

8. OOP: encapsulation

Note: try to make every field `private`

Resources:

OOP: access modifiers

OOP: encapsulation

Problems

1. Create a class named "Circle" It should have the following attributes: x, y and radius. Make sure that the attributes are all `private`.
 - (a) Create a constructor with parameters x, y and radius that initializes the attributes in this class.
 - (b) Create getters and setters for the every attribute.
 - (c) Create a method that determines whether a circle intersects another circle.

Example behavior:

Input: a circle

Output: `true` if and only if the this circle intersects the other circle

2. What does the code in the following snippet do? And why does it lead to this behavior?

```
1 public class Person {  
2  
3     private int age = 0;  
4  
5 }  
6  
7 public class Main {  
8  
9     public static void main(String[] args) {  
10         Person p = new Person();  
11         p.age++;  
12     }  
13  
14 }
```

3. What does the code in the following snippet do? And why does it lead to this behavior?

```
1 public class Person {
2
3     public int age;
4
5     public Person(int age) {
6         this.age = age;
7     }
8
9     private int getAge() {
10        return age;
11    }
12 }
13
14 public class Main {
15
16     public static void main(String[] args) {
17         Person person = new Person(11);
18         System.out.println(person.age);
19         System.out.println(person.getAge());
20     }
21
22 }
```

4. What does the code in the following snippet do? And why does it lead to this behavior?

```
1      public class Person {
2
3          private int age;
4
5          public Person(int age) {
6              this.age = age;
7          }
8
9          public int getAge() {
10             return age;
11         }
12
13         private void setAge(int age) {
14             this.age = age;
15         }
16     }
17
18     public class Main {
19
20         public static void main(String[] args) {
21             Person person = new Person(11);
22             System.out.println(person.getAge());
23             person.setAge(1);
24             System.out.println(person.getAge());
25         }
26
27     }
```

5. What is the purpose of encapsulation?