toString() in Java

Short note on toString()

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Why toString()

- What if we wish to print out the contents of an object?

- We could just use getters wherever we need to access the values?

- We have a better way…

- toString()

toString()

- We will start to write a toString() method for each class.
  - It will be public
  - It can be basic or complicated

- Then other classes can get a ’string’ version of the object at any time.

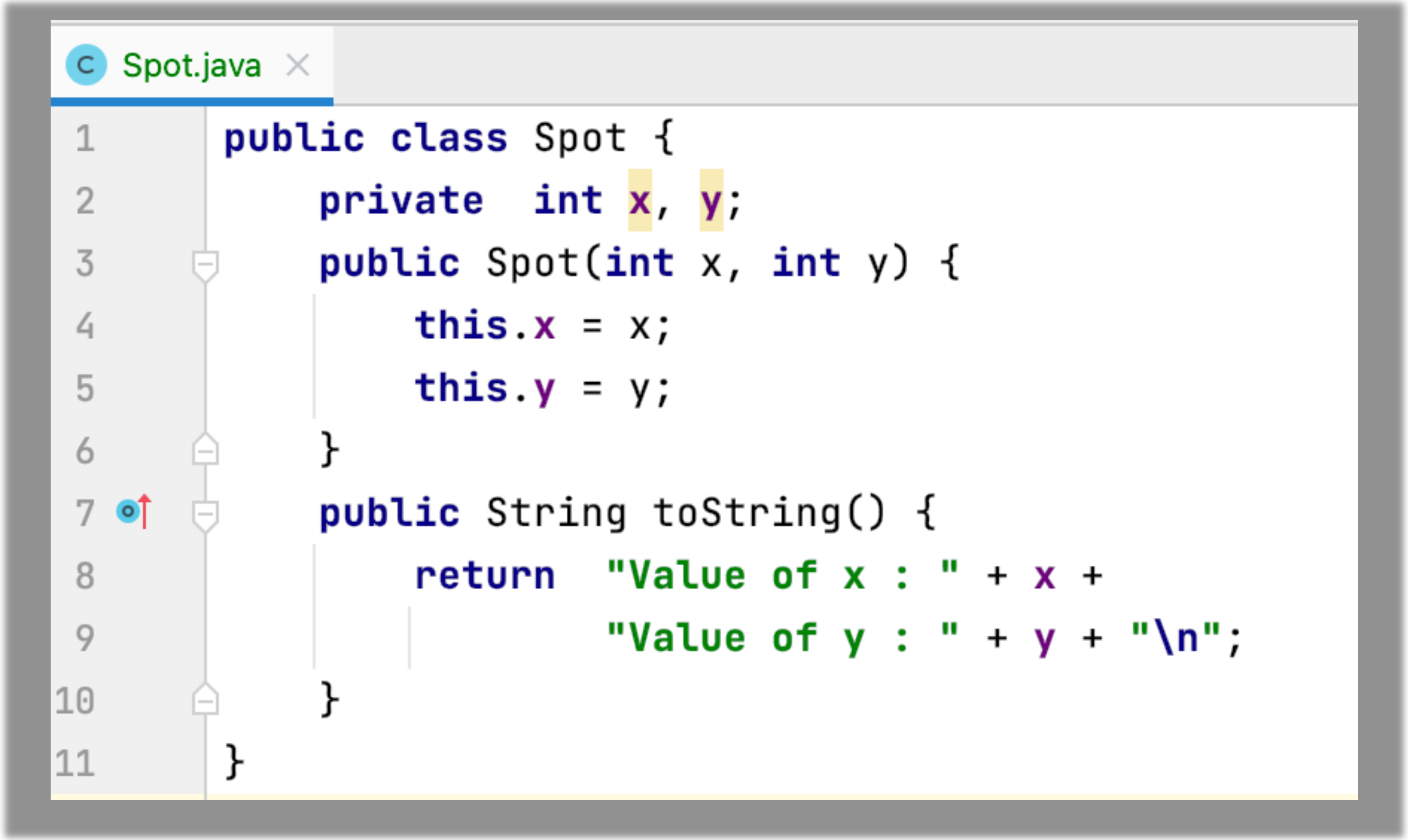
- This is useful if we wish to
  - Examine an object’s value
  - Print out an object for reporting purposes.

toString()

- We will firstly write a toString() for a simple class (Spot)

- Then we will develop a class (Spots) whose main function is to have an array of Spot.
  - We will write a toString() for this collection
  - This toString() uses the Spot toString()..

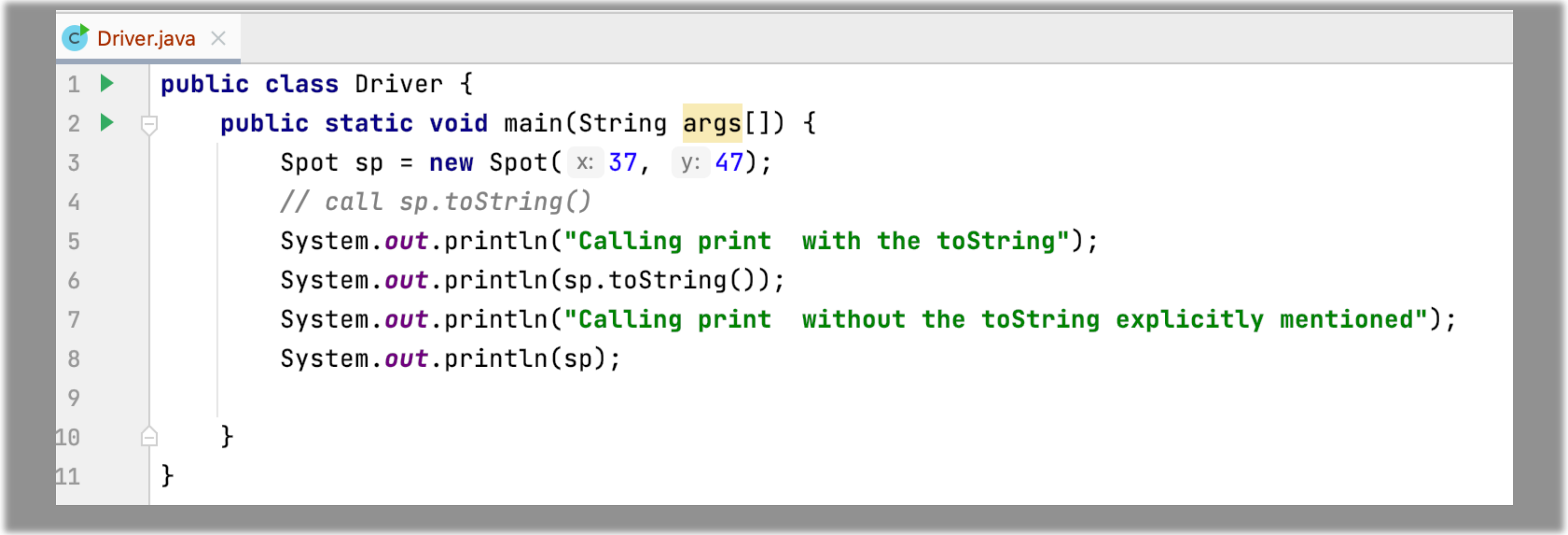
Ex 1. Example of toString() in Spot



```java
public class Spot {
    private  int x, y;
    public Spot(int x, int y) {
        this.x = x;
        this.y = y;
    }
    public String toString() {
        return  "Value of x : " + x +
                "Value of y : " + y + "\n";
    }
}
```

Simple Spot Class – Note the toString()

Ex 1. Using toString()

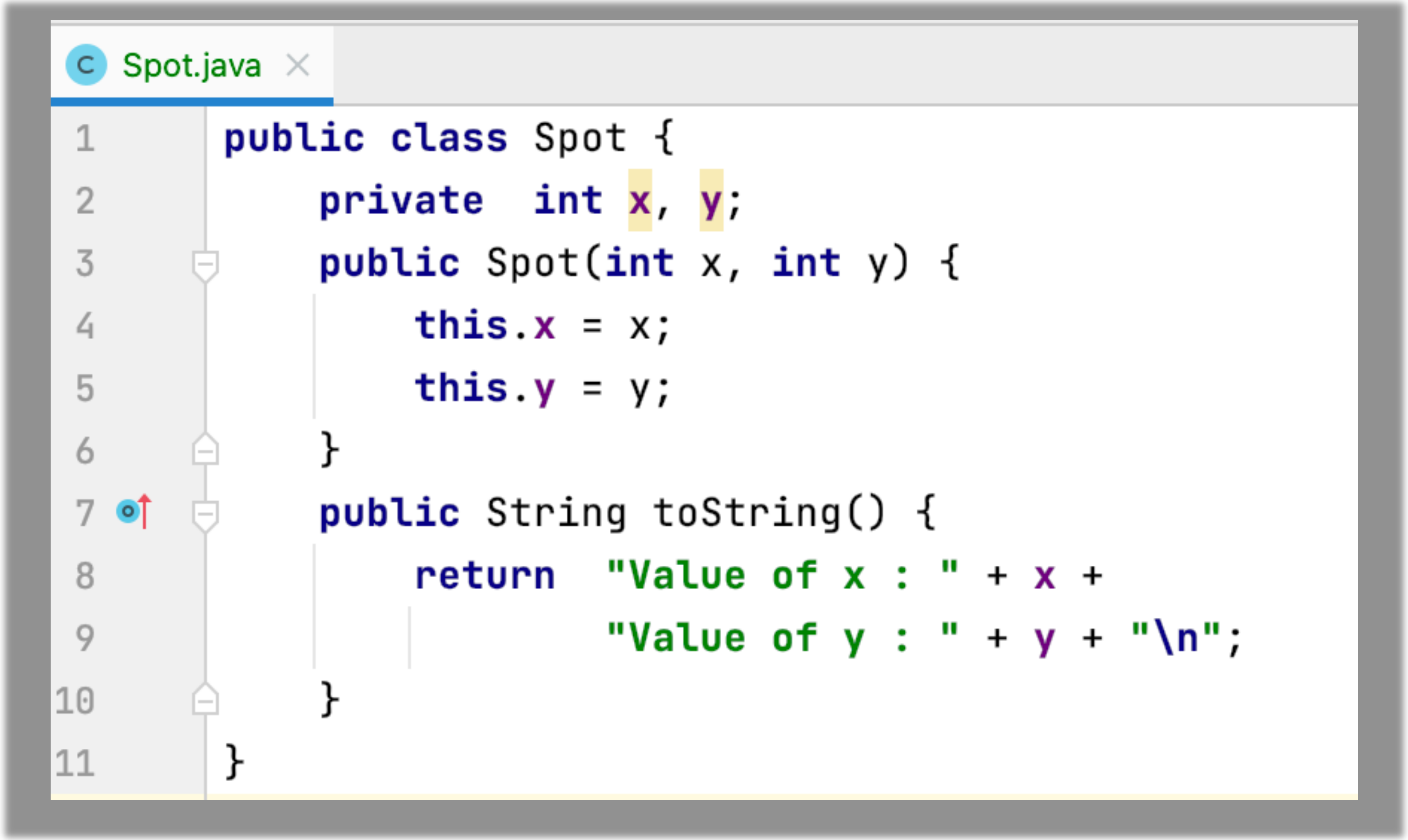


```
public class Driver {
    public static void main(String args[]) {
        Spot sp = new Spot( x: 37,  y: 47);
        // call sp.toString()
        System.out.println("Calling print  with the toString");
        System.out.println(sp.toString());
        System.out.println("Calling print  without the toString explicitly mentioned");
        System.out.println(sp);

    }
}
```

Driver Class using toString()

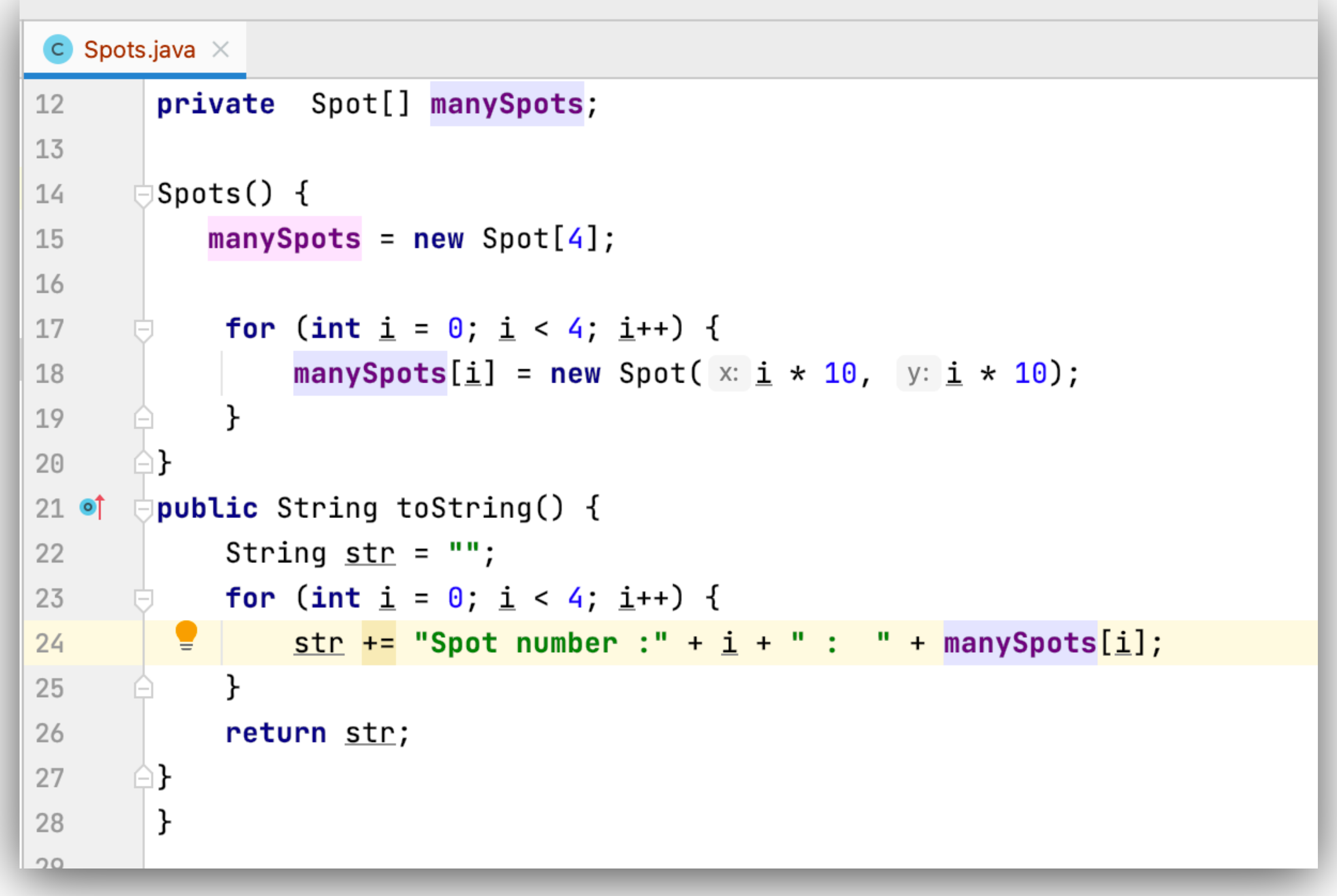
Ex 2. Example of toString() for a collection of Spots



```java
public class Spot {
    private  int x, y;
    public Spot(int x, int y) {
        this.x = x;
        this.y = y;
    }
    public String toString() {
        return  "Value of x : " + x +
                "Value of y : " + y + "\n";
    }
}
```

Simple Spot Class – Note the toString() (no change)

Ex 2. We introduce Spots which contains an array of Spot



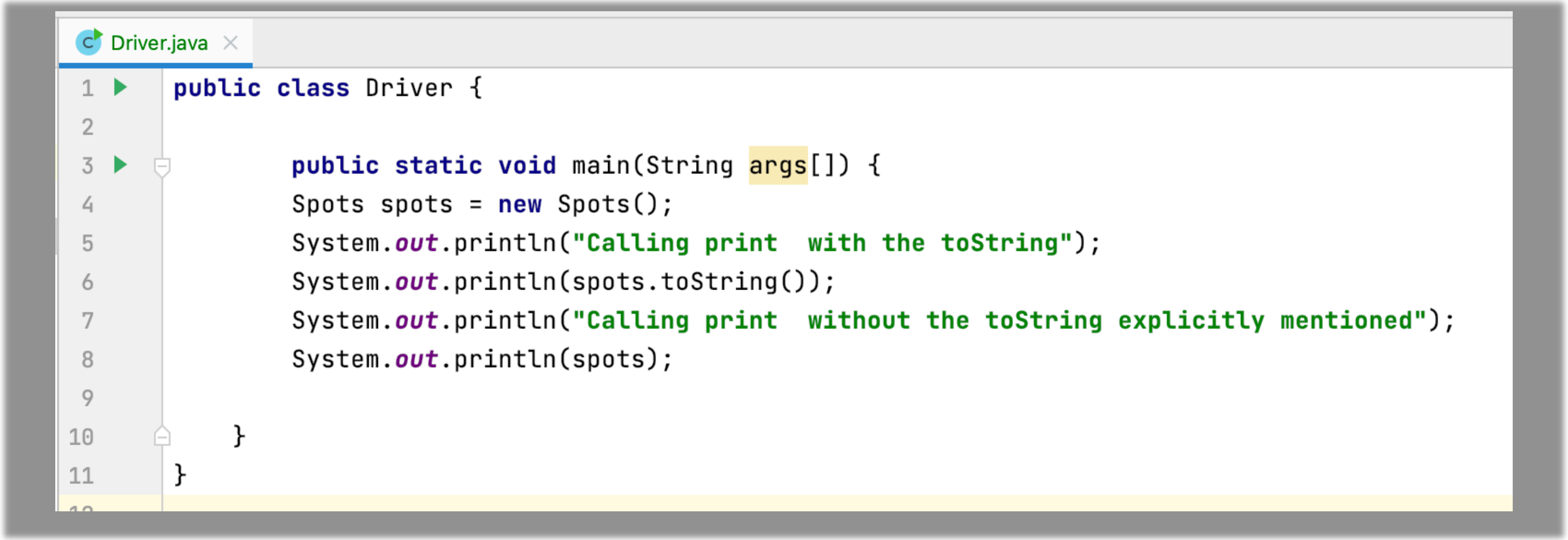
```java
private  Spot[] manySpots;

Spots() {
    manySpots = new Spot[4];

    for (int i = 0; i < 4; i++) {
        manySpots[i] = new Spot( x: i * 10,  y: i * 10);
    }
}
public String toString() {
    String str = "";
    for (int i = 0; i < 4; i++) {
        str += "Spot number :" + i + " :   " + manySpots[i];
    }
    return str;
}
}
```

Spots Class – Note the toString() – needs a loop)

Using toString()



```java
public class Driver {

        public static void main(String args[]) {
        Spots spots = new Spots();
        System.out.println("Calling print  with the toString");
        System.out.println(spots.toString());
        System.out.println("Calling print  without the toString explicitly mentioned");
        System.out.println(spots);

    }
}
```

Driver Class using toString() on spots – note similarity

Questions?

References

- Reas, C. & Fry, B. (2014) Processing – A Programming Handbook for Visual Designers and Artists, 2nd Edition, MIT Press, London.