Exercise 19: Points

This exercise is about classes that represent points by implementing the following interface:

```
interface PointInterface{
    public void move(int dx, int dy);
    //moves the point dx in the x-direction and dy in the y-direction
}
```

Question 1:
Make a class `Point` that implements the interface by representing points by their x- and y-coordinates. Apart from implementing the method from the interface, the class should have a constructor with the signature `Point(int, int)` and methods with the signatures `String toString()` and `boolean equals(Point)`.
Hint: Let the method `toString` format the point as a string of the form `(x,y)`.

Question 2: In words (not in Java), give a suggestion for a different implementation of the interface.

Question 3: Consider the following program which uses the `Point` class:

```
public class TestPoint {
  public static void main (String[] args) {
    Point p1 = new Point(5,10);
    Point p2 = new Point(5,10);
    printpoints(p1, p2);

    p1.move(2,2); printpoints(p1, p2);

    p1 = p2; printpoints(p1, p2);

    p1.move(2,2); printpoints(p1, p2);
  }

  static void printpoints(Point p1, Point p2) {
    System.out.println("p1's coordinates are  " + p1);
    System.out.println("p2's coordinates are  " + p2);
    System.out.println("p1 == p2: " +  (p1 == p2));
    System.out.println("p1.equals(p2): " + p1.equals(p2) + "\n");
  }
}
```

Draw figures that illustrate the contents of the memory at the four printouts.
What is the output from the program? (Answer the question without running the program, and then run the program afterwards to check if you answered correctly.) The program is found on the course homepage.

Exercise 20: Cars

Each car in a car register has the following data:

- brand, e.g. ‘Citroën’
- license plate, e.g. ‘SV 27698’
- colour, e.g. ‘red’

If a car is in the car register, it should be possible to:

- format the information as a character string
- check if it is of the same brand as another given car

Question 1: Make a class `Car` that represents information on cars and has methods for performing the operations mentioned above. The class should also have an appropriate constructor.
Question 2: Make a class `TestCar` that creates some car objects, compares their brands, and prints the information about them.