# NAAN MUDHALVAN

# CHALLENGE 3

## Challenge 1

Write a function called linear_search_product that takes the list of products and a target product name as input. The function should perform a linear search to find the target product in the list and return a list of indices of all occurrences of the product If found, or an empty list if the product is not found.

**PROGRAM:**

```
def linear_search_product(product_list, target_product):
    indices = []

    for i, product in enumerate(product_list):
        if product == target_product:
            indices.append(i)

    return indices

# Example usage:
products = ["apple", "banana", "apple", "orange", "grape", "apple"]
target = "apple"

result = linear_search_product(products, target)
if result:
    print(f"The product '{target}' was found at indices: {result}")
```

```
else:
    print(f"The product '{target}' was not found in the list.")
```

**Challenge 2**

Implement a function called sort_students that takes a list of student objects as input and sorts the list based on their CGPA (Cumulative Grade Point Average) in descending order. Each student object has the following attributes: name (string), rolLnumber (string), and cgpa (float). Test the function with different input lists of students.

**PROGRAM:**

```
class Student:
    def __init__(self, name, roll_number, cgpa):
        self.name = name
        self.roll_number = roll_number
        self.cgpa = cgpa

    def __str__(self):
        return f"{self.name} (Roll Number: {self.roll_number}, CGPA: {self.cgpa})"

def sort_students(student_list):
    # Sort the student_list in descending order based on CGPA
    sorted_students = sorted(student_list, key=lambda student: student.cgpa, reverse=True)
    return sorted_students

# Example usage:
students = [
```

```
    Student("Alice", "A101", 3.8),
    Student("Bob", "B102", 3.9),
    Student("Charlie", "C103", 3.7),
    Student("David", "D104", 3.95),
    Student("Eve", "E105", 3.85),
]

sorted_students = sort_students(students)

# Printing the sorted list of students
for student in sorted_students:
    print(student)
```