

### First G51PRG self-test

This test is not assessed. It is provided for revisions purposes. Similar questions may occur in the exam. If you don't understand why the answers are as they are, ask your tutor or look up lectures or a textbook.

1. What will be printed after the following lines of code are executed:

```
String string1 = new String("Hello");
String string2 = new String("Hello");
System.out.println(string1 == string2);
```

2. What will be printed after the following lines of code are executed:

```
String string1 = new String("Hello");
String string2 = new String("Hello");
System.out.println(string1.equals(string2));
```

3. What will be printed after the following lines of code are executed:

```
String string1 = new String("Hello");
String string2 = string1;
System.out.println(string1 == string2);
```

4. Consider the following class definition:

```
public class Employee{
    public int payroll;
    public static int retirementAge = 65;

    Employee(int i){
        payroll = i;
    }

    public static void main(String[] args){
        Employee x = new Employee(10146);
        Employee y = new Employee(10147);
        x.retirementAge = 60;
        System.out.println(y.retirementAge);
    }
}
```

What is x in the main() method above: (a) a class, (b) an object, (c) a number, (d) an int?

5. What will be printed after the main() from question 4 is executed?
6. Replace the main() method from question 4 with the following one:

```

    public static void main(String[] args){
        System.out.println(retirementAge);
    }

```

Will the compiler report an error? If not, what will be printed after the `main()` is executed?

7. Replace the `main()` method from question 4 with the following one:

```

    public static void main(String[] args){
        System.out.println(payload);
    }

```

Will the compiler report an error? If not, what will be printed after the `main()` is executed?

8. Write the code to make a copy of an array of integers. It should return an array which contains the same integers but has a different address in memory.

```

public class ArrayUtilities {
    public static int[] copy(int[] array){

    }
}

```

9. Complete the last line of code below to assign a copy of `myArray` to `newArray` (call the method `copy()` from the previous question).

```

int[] myArray = {1,4,5};
int[] newArray =

```

Consider the following class definitions:

```
class Rectangle {
    protected double width;
    protected double height;

    public Rectangle(double x, double y){
        this.width = x;
        this.height = y;
    }

    public double surface(){
        return width * height;
    }
}

class Square extends Rectangle{

    public Square(double x){
        super(x,x);
    }
}
```

10. Can a method in the `Square` class access `width` and `height` fields?
11. Would any of the following lines cause a compiler or runtime error (assuming the rest of the code is fine)? If not, what will it print?

```
Square s = new Square(4.0);
System.out.println(s.surface());
```

12. Would the following line cause a compiler or runtime error (assuming the rest of the code is fine)?

```
Rectangle[] r = new Rectangle[10];
r[0] = new Square(4.0);
```

13. Would the following line cause a compiler or runtime error (assuming the rest of the code is fine)?

```
Square[] s = new Square[10];
s[0] = new Rectangle(4.0, 4.0);
```