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**OBJECT ORIENTED PROGRAMMING**

**FINAL PROJECT**

**Libraries:**

* “iostream”: provides input output stream functionalities.
* “fstream”: provides file stream functionalities.
* “sstream”: provides string stream functionalities
* “cstring”: provides string manipulation functions
* “time.h”: provides function for working with time

**Class Person**

* Represents a person with name
* It has a protected member “name” and a constructor to initialize it

**Working:**

The person class was made as the teacher and the student were both the persons so by using this class we can use composition for both the classes

**Class Date:**

* Pleasants a date with “day”, “month” and “year”.
* it has private members “day”, “month” and “year” and a constructor to initialize them.
* Getter and setter methods are provided for each member.
* it also has a print method to print the date in the format “day/month/year”.

**Working:**

The class date was used so that the teacher can upload the quiz add a certain date and the student can also attempt the quiz at the same date although I was unable to complete this task for the mentioned class.

**Class Time:**

* Represents a time with hour minute and second.
* It has a private number hour, minutes and seconds and a constructor to initialize them.
* Getter and setter methods are provided for each member.
* it also has a print method to print the date in the format “hours:minutes:seconds ”.
* The “advance” method can be used to increment the time by a given number of seconds.

**Working:**

The class time was used so that the teacher can upload the quiz at a certain time and the student can also attempt the quiz at the same time.

**Class Mcqs:**

* Represents the multiple choice question
* It has a members statement, option1, option2, option3, option4 and answer
* The getstatement method is used to display the question and its options.

**Class** **truefalse:**

* Represents the True and False.
* It has a members statement, option1, option2, and answer
* The getstatement method is used to display the question and its options.

**Class subjective:**

* Represents the subjective type questions

Although this class is also incomplete because I was unable to complete it in this period of time.

**Class Teacher:**

* represents a teacher who can conduct quizzes
* it has members date and time which are pointer to date end time class, subject, e-mail, password, O which is pointer to MCQ's object and A which is pointed to truefalse object
* the constructor initializes the subject and name using the base class constructor
* getter and setter methods our provided for name and subject.
* The set e-mail method generates an e-mail address based on the name
* the is uppercase, is lowercase, is digit and special character method are utility functions to check characters properties
* the login method prompts the used to enter an e-mail and password and validate them
* that is validate password method checks if a password is valid based on length and character requirements
* the make quiz method allows the teacher to create a quiz by reading questions from the file and display them based on the chosen type and allowed time. This member function is unable to do it's complete working

**Class SetEmail:**

* Contains utility functions for checking character properties similar to those in the teachers class

overall the code provides a basic structure for a quiz application allowing a teacher to login create quiz and manage quiz also the student to login and solve the quiz uploaded by the teacher and get the result for it and also marked as present in that quiz.

**Class Student:**

It contains several private member variables such as rollno, name, email, and password and several public member functions such as setRollno(), setName(), setEmail(), setPassword(), course\_offering(), course\_registered(), and login().

The setRollno(), setName(), setCS101(), setCS201(), setCS102(), setCS301(), setCS302(), setSE301(), setCS501(), setCS407(), setCS307(), setCS601(), setCS409(), setEmail(), and setPassword() member functions are setters for the member variables. The getRollno(), getName(), getCS101(), getCS201(), getCS102(), getCS301(), getCS302(), getSE301(), getCS501(), getCS407(), getCS307(), getCS601(), and getCS409() member functions are getters for the member variables.

The setRollno(), setName(), and setEmail() member functions are self-ex It contains several private member variables such as rollno, name, email, and password and several public member functions such as setRollno(), setName(), setEmail(), setPassword(), course\_offering(), course\_registered(), and login().

The setRollno(), setName(), setCS101(), setCS201(), setCS102(), setCS301(), setCS302(), setSE301(), setCS501(), setCS407(), setCS307(), setCS601(), setCS409(), setEmail(), and setPassword() member functions are setters for the member variables. The getRollno(), getName(), getCS101(), getCS201(), getCS102(), getCS301(), getCS302(), getSE301(), getCS501(), getCS407(), getCS307(), getCS601(), and getCS409() member functions are getters for the member variables.

The setRollno(), setName(), and setEmail() member functions are self-explanatory. The setPassword() member function takes a character array setpass as an argument and sets the member variable password to it. The course\_offering() member function displays a list of courses offered to the student, and the course\_registered() member function displays a list of courses the student has registered for.

The login() member function prompts the user to enter their email and password. If the email and password match the member variables email and password, respectively, the function sets the local boolean variable cm to true and displays a message indicating that the user has successfully logged in.

The email member variable is set using either one of the two setEmail() member functions. The first setEmail() function concatenates the rollno member variable and the domain @nu.edu.pk to create an email address, whereas the second setEmail() function creates the email address manually by iterating over the rollno member variable and concatenating each character to the email address string. Both methods work similarly, but the first method is simpler and easier to understand.planatory. The setPassword() member function takes a character array setpass as an argument and sets the member variable password to it. The course\_offering() member function displays a list of courses offered to the student, and the course\_registered() member function displays a list of courses the student has registered for.

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