

EECS2030 E & F Fall 2024

Exercises

Reference Aliasing with Arrays

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Assume the following model class:

```
1 public class Person {  
2     private String name;  
3     private int age;  
  
4     public Person(String name) {  
5         this.name = name;  
6     }  
  
7     public int getAge() {  
8         return this.age;  
9     }  
  
10    public void setAge(int age) {  
11        this.age = age;  
12    }  
13 }
```

Consider the following fragment of Java code which manipulates array- and reference-typed variables:

```
1 Person alan = new Person("Alan");  
2 Person mark = new Person("Mark");  
3 Person tom = new Person("Tom");  
4 Person jim = new Person("Jim");  
5 Person[] persons1 = {alan, mark, tom};  
6 Person[] persons2 = new Person[persons1.length];  
7 for(int i = 0; i < persons1.length; i++) {  
8     persons2[i] = persons1[i];  
9 }  
10 persons1[0].setAge(70);  
11 System.out.println(jim.getAge());  
12 System.out.println(alan.getAge());  
13 System.out.println(persons2[0].getAge());  
14 persons1[0] = jim;  
15 persons1[0].setAge(75);  
16 System.out.println(jim.getAge());  
17 System.out.println(alan.getAge());  
18 System.out.println(persons2[0].getAge());
```

Exercise. Trace the above program (by visualizing objects using boxes and arrows) and write down the console output values from Lines 11 – 13 and 16 – 18, **without** the help of any programming IDE (e.g., Eclipse).