<u>Report Submission</u>

(i)   Design Report
    Distribution of tasks:

Student Name: Wu, Yajie
Student ID: 1509853N-SA10-0015

The student is responsible for making the first part of
program 3.1 which is read records, and the last part of
program 3.4.2 Statistics of reports. In convention to making
the report, the student choose to work on the second part of
report which is System Application since the whole program
code was shared to prepare the contents of the System
Application Report.

Student Name: Rafi, Husna
Student ID: 1409853O-I011-0011

The student is responsible for the following parts of
program:

1. **3.1.1** Data File Format

2. **3.2** Store Records

3. **3.3** Query on Score System

4. **3.3.1** Calculate the GPA of student

5. **3.3.2** Search the grades of all courses
   taken by student

6. **3.3.3** Sorting GPA

7. **3.3.4** Advanced Queries (Part 1 only
   which states that program should
   supports the query by student
   surnames)

8. **3.4** Print out the Results

9. **3.4.1** Sorting on the Report
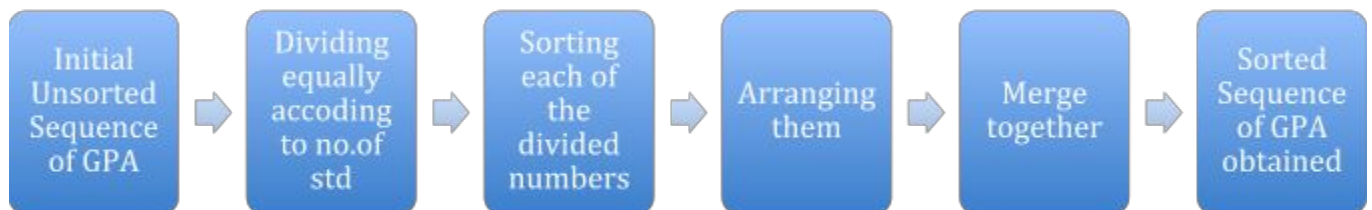
10. **3.4.2** Statistics Report

System Design Report:

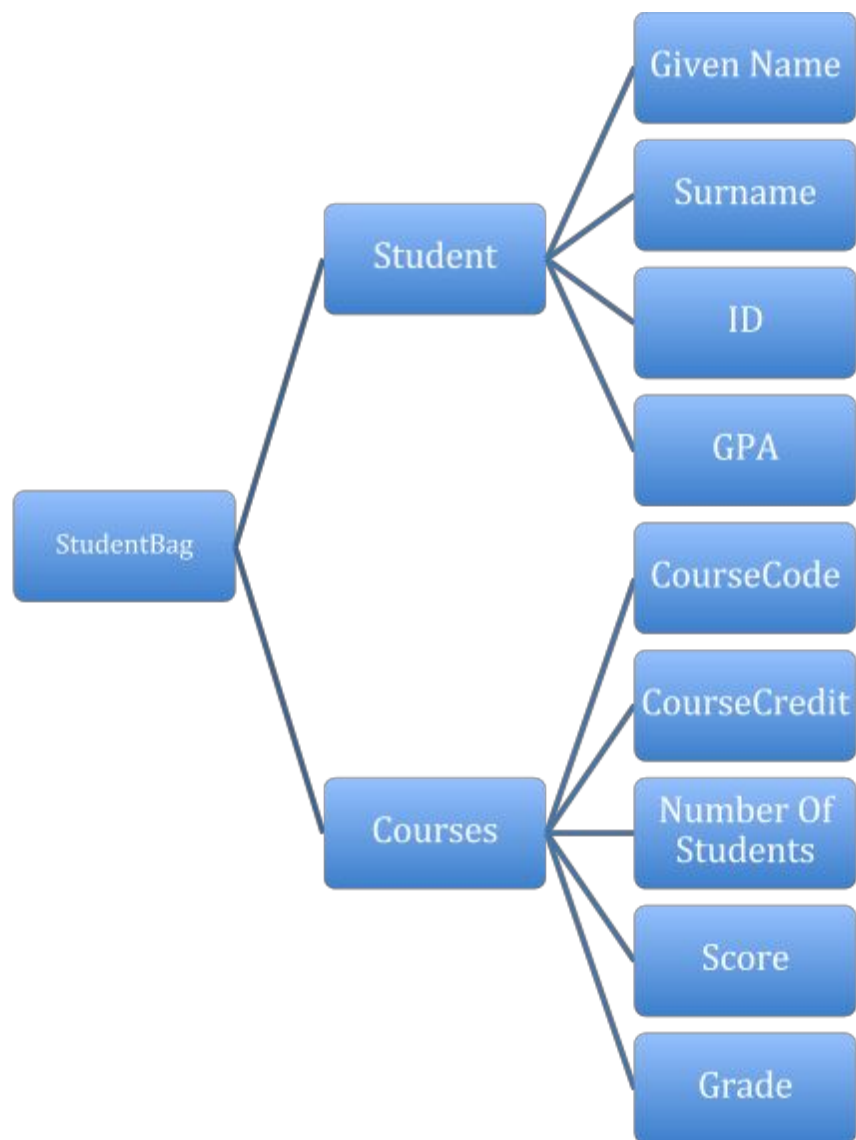The class diagram is drawn and is attached as a photo with the files.

Algorithm Design Report:

In the program, an extensive use of Algorithm (Bag) is done. However in the sorting of GPA, the use of Sorting (Merge Sort) is done extensively. The flow chart diagram of the two algorithms is below:

1. Flow Chart of Merge Sort Algorithm

Initial Unsorted Sequence of GPA → Dividing equally accoding to no.of std → Sorting each of the divided numbers → Arranging them → Merge together → Sorted Sequence of GPA obtained

2. Flow Chart of Bag Algorithm

Data Structures:

In the program, Grading System Menu.java is the main class. It contains the following subclasses.
- GradingSystem.java
- QueryManager.java

The subclass GradingSystem.java contains another subclass named as studentBag.java. The studentBag.java contains the following subclasses.
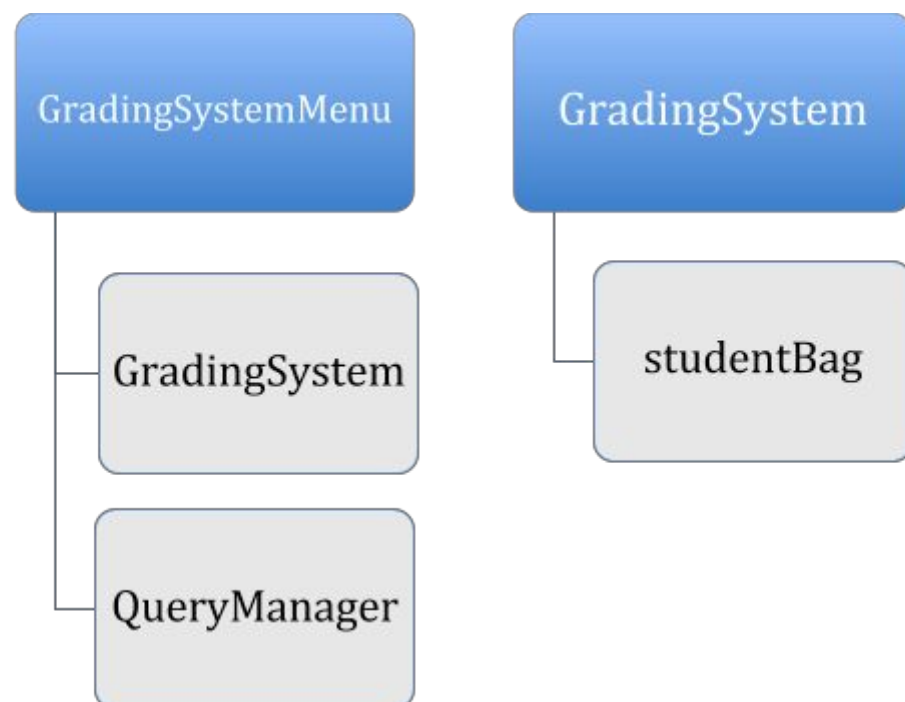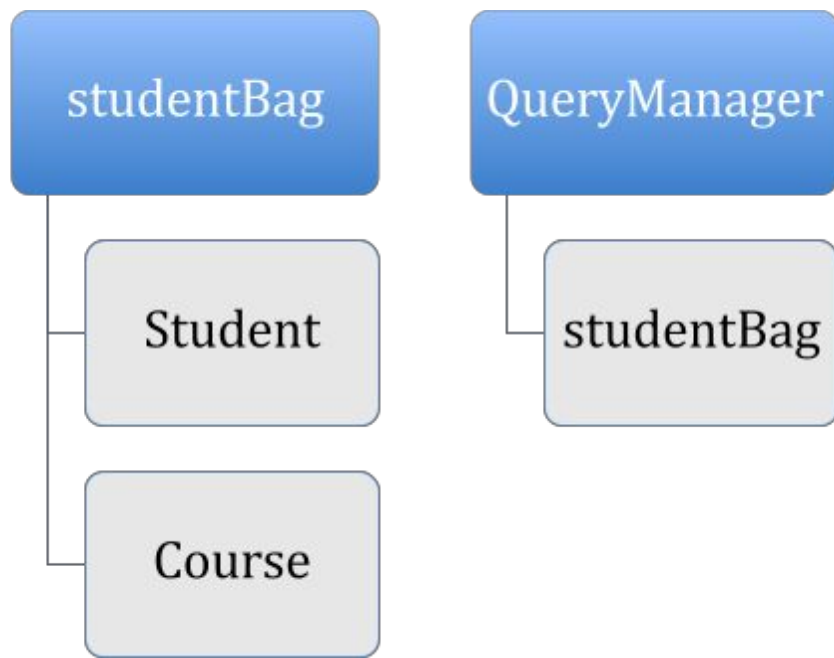- Student.java
- Course.java

Similarly the subclass QueryManager.java is linked with the GradingSystem.java class. This means that the studentBag.java class is now in the QueryManager.java class too.
Now the QueryManager.java class has the following class.

- studentBag.java (contains student.java and course.java classes)

We have tried to demonstrate the concrete design of each class in the diagram below. The linked relationships are described in the description above.

(ii)   System Application:

This part of report is done in another file, which is a .txt file and is compiled together with this report. The readme.txt file is contained in the zip file named as "System Application.txt".