

CSE110 Review Questions

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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;
    }
}
```

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. 10.2

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