“Exam management system”

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Report submitted to

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FAST

1. Introduction:

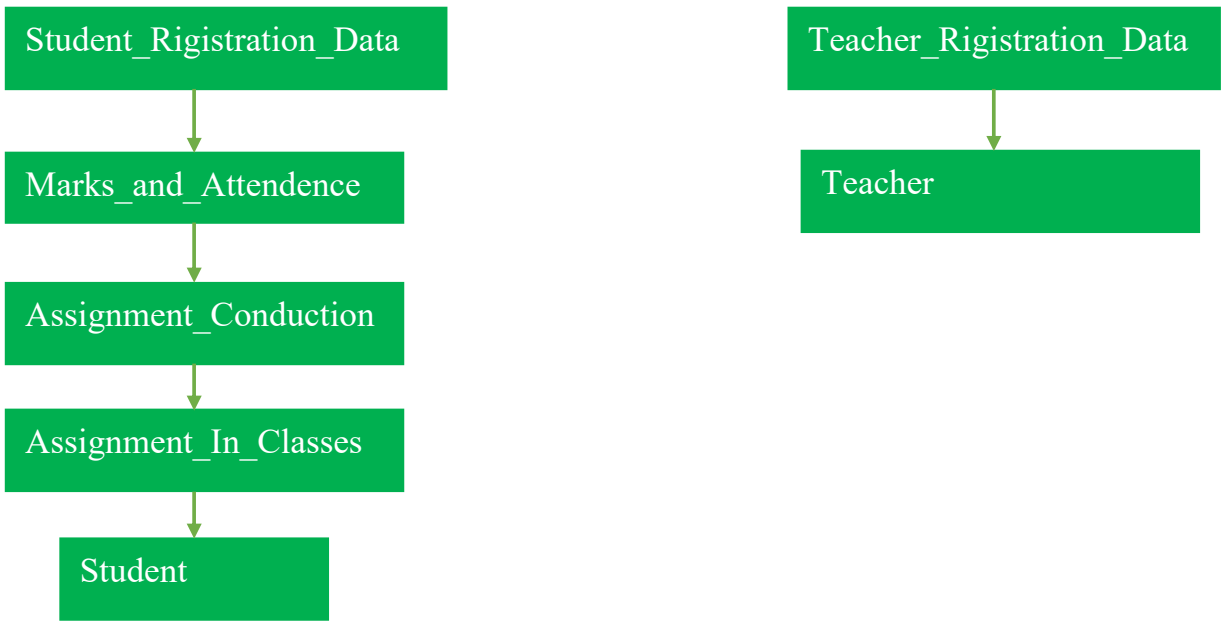
In this project, I have implemented seven classes, each containing specific functions. The project heavily relies on the concept of inheritance in object-oriented programming (OOP). By utilizing inheritance, I have created a simple and organized flow chart of inherited classes.

Inheritance allows the project to establish a hierarchical relationship between classes, enabling the sharing of attributes and methods. This approach promotes code reusability, reduces redundancy, and enhances the overall structure and maintainability of the project.

The seven classes implemented in the project exhibit a clear inheritance pattern, where each class inherits properties and behaviors from its parent class. This inheritance hierarchy streamlines the project's architecture and ensures a logical and intuitive organization of code.

By leveraging the power of inheritance, the project benefits from modularization and encapsulation, facilitating efficient development and future modifications. The utilization of inheritance demonstrates the effective implementation of OOP principles, leading to a well-structured and extensible solution.

3. Classes:



I. Class: Student_Rigistration_Data:

In this class, all student registration data is stored. When the program runs, this class reads and stores data from a CSV file provided by the instructor. The data is stored in string arrays, including student roll number, student serial number, student email ID, student name, and eleven string arrays for each of the eleven courses, each with a size of 216.

This class serves as a central repository of student data and provides information to other classes when needed. For instance, it facilitates password and email verification, enables the conduction of assignments, stores marks, and manages attendance. The class includes appropriate getter and setter functions to facilitate these operations seamlessly.

By maintaining a comprehensive and organized collection of student information, this class enables seamless integration with other components of the program. The getter and setter functions ensure secure and controlled access to the data, promoting data integrity and encapsulation.

Overall, this class acts as a vital component of the program, serving as a reliable source of student registration data and supporting various functionalities throughout the system.

II. Class: Marks_and_Attendence:

In this class, when a student conducts an exam, their marks and attendance are uploaded to the corresponding CSV file for the specific course in which they took the exam. The class is responsible for handling all the necessary functions during the process of uploading marks and attendance. This includes determining the correct CSV file to store the data based on the course.

The main objective of this class is to display the marks and attendance for a specific course to the student. It achieves this by retrieving and presenting all the marks and attendance recorded for the assignments related to that particular course.

By efficiently managing the uploading of marks and attendance, this class ensures accurate record-keeping and provides students with easy access to their performance in each course. It facilitates effective monitoring of progress and enables students to track their achievements throughout the academic term.

The class plays a vital role in promoting transparency and accountability in the evaluation process, allowing students to review their marks and attendance in a comprehensive and organized manner.

III. Class: Assignment_Conduction:

This class holds the responsibility of conducting exams. Whenever a student wishes to take an exam, this class carries out its functions accordingly. The class encompasses various functions that are primarily responsible for conducting exams.

Prior to accessing this site, the assignment type is specified, and the class employs a specific function to check the assignment type. If the assignment is of the multiple-choice question (MCQ) type, the function "void Solve_MCQs_Type_Assignment (string Assignment)" is called. Similarly, corresponding functions are invoked for other types of assignments.

Additionally, this class calculates marks and attendance by invoking the uploading function. During the execution of the assignment conducting functions, if a student exceeds the time limit set by the instructor, the assignment is automatically closed.

By efficiently managing the exam process, this class ensures that students can complete their assignments within the designated time frame. It facilitates the evaluation of student performance, the calculation of marks, and the tracking of attendance records.

The class's functionality adheres to the guidelines set by the instructor, ensuring a fair and standardized examination process. It plays a crucial role in providing students with a seamless and structured experience while conducting exams, ultimately contributing to their academic progress.

IV. Class: Assignment_In_Class:

When a student enters a registered course, they are greeted with a comprehensive overview of all the assignments that will be uploaded throughout the class, complete with relevant details. This allows students to carefully select which assignment they wish to tackle. Once their choice is made, the program seamlessly guides the student to the next class, ensuring a smooth and efficient learning experience.

V. Class: Students:

Once the student's email ID and password have been successfully verified, the class springs into action. It presents the student with a range of options to choose from, including accessing and solving assignments, checking marks and attendance, or even changing the password if needed.

If the student decides to explore and tackle the uploaded assignments, the class smoothly transitions them to the next stage, aptly named "Assignment_In_Classes." This ensures a seamless progression in the learning journey.

Should the student desire to modify their password, the class promptly attends to their request, enabling a convenient password change within the present class itself.

Furthermore, if the student seeks to view their marks and attendance for a specific course, the class promptly redirects them to the dedicated "Marks_And_Attendance" class. This provides a comprehensive overview of their academic progress and ensures easy access to the desired information.

Through these streamlined functionalities, the class strives to enhance the student's experience, promoting efficiency and convenience at every step.

VI. Class: Teacher_Rigistration_Data:

The teacher class plays a vital role like the student registration class. It verifies the teacher's password and email ID and directs them to their corresponding course.

VII. Class: Teacher:

Once the teacher enters their corresponding class, they are presented with two options: to upload an assignment or to quit. If the teacher chooses to upload an assignment, they are prompted to provide essential details such as the assignment name, submission time, assignment duration time, and the number of questions they wish to include from the question bank. This streamlined process ensures efficient assignment management and allows teachers to tailor their assignments to meet specific requirements.

How my program works?

In the following pages, I have provided a timeline and accompanying diagrams that illustrate the workflow of my program. Specifically, I have created separate diagrams for both the teacher mode and the student mode. These diagrams outline the fundamental steps involved in the program's operation. It's important to note that while the diagrams do not encompass all the features and functionalities, they serve as a visual representation of the program's flow. The complete set of features and functionalities will be demonstrated to the instructor during the live demo, ensuring a comprehensive understanding of the program's capabilities.

Teacher Mode:

1. After when teachers email id and password is verified the program will enter the teacher to his corresponding class automatically.
2. Then the program will run as the flow shown in the following figures. This is a general overview and other functions will be shown during demo. Kindly go through step wise.

STEP I : Entering and verifying Email ID and Password

```
**********************************************************************
*                          WellCome!                                 *
**********************************************************************
**********************************************************************
* PRESS 1 if you are student                                         *
* PRESS 2 if you are a teacher                                       *
* PRESS 3 if you want to quit                                        *
**********************************************************************
 PRESS : 2
Enter id : Adil@nu.edu.pk
Enter password : PP4ppf
**********************************************************************
*                       TEACHER MODE                                 *
**********************************************************************
*  PRESS 1 if you want to see upload Assighment                      *
*  PRESS 2 if you want to go back to main menu                       *
**********************************************************************
   PRESS : 1
**********************************************************************
```

STEP II : Ask teacher whether to upload assignment or go back to menu.

```
**********************************************************************
*                       TEACHER MODE                                 *
**********************************************************************
*  PRESS 1 if you want to see upload Assighment                      *
*  PRESS 2 if you want to go back to main menu                       *
**********************************************************************
   PRESS : 1
**********************************************************************
```

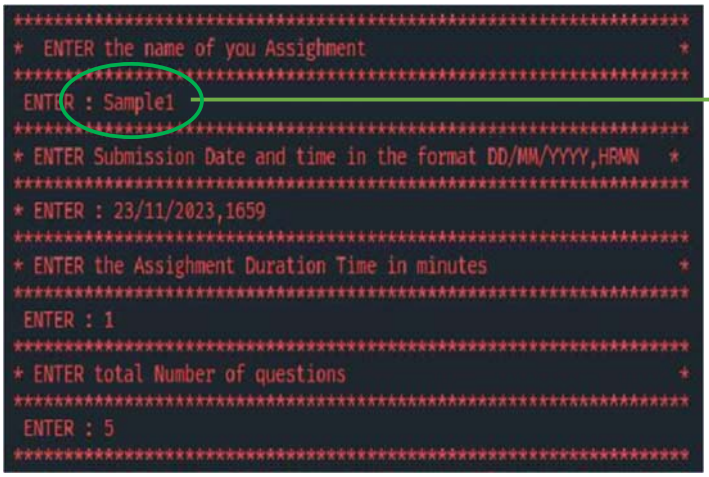
STEP III : Ask teacher whether to upload which type of assignment.

```
**********************************************************************
* PRESS 1 if you want to upload MCQs type question                   *
* PRESS 2 if you want to upload Fill in the blanks type question     *
* PRESS 3 if you want to upload True False type qusetion             *
* PRESS 4 if you want to upload Discriptive type question            *
* PRESS 5 if you want to go to back menu                             *
**********************************************************************
 PRESS : 1
```

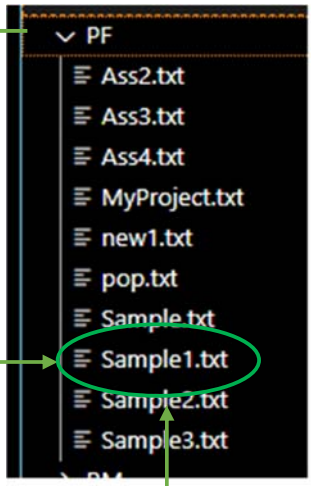
PF class of Sir Adil Majeed.

It is an example; this process will be done for all the teachers' classes.

STEP IV : Entering name, date, etc.…

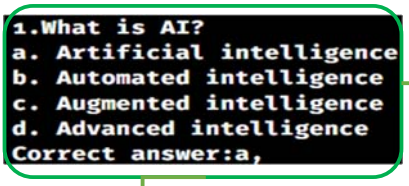


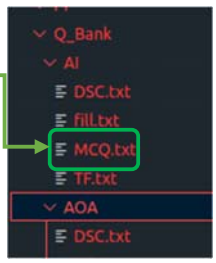
STEP VI : File formation



STEP V : Making assignment.

e.g. MCQs type

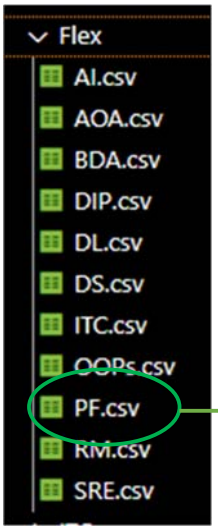




Whenever a teacher will want to upload a new Assignment(may be of MCQs, T/Fs, fill in the blank, or Descriptive type) a new file on the name of assignment will be created in the folder of the corresponding teacher class.

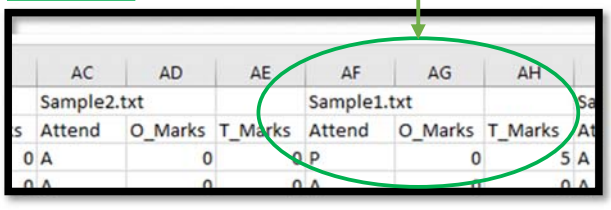
And a new slot(containing three columns, obtained marks, total marks, attendance) on the name of assignment will be added to the csv file of the corresponding teacher's class.

When the teacher uploads the assignment, he will ask about which type of assignment do you want to upload. Then the corresponding file will be open, and the questions that teacher wants will be added to the assignment from here.

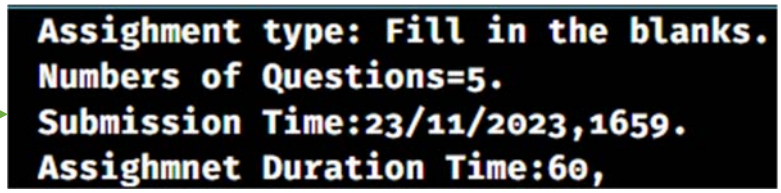


The slot is added to the PF.csv file because the assignment was uploaded by PF teacher.

PF.csv



Moreover, the other information taken by the teacher will be store in the first four lines of the assignment uploaded file by the teacher. And in student mode this data will be readied to perform more functionalities.

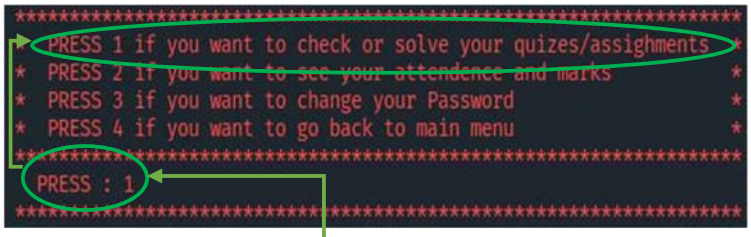


Student Mode:

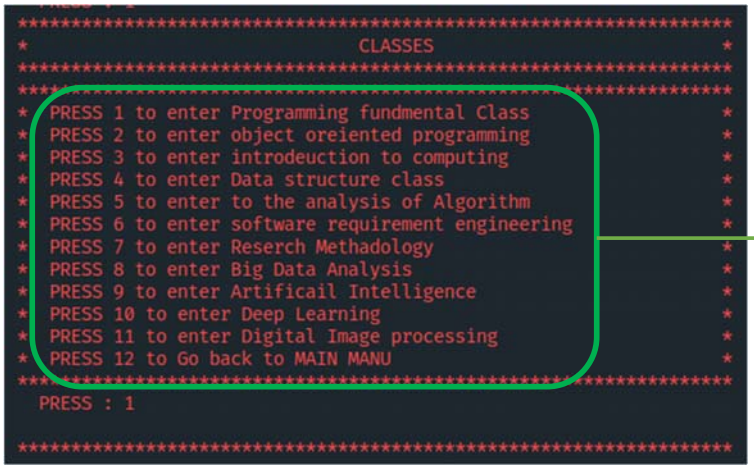
1. In student mode once email id and password will be verified, then all the data will flow through this email id automatically.
2. The program will show the registered courses of the student corresponding to the entered email id.
3. The program will take assignment and will store the marks and attendance in the corresponding course csv file(as per course csv file given above) in the row that contained the entered email id.
4. The program will run as the flow shown in the following figures. This is a general overview and other functions will be shown during demo. Kindly go through step wise.

STEP I : Entering and verifying Email ID and Password

STEP II : Asks student whether to see marks or give assignment.



STEP III : Assignment mode



This will show only the registered classes, but this is an example, so all classes are showing here.

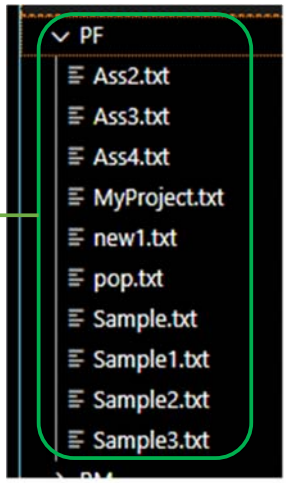
STEP IV : Now student is entered to the PF class.

```
**************************************************************
* Programming Fundmental                                AI_C  *
* Adil Majeed                                                 *
**************************************************************
**************************************************************
*                         INSTRUCTION                        *
*  1. Once you enter the Assighment you will have to complete it  *
*  other wise you cannot leave the Assighment.                *
*  2. You can do your Assighmnet only one time.               *
*  3. If you want to leave your task then PRESS 555 but remmember *
*  PRESS 555 but remmember your marks will be deducted.       *
**************************************************************
Files in class PF:
**************************************************************
* 1.Sir Adil Majeed Posted a new Assighment new1.txt
*                              Due: 23 MARCH 2023  12:45.am
*                                                  Turned in late  *
**************************************************************
**************************************************************
* 2.Sir Adil Majeed Posted a new Assighment Sample.txt
*                              Due: 12 MARCH 2023  12:45.am
*                                                  Missing    *
**************************************************************
**************************************************************
* 3.Sir Adil Majeed Posted a new Assighment POP.txt
*                              Due: 23 MARCH 2023  08:00.pm
*                                                  Missing    *
**************************************************************
**************************************************************
* 4.Sir Adil Majeed Posted a new Assighment Ass4.txt
*                              Due: 13 MAY 2023  02:55.pm
*                                                  Turned in  *
**************************************************************
**************************************************************
* 5.Sir Adil Majeed Posted a new Assighment Sample2.txt
*                              Due: 12 DECEMBER 2022  03:00.pm
*                                                  Missing    *
**************************************************************
**************************************************************
* 6.Sir Adil Majeed Posted a new Assighment Ass3.txt
*                              Due: 02 JULY 2024  12:00.am
*                                                  Turned in  *
**************************************************************
**************************************************************
* 7.Sir Adil Majeed Posted a new Assighment Sample1.txt
*                              Due: 23 NOVENBER 2023  04:59.pm
*                                                  Turned in  *
**************************************************************
**************************************************************
* 8.Sir Adil Majeed Posted a new Assighment Sample3.txt
*                              Due: 13 MARCH 2023  06:00.pm
*                                                  Missing    *
**************************************************************
**************************************************************
* 9.Sir Adil Majeed Posted a new Assighment MyProject.txt
*                              Due: 12 MAY 2023  06:30.pm
*                                                  Turned in late  *
**************************************************************
**************************************************************
* 10.Sir Adil Majeed Posted a new Assighment pop.txt
*                              Due: 23 August 2023  07:00.pm
*                                                  Turned in  *
**************************************************************
```

PF class of which instructor is Sir Adil Majeed

```
Assighment type: Fill in the blanks.
Numbers of Questions=5.
Submission Time:23/11/2023,1659.
Assighmnet Duration Time:60,
```

This data was saved in the first four lines of sample1.txt file when Sir Adil Majeed was uploading sample1 assignment. Now, for example in third line the data is readied from file and stored in a string to perform multiple functions.



You have notice that all the files in PF folder are shown in the PF class. And all the files are the assignment that are uploaded by the PF teacher.

This means a student has not submitted the assignment and the time has been gone.

This means a student has submitted the assignment but late.

This means a student has submitted the assignment on time.

There is another case “Remaining” (there is no assignment in this case in the class), it means that a student has not submitted the assignment, but the time is remaining.

STEP V : Assignment conduction

MCQs type assignment

```
4.What is machine learning?
d. Teaching machines to have emotions like humans
c. Teaching machines to replace humans in all tasks
a. Teaching machines to think like humans
b. Teaching machines to learn from data

10.What is ethics in AI?
b. The study of how machines can replace humans in all
d. The study of how machines should be designed and use
a. The study of how machines can be programmed to perfo
c. The study of how machines can learn from data
```

```
Assighment type: MCQs.
Numbers of Questions=10.
Submission Time:13/05/2023,1455.
Assighmnet Duration Time:120,
1.What is AI?
```

The information will be taken from the first line of the file and then the program will run the function that will conduct MCQs type questions. Same as that T/Fs, fill in the blanks, or descriptive type questions will be shown on disk.

STEP VI : Result showing to student.

```
new1.txt
==========
Attend  O_Marks T_Marks
------------------------------
PL      -2      2
------------------------------
Ass4.txt
==========
Attend  O_Marks T_Marks
------------------------------
P       0       10
------------------------------
Ass3.txt
==========
Attend  O_Marks T_Marks
------------------------------
P       0       10
------------------------------
MyProject.txt
==========
Attend  O_Marks T_Marks
------------------------------
PL      -2.000000       1
------------------------------
Ass2.txt
==========
Attend  O_Marks T_Marks
------------------------------
PL      -2      10
------------------------------
```

```
POP.txt
==========
Attend  O_Marks T_Marks
------------------------------
A       0       0
------------------------------
pop.txt
==========
Attend  O_Marks T_Marks
------------------------------
P       0.000000        1
------------------------------
Sample.txt
==========
Attend  O_Marks T_Marks
------------------------------
A       0       0
------------------------------
Sample2.txt
==========
Attend  O_Marks T_Marks
------------------------------
A       0       0
------------------------------
Sample1.txt
==========
Attend  O_Marks T_Marks
------------------------------
P       0       5
------------------------------
Sample3.txt
==========
Attend  O_Marks T_Marks
------------------------------
A       0       0
```

	new1.txt			Ass4.txt			Ass3.txt			MyProject.txt			Ass2.txt			POP.txt	
N Student ID	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks
hr i221388@nu.edu.pk	PL	-2	2	P	0	10	P	0	10	PL	-2	1	PL	-2	10	A	0

	POP.txt			pop.txt			Sample.txt			Sample2.txt			Sample1.txt			Sample3.txt		
	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks	Attend	O_Marks	T_Marks
0	A	0	0	P	0	1	A	0	0	A	0	0	P	0	5	A	0	0

In short, this was a general overview that how my program works. However, there are many other features and function that my program does but this will show to the instructor at the time when I will run my program.