OOP Assignment

19Z311 - Object Oriented Programming Laboratory
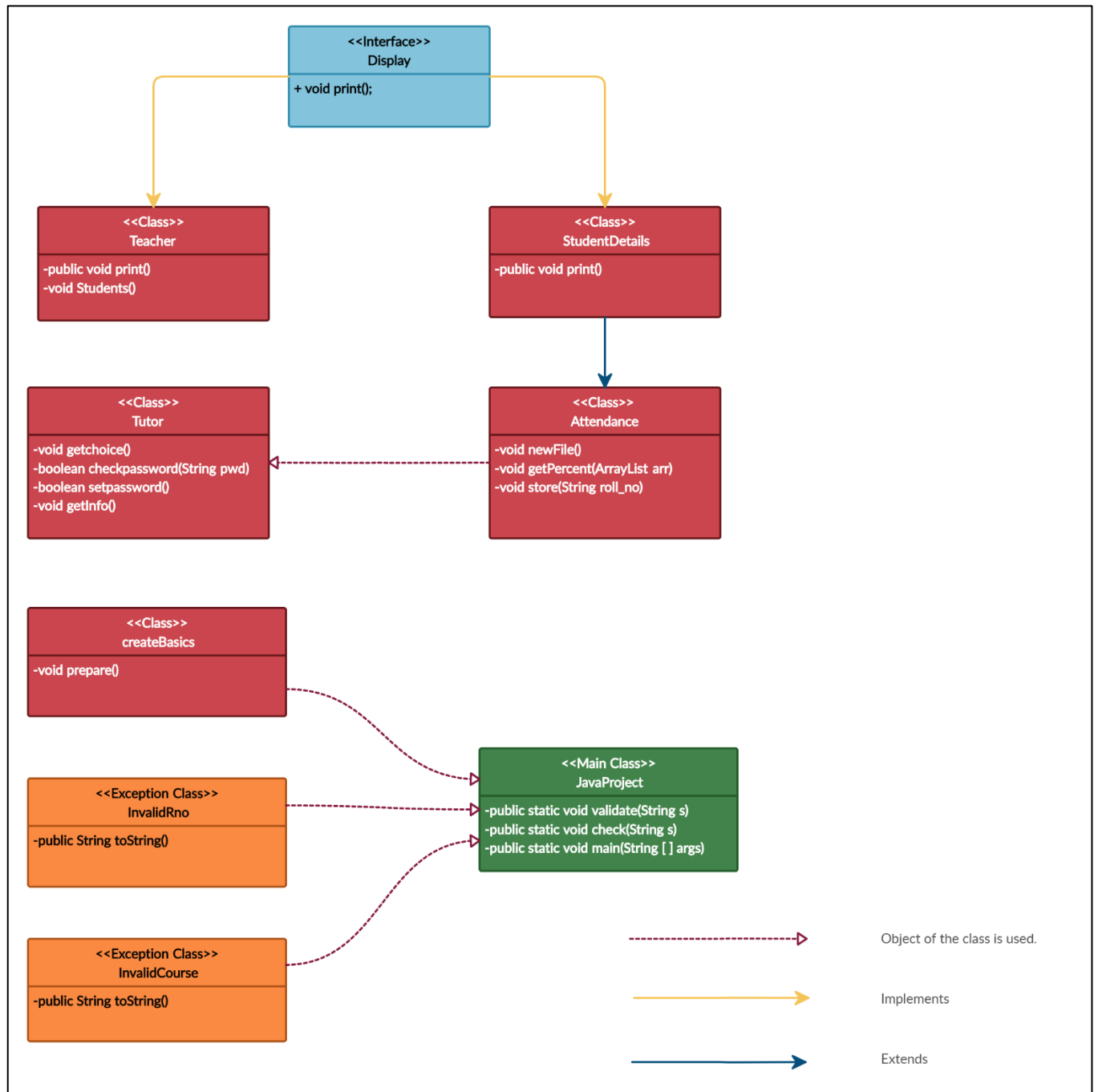
{OOP}

19Z306   Aravind M

19Z307   Barath Kumar G

19Z309   Bhooshaan A

19Z313   Dharun Bharathi S

19Z321   Hrithik B

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Problem Statement:

To develop a java program that uses Object Oriented Programming concepts to keep track of attendance of students in a class, provided with information of students in a class like name, roll number, courses a student takes up and number of lectures a student showed his presence, absence, etc. through a spreadsheet (csv file). In addition, the program should provide features that enables students and teachers to have a precise and processed information regarding their attendance percentage, attendance lag, etc.

Class Diagram:

Users and Features available in the application:

The source code developed primarily aims at providing access to 3 set of users namely,

- ✓ Students
- ✓ Teachers
- ✓ Tutors

The features available to each set of users is describes briefly below

- **Students:**

    The 1ˢᵗ window prompts the user to enter his choice based on the fact that he/she is a student, teacher or a tutor. In case the user chooses to be a student, he/she is prompted to **enter his/her roll number**. In case the entered roll number is valid, access to **attendance** corresponding to the entered number **is displayed for all the courses** that particular student has taken up and also provided with additional information about **percentage of attendance secured in each course** and also notified in case there is an **attendance lag**. On the other hand, if the entered roll number is invalid, the student is notified that the roll number is not valid and he/she is asked to try re-entering the roll number.

- **Teachers:**

    Similar window to the previous case is shown first to enter the choice. If the user appears to be a teacher, then he/she is prompted to enter the corresponding course code that the respective faculty handles. If the entered course code is valid, then the staff is provided with information about the **number of students who have an attendance lag (<75%)** and also **displayed with their name, roll number and percentage of attendance** they have. Again, if the teacher enters an invalid course code, he/she will be notified that the course code is not valid and he/she is asked to try re-entering the course code.

- **Tutor:**

    This access is actually a privileged access, as the tutor can know how his/her class performance from both an individual student's point of view and also from any course handling faculty's point of view. So, if the entered choice is tutor, he/she is asked to **enter** a special **password** (BECSEG2 by default) and provided **only 5 attempts to enter the correct password**. If the correct password is entered, he/she can **view particular student's attendance or defaulters in a particular course or can change the password.** While changing the password, the new password has to be typed twice and if the 2 entries doesn't match, tutor will be asked to retry.

    Thus, these are the features provided to the users accessing the application that is run by the java code that is developed.

Challenges Faced:

- ❖ Reading data from spreadsheets into the java program was difficult as it requires a special library (opencsv.jar) to read data. So, firstly the spreadsheets had to be saved in a csv (comma separated value) format.
- ❖ The designed code will be able to operate successfully under the condition that the template of the given spreadsheet remains the same. This is another difficulty that is to be managed for further efficiency.
- ❖ Storing the percentages also requires a pre-designed template (spreadsheet) with respective course headers in order to execute successfully.
- ❖ On the general note, communication between the group members was a little difficult as the members are scattered due to the pandemic situation. The main reason being digital communication not proving that very efficient when compared to contact in person.

Contribution of Team Members:

Name	Class Developed	Functionality
Hrithik B(19Z321)	createBasics	Prepares all necessary files and reads the data required for processing into the program.
Barath Kumar G(19Z307)	StudentDetails Attendance	These two classes include attributes and methods that enable attendance access to a student.
Aravind M(19Z306)	Teacher	This class includes attributes and methods that enable attendance access to the faculty of a particular course.
Bhooshaan A(19Z309)	Tutor	This class includes attributes and methods that enable special access to the tutor, so that he/she can access a particular student's attendance or defaulters of a specific course.
Vivek Surya D(19IZUS010)	InvalidRno InvalidCourse validate () and check () methods in JavaProject	These are user defined exception classes and the methods check whether the user input (Rno or Course code) is valid or not and throws exception accordingly.
Dharun Bharathi S(19Z313)	main() method in JavaProject	This method is the actual driver method that bridges all the classes and methods resulting in combined features that helps to interact with the user.

Annexure I - Code:

The link to the GitHub repository that contains source code, and other related files to the project is given : https://github.com/Bhooshaan/Student-Attendance-Tracker.git

Annexure II – Snapshots of output:

```
                                    STUDENT ATTENDANCE TRACKER
1- STUDENT
2- TEACHER
3- TUTOR
Please enter the choice:1
Please enter your Register Number:19Z2543
Invalid RollNumber Try Again!
Enter 0 to continue:
0
Please enter your Register Number:19Z344

ROLL NUMBER: 19Z344
NAME: SANJAI K


                                         P   L   E   U   PERCENTAGE
19Z301 – Linear Algebra                  23  0   1   7   77.42
19Z302 – Data Structures                 22  0   0   2   91.67
19Z303 – Computer Architecture           18  0   0   6   75.00
19Z304 – Discrete Structures             22  0   0   1   95.65
19Z305 – Object Oriented Programming     14  0   0   9   60.87        -LAG
190306 – Economics for Engineers         14  0   0   0   100.00
19Z310 – Data Structures Laboratory      24  0   0   0   100.00
19Z311 – Object Oriented Programming Laboratory  10  0  0  12  45.45  -LAG
19K312 – Environmental Science           5   0   0   1   83.33

P- PRESENT
L- LATE
E- EXCUSED LEAVE
U- UNEXCUSED LEAVE
Enter 0 to continue:
1
```

O/P1: Student access

```
                                    STUDENT ATTENDANCE TRACKER
1- STUDENT
2- TEACHER
3- TUTOR
Please enter the choice:2
Please enter the course code:19Z307
Invalid Course Code Try Again!
Enter 0 to continue:
0
Please enter the course code:19Z311
Course Code: 19Z311
Number of students lacking attendance: 1

Student 1
R.NO: 19Z344
Name: SANJAI K
Attendance Percentage: 45.45
Enter 0 to continue:
1

Process finished with exit code 0
```

O/P 2: Teacher Access

```
                                    STUDENT ATTENDANCE TRACKER
1- STUDENT
2- TEACHER
3- TUTOR
Please enter the choice:3
Enter Password (5 turns left): 2023
Enter Password (4 turns left): 2019
Welcome to BE CSE G2:

1- GET SPECIFIC STUDENT DETAILS
2- GET COURSE DETAILS
3- CHANGE PASSWORD
ENTER YOUR CHOICE: 2
Please enter the course code:190306
Course Code: 190306
Number of students lacking attendance: 2

Student 1
R.NO: 19Z342
Name: ROHIT SONAR
Attendance Percentage: 71.43

Student 2
R.NO: 19IZUS013
Name: PRAVEK DHINA
Attendance Percentage: 71.43
Enter 0 to continue:
1

Process finished with exit code 0
```

O/P 3: Tutor Access to specific course attendance defaulters

O/P 4: Tutor attempting to change password

References:

1.   Spreadsheets for data
        ATTENDANCE FILES OFAUGUST, SEPTEMBER, OCTOBER

2.   File Handling and other references:
        - https://www.javatpoint.com/how-to-read-csv-file-in-java
        - "Java: The Complete Reference" by Schildt H

Plagiarism Report: