Lab 6

Q1. Write a C++ program that:

- Defines a struct named Student with attributes:
  - name (string)
  - age (int)
  - marks (float)
- Takes input for these attributes and prints them.

Q2. Create a struct named Rectangle with:

- length and width as float members.
- A function calculateArea() that returns the area of the rectangle. Make this function inside the struct.
- Write a program to input length and width, then display the area.

Q3.Write a program that:

- Defines a struct named Circle with a radius member.
- Implements a function float getArea(Circle c) that returns the area of the circle.
- Accepts input for radius, calls the function, and prints the area. Make this function outside the struct.

Q4. Write a program that:

- Defines a struct named Book with title, author, and price.
- Creates an array of 3 books, takes input from the user, and displays details of all books.

Q5. Create a four- function calculator for fractions using structure.
Make a structure named fraction, whose members are nominator and denominator of type int.
You need to implement the following functions:
- Function that takes **structure Fraction** as an argument and initialize it's members.
- Display function that takes **structure Fraction** as an argument, and displays it's member values.
- Separate functions for addition,subtraction,multiplication & division. Formulas are given below. **Each function must return a Fraction**.

Addition: a/b + c/d = (a*d + b*c) / (b*d)
Subtraction: a/b - c/d = (a*d - b*c) / (b*d)
Multiplication: a/b * c/d = (a*c) / (b*d)
Division: a/b / c/d = (a*d) / (b*c)

Q6. **Implement a structure, Car. The structure has the following data member:**

● int petrolLevel – that indicates the liters of petrol in the car's petrol tank. PetrolLevel for this car can only be in the range 0 – 45 liters.

The structure has the following member functions:

1. **void setPetrolLevel(int petrolLevelVal)** – a setter for petrol level, cannot set value greater than 45.
2. **int getPetrolLevel()** – a getter for petrolLevel
3. **bool MoveCar(int distanceKM)** – a function that takes an integer as an argument and moves the car to the argument value which is in Km. Provided the petrol tank has enough fuel. Successful movement of the car returns true otherwise returns false. Moving for each km causes the petrolLevel to go low by one.
4. **void Refill()** – a function that refills the car tank to the maximum value of petrolLevel
5. **bool isEmpty()** – a function that tells whether the Petrol tank is Empty or not