

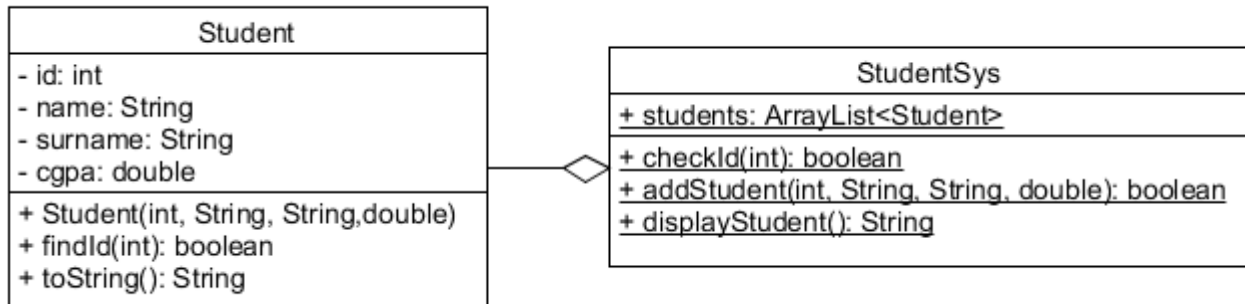
**OBJECTIVE:** Inheritance, ArrayList, Generics with GUI

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Q1.

- a) Write a Java program that stores and displays the Student information. Create below classes as shown in the following UML Class Diagrams.



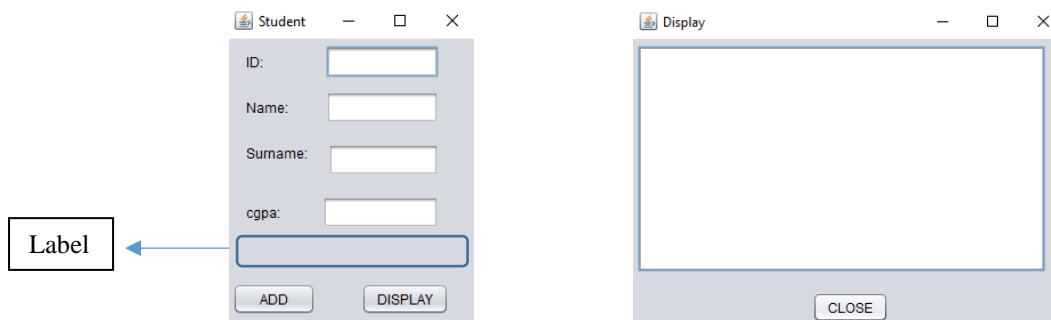
Create a **Student** class, with the following instructions;

- Write data members; **id, name, surname and cgpa**.
- Write a **non-default constructor** and a **toString()** method.
- Write a member method **findId()** that gets an id as a parameter and checks if that id is equal to the Student id.

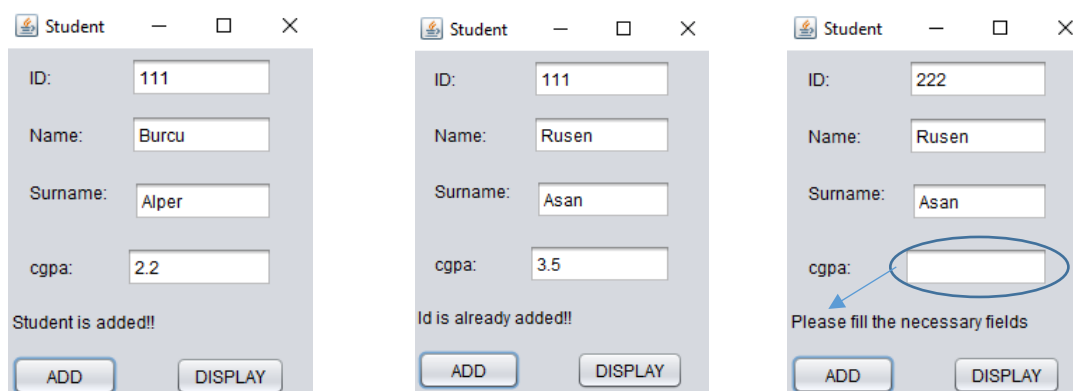
Create a **StudentSys** class, with the following instructions;

- Write the data member; ArrayList named **students** that will contain the Student objects.
- Write a static member method **checkId(...)** that gets a student id as a parameter then checks if that id is already exist in the arraylist. If the id exist in the arraylist, returns true, otherwise returns false.
- Write a static method **addStudent()** that takes the student information as parameters and checks if the id is exist on the arraylist or not by invoking **checkId(...)** method, if it is exist returns false, otherwise adds the object to the arraylist and returns true.
- Write a static method **displayStudent()** that displays the content of the arraylist.

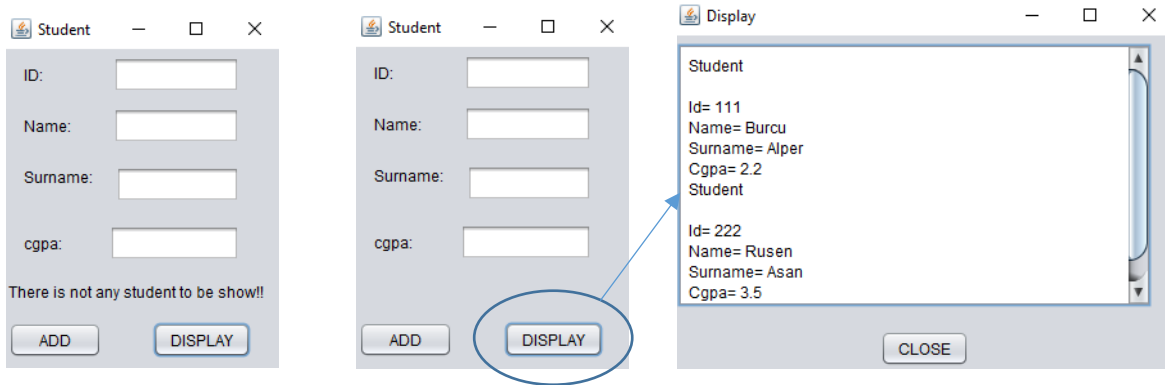
Create two frames named as **StudentFrame** and **DisplayFrame**. They should look like below screen shoots;



When “**ADD**” button is clicked, it will get the informations from the text fields and add it to the arraylist by invoking the **addStudent(...)** method from StudentSys class. If the addition is not successful or one of the text fields is empty display a message on the label. Also clear the text fields when addition is successful.

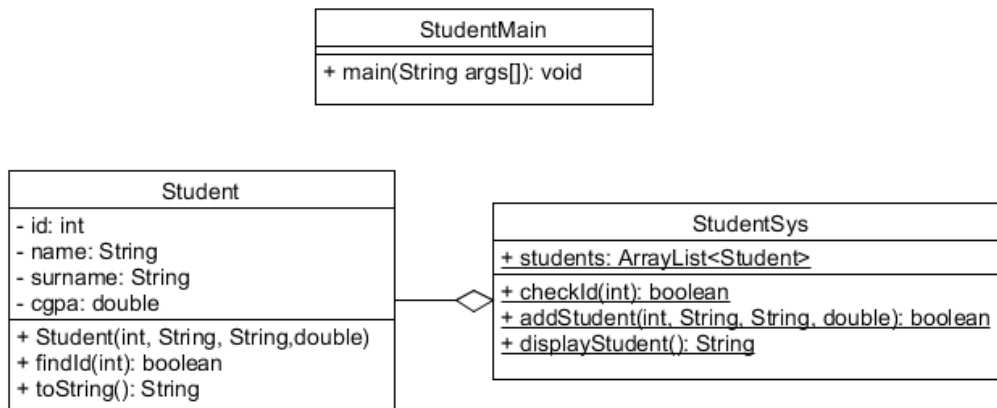


When **“DISPLAY” button** is clicked, if the arraylist in the StudentSys class is not empty, open displayStudent frame, set the visibility of the StudentFrame to true and display the content of the arraylist on to the text area in the DisplayFrame. If the arraylist is empty display a message on the label.



When **“CLOSE” button** is clicked dispose the frame and set the visibility of StudentFrame to true.

**b)** Modify the previous question as shown in the following UML Class Diagrams.



Create a main class named as StudentMain.

- Create an object from StudentFrame and set the visibility of the object to true.

Do not forget to delete the main part of the StudentFrame.