19Z311 – Object Oriented Programming Laboratory

Assignment: Student Attendance Tracker

Batch-7

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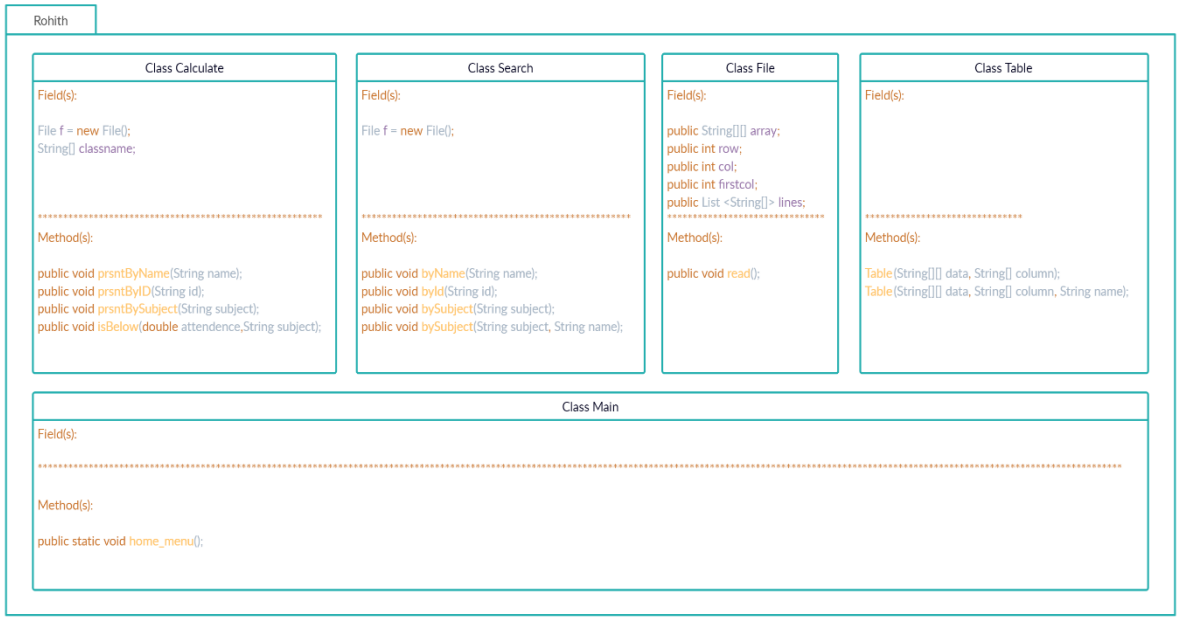
Problem Statement

In today's dynamic environment, with growing working hours and fewer classroom time, teachers need additional resources to help them handle important class time effectively. Their focus is not only demanded by teaching, but faculty members are often stuck with formal duties, e.g. taking student attendance. If undertaking this task isn't just bad, imagine their plight in attempting to manage it. That's exactly where we step in. Let's agree on one thing, the teachers still do some of the initial work in this process, but soon, we'll take over. Give us an excel sheet with the names, roll numbers and the tracked attendance of the students and we will give you the desired, filtered and "hand-picked" output, quickly and efficiently. Timely, spatially, and mathematically efficient, this project can hands-down help reduce a tired and a hard-working teacher's time, energy and money too (in case they decide to opt another expensive attendance tracker over this beauty we've got here). So, this was a short heads-up on what we're going to see here, a simple yet an efficient Student Attendance Tracker.

Class Diagram



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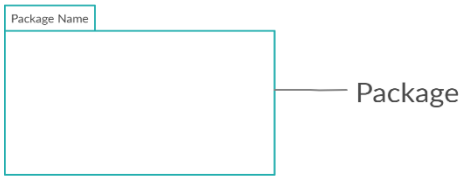
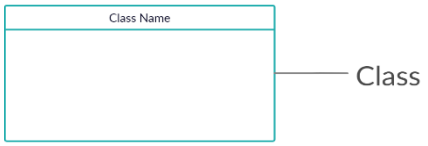




In the package "*Rohith*", we find the classes:

- *Calculate*
- *Search*
- *File*
- *Table*

and the

- *Main*

As we can see, neither are any interfaces implemented nor are any classes inherited.

This is a simple Attendance Tracker with an even simpler and straight-forward code.

Features Available

The User is first greeted with the menu-driven program that gives them the choice to choose one among the 8 offered services which are as follows:

- To View the Student Details by Name:

  Here the User is required to enter the Student's Name and with that, they're presented with a table which has the Name, Roll Number and Courses with their corresponding Attendance for that month.

- To View the Student Details by Roll Number:

  Here the User is required to enter the Student's Roll Number and with that, they're presented with a table which has the Name, Roll Number and Courses with their corresponding Attendance for that month.

- To View the Attendance from a Course's POV:

  Here the User is required to enter the Course Name and with that, they're presented with the table of Students Present or Absent in that course or have an Excused Absence or Unexcused Absence for that Course in that month.

- To View the Attendance of a Student in a Course:

  Here the User is required to enter the Course Name along with the desired Student's Name and with that, they're presented with the table of the Student's Attendance Details for that Course in that month.

- To View the Attendance % of a Student in all the Courses:

  Here the User is required to enter the Student's Name and with that, they're presented with a simple statistic which has the Name of the Student and the Courses with their corresponding Attendance % for that month.

- To View the Attendance % of a Student in all the Courses (Roll Number):

  Here the User is required to enter the Student's Roll Number and with that, they're presented again with the statistic which has the Name and Roll Number of the Student and the Courses with their corresponding Attendance % for that month. This method can be useful as the Roll Numbers are unique and cannot be confused with others, contrary to the case with Names.

- To View the Attendance % of the class from a Course's POV:

  Here the User is required to enter the Course Name and with that, they're presented with the average percentage of students attending the Course in that month.

- To View the list of Attendance Defaulters:

  Here the User is required to enter the Course Name and their desired percentage below which a Student is considered to be a defaulter of Attendance. They're then presented with the list of Students with their Roll Number, Name and their percentage of attendance in that Course.

Methods behind this Tracker:

- public void prsntByName(String name);
- public void prsntByID(String id);
- public void prsntBySubject(String subject);
- public void isBelow(double attendence,String subject)
- public void byName(String name);
- public void byId(String id);
- public void bySubject(String subject);
- public void bySubject(String subject, String name);
- public void read(String id);
- public static void home_menu();

- Table(String[][] data, String[] column);
- Table(String[][] data, String[] column, String name);

Challenges Faced

These were some of the challenges we faced while starting this project, which we later overcame:

- The data being in large collections, going through them and printing them in an user-friendly way was challenging.
- There wasn't enough work that could be distributed among six people, considering our knowledge on the new concept of JAVA-SWING and the simplicity of this project.
- JAVA-SWING, having a steep learning curve, gave us a tough time when we had to incorporate it into the code.
- There were difficulties initially on converting an ArrayList to a Two-Dimensional Array.
- There were a few issues that popped-up when we tried importing the .csv file to use in our project.

Credits

- Rohith Prabakar:

Organized the final code and coded the classes *File* and *Table*.

- Sutharsanan S R: class *Search*

Coded the methods bySubject(String subject); and bySubject(String subject, String name);

- R M Venkatram: class *Search*

Coded the methods byName(String name); and byId(String id);

- T S Swaminathan: class *Calculate*

Coded the methods prsntByName(String name); and prsntByID(String id);

- Sanjai K: class *Calculate*

Coded the methods prsntBySubject(String subject); and isBelow(double attendence,String subject);

- Priyavarman R: class *Main*

Coded the method home_menu();

Annexure I

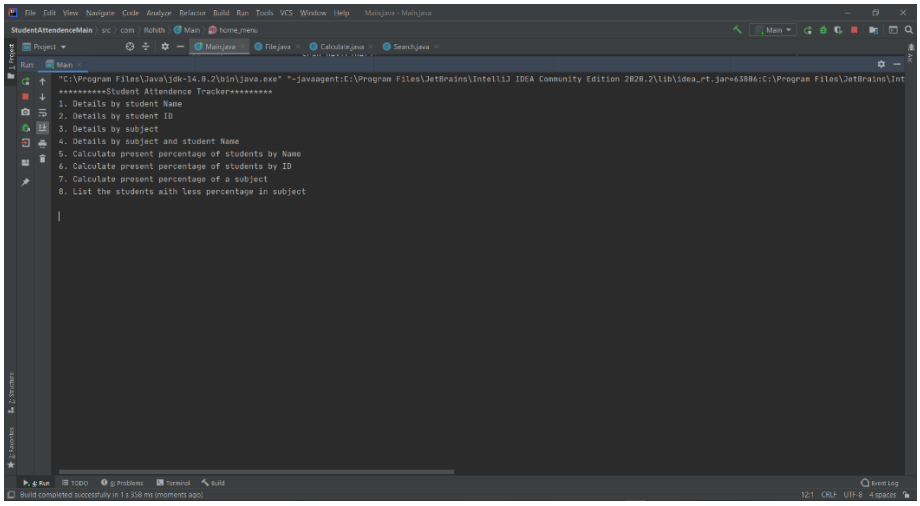
Code:

https://github.com/RohithPrabakar/StudentAttendence

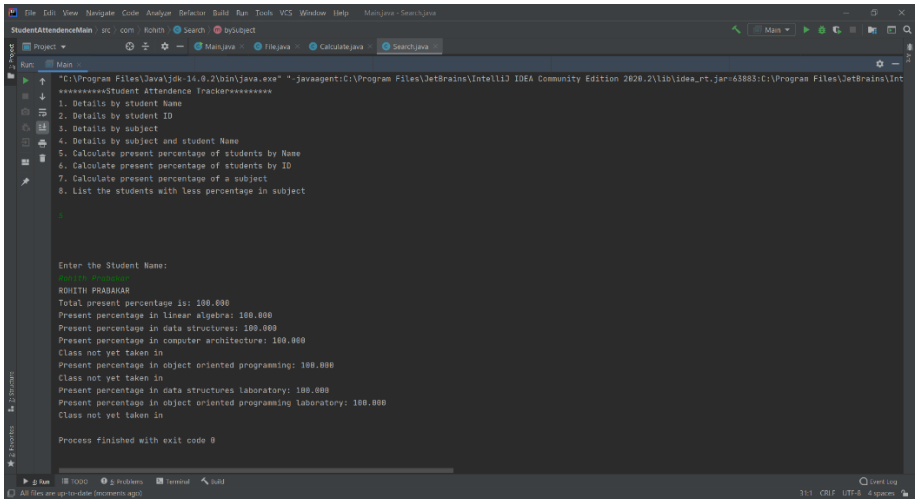
Annexure II

Output Snapshots:

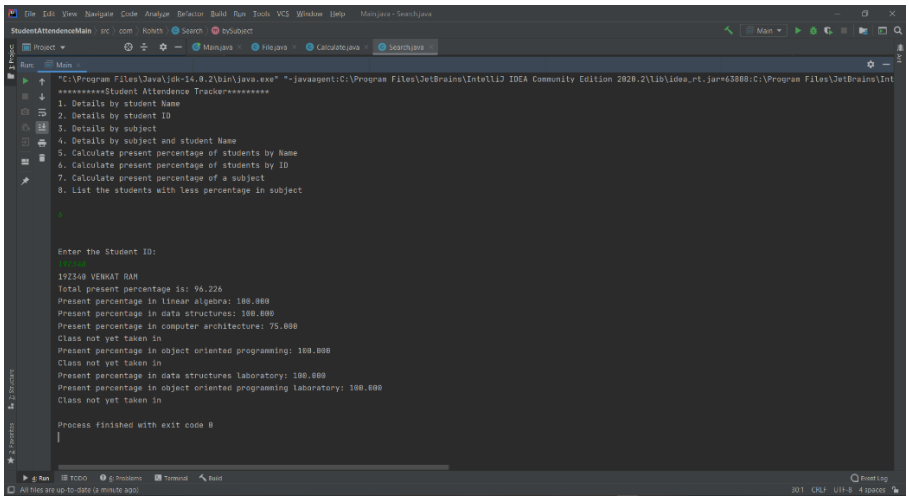
- Home Screen:



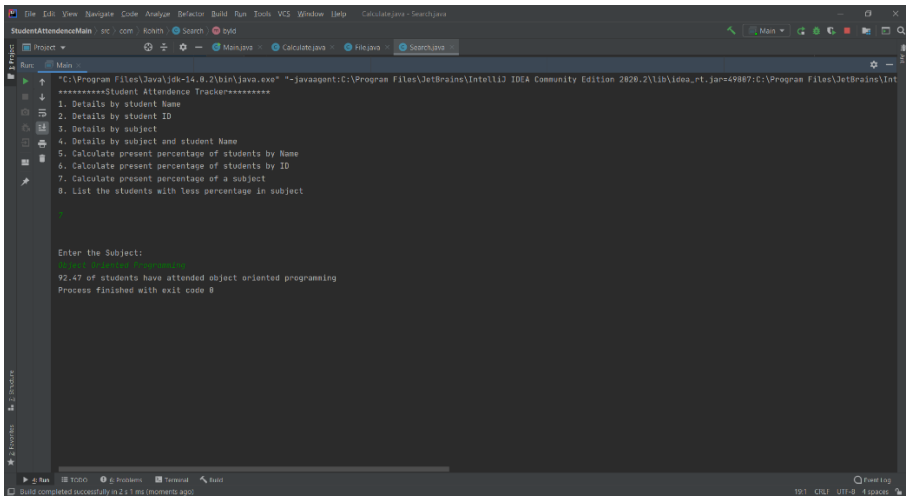
- When the Option-5 is chosen:



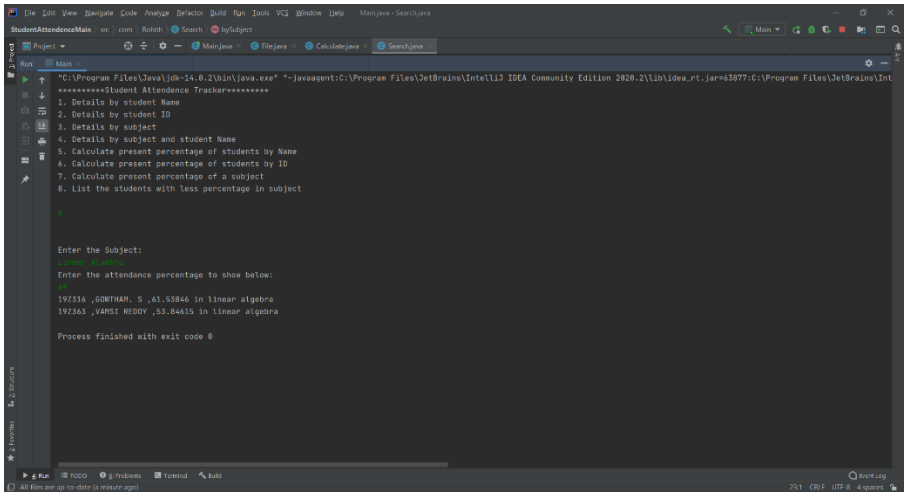
- When the Option-6 is chosen:



- When the Option-7 is chosen:



- When the Option-8 is chosen:



References

- Attendance Sheet:
  https://docs.google.com/spreadsheets/d/1Mq25pZcLZE5a_vzTg--kwmhq_I7j-VbKLTkfmfgT2Go/edit#gid=191862373

- JAVA-SWING:
  https://www.javatpoint.com/java-swing
  https://beginnersbook.com/2015/07/java-swing-tutorial

- To Read a .csv File:
  https://www.javatpoint.com/how-to-read-csv-file-in-java