Assignment 6 - Classes

Problem 1: Book Class

Objective:

Create a class called `Book` with the following attributes:

- `title` (String)
- `author` (String)
- `price` (double)
- `pages` (int)

The class should have:

- A method `displayInfo()` to print the book's details: title, author, price, and number of pages.

Task:

1. Create an object of the `Book` class and initialize the attributes.
2. Use the `displayInfo()` method to print the details of the book.

Example:

```
Input: Book title: Java Programming Author: John Doe Price: 29.99 Pages: 300
```

```
Output: Book Title: Java Programming Author: John Doe Price: $29.99 Pages: 300
```

Problem 2: Student Class

Objective:

Create a class called `Student` with the following attributes:

- `name` (String)
- `rollNumber` (int)
- `marks` (double)

The class should have:

- A method `calculateGrade()` that returns the grade based on the marks:
  - Grade A: 90 and above
  - Grade B: 75 to 89
  - Grade C: 50 to 74
  - Grade D: Below 50

Task:

1. Create an object of the `Student` class and initialize the attributes.
2. Use the `calculateGrade()` method to display the grade based on the student's marks.

Example:

```
Input: Name: Alice Roll Number: 101 Marks: 85
```

```
Output: Name: Alice Roll Number: 101 Grade: B
```

Problem 3: Car Class

Objective:

Create a class called `Car` with the following attributes:

- `model` (String)
- `year` (int)
- `color` (String)
- `speed` (double)

The class should have:

- A method `accelerate(double speedIncrease)` that increases the car's speed by the given amount.
- A method `brake(double speedDecrease)` that decreases the car's speed by the given amount.

- A method `displayCarDetails()` that prints the details of the car.

Task:

1. Create an object of the `Car` class and initialize the attributes.

2. Use the `accelerate()` method to increase the car's speed.

3. Use the `brake()` method to decrease the car's speed.

4. Use the `displayCarDetails()` method to display the car's details after the speed changes.

Example:

```
Input: Model: Toyota Corolla Year: 2022 Color: Red Speed: 50
```

```
Output: Model: Toyota Corolla Year: 2022 Color: Red Current Speed: 50 km/h
```

```
After acceleration: New Speed: 70 km/h
```

```
After brake: New Speed: 60 km/h
```