CSE110 Review Questions
Prepared by Ryan Dougherty

Methods

Question 1 Write a boolean method called allDifferent that takes 3 int numbers and returns true if the numbers are all different and false otherwise.
Answer:

```
public boolean allDifferent(int num1, int num2, int num3) {
        if (num1 != num2 && num1 != num3 && num2 != num3) {
                return true;
        } else {
                return false;
        }
}
```

Or equivalently,

```
public boolean allDifferent(int num1, int num2, int num3) {
        return num1 != num2 && num1 != num3 && num2 != num3;
}
```

Question 2 Write a boolean method called isPrime that takes in an int number, and returns true if the number is prime, and false otherwise.
Answer:

```
public boolean isPrime(int n) {
        // Question: how can we improve the performance of this loop?
        // (Hint: what is the max number relative to n that can divide into n?)
        for (int i = 2; i < n; i++) {
                if (n % i == 0) {
                        return false;
                }
        }
        return true;
}
```

Question 3 Write the output generated by the following program:

```
public class Two {
        private double real, imag;

        public Two(double initReal, double initImag) {
                real = initReal;
                imag = initImag;
        }
```

```
        public double getReal() {
                return real;
        }

        public double getImag() {
                return imag;
        }

        public Two mystery(Two rhs) {
                Two temp = new Two(getReal() + rhs.getReal(),
                        getImag() + rhs.getImag());
                return temp;
        }
}

public class Test {
        public static void main(String[] args) {
                Two a = new Two(1.2, 3.4);
                Two b = a.mystery(a);
                Two c = b.mystery(b);

                System.out.println("1. " + a.getReal());
                System.out.println("2. " + a.getImag());
                System.out.println("3. " + b.getReal());
                System.out.println("4. " + b.getImag());
                System.out.println("5. " + c.getImag());
        }
}
```

Answers:
1. 1.2
2. 3.4
3. 2.4
4. 6.8
5. 13.6

Question 4 Using these 2 classes, write the output of the following program:

```
public class CDPlayer {
        private int totalTime;

        public CDPlayer() {
                totalTime = 0;
        }

        public int totalPlayTime() {
                return totalTime;
        }

        public void play(CDTrack aTrack) {
                totalTime += aTrack.getPlayTime();
        }
}
```

```
public class CDTrack {
        private String myTitle;
        private int myPlayTime, myTimesPlayed;

        public CDTrack(String trackTitle, int playTime) {
                myTitle = trackTitle;
                myPlayTime = playTime;
                myTimesPlayed = 0;
        }

        public int getPlayTime() {
                return myPlayTime;
        }

        public void wasPlayed() {
                myTimesPlayed++;
        }

        public String toString() {
                String result = "";
                int minutes = myPlayTime / 60;
                int seconds = myPlayTime % 60;
                result += myTitle + " " + minutes + ":" + seconds;
                result += " #plays = " + myTimesPlayed;
                return result;
        }
}

public class RunCDPlayer {
        public static void main(String[] args) {
                CDTrack t1 = new CDTrack("Day Tripper", 150);
                CDTrack t2 = new CDTrack("We Can Work it Out", 200);
                CDTrack t3 = new CDTrack("Paperback Writer", 138);

                CDPlayer diskPlayer = new CDPlayer();
                t1.wasPlayed();
                diskPlayer.play(t1);
                t2.wasPlayed();
                diskPlayer.play(t2);
                t1.wasPlayed();
                diskPlayer.play(t1);

                System.out.println(t1.toString());
                System.out.println(t2.toString());
                System.out.println(t3.toString());
                System.out.println("Total play time: " +
                        (diskPlayer.totalPlayTime() / 60) + ":" +
                        (diskPlayer.totalPlayTime() % 60));
        }
}
```

Answers:
Day Tripper 2:30 #plays = 2
We Can Work it Out 3:20 #plays = 1
Paperback Writer 2:18 #plays = 0

Total play time: 8:20