Chapter 2 review questions (Q&A)

1. What is a Function? A function is known as the static method. Functions allow us to encapsulate a block of code that performs a specific task.
   Example.

```
public static double harmonic(int n) {
   double sum = 0.0;
   for (int i = 1; i <= n; i++) {
      sum += 1.0 / i;
   }
   return sum;
}
```

2: What is a class? Give an example.

Classes are defined as blueprints for creating objects.

Example.

```
public class Car {

   // Properties

   String brand;

   int year;


   // Method

   public void displayInfo() {

      System.out.println("Brand: " + brand + ", Year: " + year);

   }

}
```

3: What is an object? Give an example.

An object is an instance of a class. It represents a specific implementation of the class and can use its methods and properties.

Example.

```
public class Main {

   public static void main(String[] args) {
```

```
        Car myCar = new Car(); // Creating an object
        myCar.brand = "Toyota";
        myCar.year = 2022;
        myCar.displayInfo(); // Output: Brand: Toyota, Year: 2022
    }
}
```

4. What is OOP? Object-Oriented Programming (OOP) is a programming paradigm based on the concept of "objects." Objects represent real-world entities with properties (attributes) and behaviors (methods). The key principles of OOP are:

Encapsulation: Hiding the internal state and requiring access through methods.

Inheritance: Creating new classes based on existing ones.

Polymorphism: Allowing one interface to be used for different data types.

Abstraction: Focusing on essential qualities rather than specific details.

5: What is functional programming? Give an example.

Functional programming is a programming paradigm where computation is treated as the evaluation of mathematical functions.

Example.

```
public static int gcd(int p, int q) {
   if (q == 0) return p;
   return gcd(q, p % q);
}
```