

EECS2030 (Section E) Summer 2025

Exercises

Reference Aliasing with Arrays

CHEN-WEI WANG

Assume the following model class:

```
1 public class Person {
2     private String name;
3     private int age;
4
5     public Person(String name) {
6         this.name = name;
7     }
8
9     public int getAge() {
10        return this.age;
11    }
12
13    public void setAge(int age) {
14        this.age = age;
15    }
16 }
```

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).