Final Exam S2023 Version A

Please **DO NOT START** the exam until instructed, out of fairness to all students.

75 minutes.

Score: _____ / 62 pts

Name: _____

1. Complete the code below that performs the following functionality: (14 points)

   Write code that counts how many times a substring entered by the user is inside a primitive array of `Strings` also entered by the user.

   For example, if the array is {"**cat**", "dog", "large **cat**s", "bird", "**cat**egory", "fish"} and the substring is `cat`, your code would return 3.

   The `indexOf(substring)` method in Java can be called on a `String` and will return either the first index of the substring in the string, or -1 if it never occurs.

   We guarantee that a substring will appear at most once inside a string.

   ```
   public _____countArr(_____ inputArray, _____ substr){
   ```

   ```
          return _____  ;
   }
   ```

2. Complete the code below that performs the following functionality: (13 points)

Write code that checks if an input argument `ArrayList` of `Strings` contains any items that are the same (duplicates); return `true` or `false` depending on the result. For example, if the `ArrayList` contained the strings `bird, cat, dog, cat, house` it would return `true`, while if it contained `bird, cat, dog, category, house` it would return `false`.

You must correctly use generics for full credit.

```
import_____;


public _____  check(_____ input){
```



```
        return  _____  ;
}
```

3. Complete the code below that performs the following functionality: (13 points)

Write code that returns the largest value any three consecutive integers inside a primitive array of integers sums up to. For example, in the array `{2, 4, 7, 1, 6, 9, 0, 6}` your code would return the sum of the bolded triplet, which would be 16.

We guarantee that the input list is at least three elements long, and no negative values appear.

```
public _____  maxTriplet(_____ numbers){
```

```
        return _____ ;
}
```

Multiple choice (6 points) – circle the best answer

4. Which of the following is true about the constructors for a class called **Person**?
    a. You can call the default constructor **Person()** without having written one.
    b. You can write multiple constructors for the **Person** class.
    c. A constructor can be called without the **new** keyword, or with it, for **Person**.
    d. A and B
    e. B and C
    f. A, B, and C

5. A private method can only access private attributes/fields in the same class.
    a. True
    b. False

6. A private method can only access other private methods in the same class.
    a. True
    b. False

7. A static method can only access static attributes/fields in the same class.
    a. True
    b. False

8. A static method can only access other static methods in the same class.
    a. True
    b. False

9. A public method can only access other public attributes/fields and methods in the same class.
    a. True
    b. False

scratch paper

10. What is the output of the following code? (16 points)

```java
import java.util.Arrays;

public class Cloud {

        public static int count = -1;
        int[] x = {3, 4};
        int[] y = new int[3];
        int z;

        public Cloud(int[] x, int[] other){
                System.out.println("in cloud");
                System.out.println(Arrays.toString(x));
                System.out.println(Arrays.toString(this.x));
                System.out.println(z);
                x = x;
                this.z = x[1];
                y = other;
        }

        public String toString(){
                return Arrays.toString(this.x)+" "+Arrays.toString(this.y)+" "+z+" "+count;
        }

        public int[] func(int[] arr, int q){
                q++;
                x = y;
                y[0] = -1;
                x = arr;
                x[0] = -2;
                int[] a = new int[1];
                count++;
                return a;
        }

        public static void main(String[] args){
                int[] x = {5, 6};
                int[] a = {3, 3};
                int z = 11;
                System.out.println(count);
                Cloud grey = new Cloud(x, a);
                Cloud white = new Cloud(x, a);

                int[] b = {7, 8};
                System.out.println(Arrays.toString(grey.func(b, z)));
                System.out.println(Arrays.toString(x));
                System.out.println(Arrays.toString(a));
                System.out.println(z);
                System.out.println(count);
                System.out.println(grey.toString());
                System.out.println(white.toString());
        }
}
```

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OUTPUT:

1_____

2_____

3_____

4_____

5_____

6_____

7_____

8_____

9_____

10_____

11_____

12_____

13_____

14_____

15_____

16_____

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