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 cats”, “bird”, “category”, “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.

```java
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.

```java
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.

```java
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());
    }
}
```
OUTPUT:
1__________________________
2__________________________
3__________________________
4__________________________
5__________________________
6__________________________
7__________________________
8__________________________
9__________________________
10_________________________
11_________________________
12_________________________
13_________________________
14_________________________
15_________________________
16_________________________
SCRATCH PAPER. Name:____________________________
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