Question -1:

What is wrong with each of the following programs?

(a)
```java
1 public class ShowErrors {
2     public static void main(String[] args) {
3         ShowErrors t = new ShowErrors();
4     }
5 }
```

(b)
```java
1 public class ShowErrors {
2     public static void main(String[] args) {
3         ShowErrors t = new ShowErrors();
4         t.x();
5     }
6 }
```

(c)
```java
1 public class ShowErrors {
2     public void method1() {
3         Circle c;
4         System.out.println("What is radius "+c.getRadius());
5         c = new Circle();
6     }
7 }
```

(d)
```java
1 public class ShowErrors {
2     public static void main(String[] args) {
3         Circle c;
4         System.out.println(c.value);
5     }
6 }
7 class C {
8     int value = 2;
9 }
10 }
```

Question -2:

What is wrong in the following code?

```java
1 class Test {
2     public static void main(String[] args) {
3         A a = new A();
4         a.print();
5     }
6 }
7 class A {
8     String s;
9     A(String newS) {
10        s = newS;
11    }
12    public void print() {
13        System.out.print(s);
14    }
15 }
16 }
```
Question-3:

What is the output of the following code?

```java
public class A {
    boolean x;

    public static void main(String[] args) {
        A a = new A();
        System.out.println(a.x);
    }
}
```

Question-4:

*(The Rectangle class)* Following the example of the Circle class in Section 9.2, design a class named Rectangle to represent a rectangle. The class contains:

- Two double data fields named width and height that specify the width and height of the rectangle. The default values are 1 for both width and height.
- A no-arg constructor that creates a default rectangle.
- A constructor that creates a rectangle with the specified width and height.
- A method named `getArea()` that returns the area of this rectangle.
- A method named `getPerimeter()` that returns the perimeter.

Draw the UML diagram for the class and then implement the class. Write a test program that creates two Rectangle objects—one with width 4 and height 40 and the other with width 3.5 and height 35.9. Display the width, height, area, and perimeter of each rectangle in this order.

Question-5:

*(The Stock class)* Following the example of the Circle class in Section 9.2, design a class named Stock that contains:

- A string data field named symbol for the stock’s symbol.
- A string data field named name for the stock’s name.
- A double data field named previousClosingPrice that stores the stock price for the previous day.
- A double data field named `currentPrice` that stores the stock price for the current time.
- A constructor that creates a stock with the specified symbol and name.
- A method named `getChangePercent()` that returns the percentage changed from previousClosingPrice to currentPrice.

Draw the UML diagram for the class and then implement the class. Write a test program that creates a Stock object with the stock symbol ORCL, the name Oracle Corporation, and the previous closing price of 34.5. Set a new current price to 34.35 and display the price-change percentage.
Question-6:

((Use the Random class) Write a program that creates a Random object with seed 1000 and displays the first 50 random integers between 0 and 100 using the nextInt(100) method.

Question-7:

((Stopwatch) Design a class named Stopwatch. The class contains:

- Private data fields startTime and endTime with getter methods.
- A no-arg constructor that initializes startTime with the current time.
- A method named start() that resets the startTime to the current time.
- A method named stop() that sets the endTime to the current time.
- A method named getElapsedTime() that returns the elapsed time for the stopwatch in milliseconds.

Draw the UML diagram for the class and then implement the class. Write a test program that measures the execution time of sorting 100,000 numbers using selection sort.)