# OOP Project Report

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**Report:**

Title: Examination System Project Report

1. Introduction:

The examination system project is a software solution designed to manage user authentication, course management, quiz creation, and student quiz attempts. The project aims to provide a comprehensive platform for conducting quizzes and evaluating students' performance. This report provides an overview and analysis of the code structure and functionalities implemented in the project.

2. Code Overview:

The code consists of several classes, including User, Authenticator, Menu, Teacher, Student, Course, and Answer. Each class has specific responsibilities and functions related to the examination system. The code follows object-oriented programming principles to achieve modularity and code reusability.

2.1 User Class:

The User class represents a user entity and contains attributes such as name, email, and password. It provides methods to set and retrieve user information.

2.2 Authenticator Class:

The Authenticator class handles user authentication, specifically password and email validation. It includes methods to check password complexity and email format.

2.3 Menu Class:

The Menu class is responsible for displaying menus and getting user input. It contains methods to display menus, get user input, and facilitate navigation within the application.

2.4 Teacher Class:

The Teacher class represents a teacher entity and is associated with a Course. It includes methods to update the quiz bank by adding new questions and creating quizzes based on the quiz bank.

2.5 Student Class:

The Student class represents a student entity and contains information such as the number of registered courses and the courses in which the student is enrolled. It provides methods to set and retrieve student information and attempt quizzes.

2.6 Course Class:

The Course class represents a course entity and includes attributes such as course name, code, and instructor details. It provides methods to set and retrieve course information.

3. Functionality Analysis:

The examination system project provides several key functionalities, as described below:

3.1 User Authentication:

The Authenticator class validates user passwords and email addresses. It ensures that the password meets specific complexity requirements, such as length, uppercase, lowercase, and numeric characters. The email validation checks for the presence of the "@" symbol and a valid format.

3.2 Quiz Bank Management:

The Teacher class allows teachers to update the quiz bank by adding new questions. Teachers can specify the type of question (MCQ, True/False, or Subjective) and provide relevant details such as the question text, options, and correct answer. The quiz bank is stored in a file for future reference.

3.3 Quiz Creation:

Teachers can create quizzes based on the quiz bank. They can specify the number of marks assigned to each question type (MCQ, True/False, or Subjective) and set a deadline for the quiz. Quizzes are stored in separate files, including details such as the course name, rubric, total marks, and deadline.

3.4 Quiz Attempt:

Students can attempt quizzes by providing answers to the questions. The Student class allows students to select a quiz file and input their answers. The code validates the answers and calculates the total marks based on the correct responses. The implementation considers MCQs and True/False questions for grading.

4. Conclusion:

The examination system project demonstrates the implementation of an automated system for managing quizzes and evaluating student performance. It provides essential functionalities for user authentication, course management, quiz creation, and student quiz attempts. The modular code structure enables easy maintenance and future enhancements. Overall, the project offers an efficient solution for conducting examinations in an organized and automated manner.