digit_sum % 2 == 0

TypeError: 'int' object is not callable
```

In [7]:
```
# 12 Write a python Function to find the number of digits and sum of digits for a g
def count_digits_and_sum(number):
    digit_count = 0
    digit_sum = 0
    number = abs(number) #Convert the number to a positive integer (if it's negati
    while number > 0:
        digit = number % 10
        digit_count += 1
        digit_sum += digit
        number //= 10
    return digit_count, digit_sum

num = int(input("Enter int "))
count, total = count_digits_and_sum(num)
print(f"Number of digits: {count}")
print(f"Sum of digits: {total}")
```

```
Enter int 346
Number of digits: 3
Sum of digits: 13
```

In [15]:
```python
#13
def is_sorted(list):
    for i in range(len(list) - 1):
        if list[i] > list[i + 1]:
            return False
        return True


def has_duplicates(list):
    seen = set()
    for item in list:
        if item in seen:
            return True
        seen.add(item)
    return False
```

In [ ]:
```python

```