

Name(s): \_\_\_\_\_

1. Write the exact output if we run the main method of Question1 class.

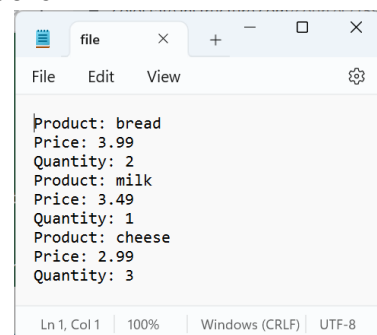
```
import java.util.ArrayList;
public class Question1 {
    public static void main(String[] args) {
        ArrayList<String> arrayList = new ArrayList<>();
        arrayList.add("1");
        arrayList.add("2");
        arrayList.add("3");
        arrayList.add("4");
        arrayList.add("5");
        System.out.println(arrayList);
        String obj = arrayList.remove(0);
        System.out.println(obj + " is removed from list");
        arrayList.set(0, "0");
        System.out.println(arrayList);
        ArrayList<String> subList = new ArrayList<String>();
        for(int i = 1; i < arrayList.size(); i+=2){
            subList.add(arrayList.get(i));
        }
        System.out.println(subList);
    }
}
```

2. Write the exact output if we run the main method of Question2 class.

```
public class Question2 {
    public static void main(String[] args) {
        System.out.println(formatNumber(500));
        System.out.println(formatNumber(89.9934));
        System.out.println(formatNumber("550"));
    }
    public static String formatNumber(int value) {
        return String.format("%d", value);
    }
    public static String formatNumber(double value) {
        return String.format("%.3f", value);
    }
    public static String formatNumber(String value) {
        return String.format("%.2f", Double.parseDouble(value));
    }
}
```

3. Write a method in Java that receives a String as a parameter and return a String containing only the characters that appears more than one time in the String. The String returned can't have repeated characters. Before starting coding, think about how you are going to solve that problem, write your algorithm in English and after that code your method.
4. Consider the file.txt presented below to answer the following questions:

- What class would you define to store the information on that file? How many instance variables that class would have? Which methods do you need to implement for that class?
- Assuming that you have that class implemented, write a method that reads the content of that file and creates an ArrayList to store that data.
- After you have the data stored in your ArrayList, calculates the total someone would spend if they have bought all those items.



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5. Consider the classes presented below to answer the following questions:
- Identify the super class and the sub class.
  - Explain what a sub class inherits from a super class by providing examples from the classes presented below.
  - Is the following statement true or false: "A sub class can have direct access to its super class instance variables"? Justify your answer.
  - Write the exact output if we run the main method presented in the Main class.

```
public class Animal {
    private String name;
    public Animal() {
        this("");
    }
    public Animal(String name) {
        this.name = name;
    }
    public void eat() {
        System.out.println("I can eat");
    }
    public String toString() {
        return "Name: " + name;
    }
}
public class Dog extends Animal {
    public Dog() {
        this("");
    }
    public Dog(String name) {
        super(name);
    }
    public void eat() {
        System.out.println("I eat dog food");
    }
    public void bark() {
        System.out.println("I can bark");
    }
    public String toString() {
        return super.toString() + " is a dog.";
    }
}
public class Main {
    public static void main(String args[]) {
        Animal a = new Animal();
        a.eat();
        System.out.println(a);
        Dog d = new Dog("Labrador");
        d.eat();
        d.bark();
        System.out.println(d);
    }
}
```