STUDENT PERFORMANCE PREDICTION AND FEEDBACK ANALYSIS

Thesis submitted in partial fulfillment of the requirements for the award of the degree of ***Master of Computer Applications*** *of the* ***APJ Abdul Kalam Technological University***

submitted by

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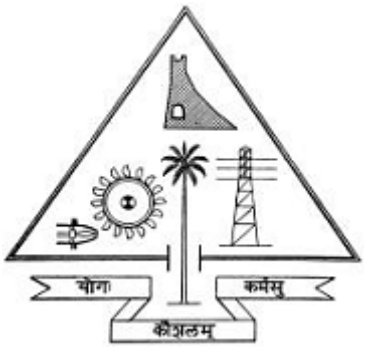

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MAY 2022

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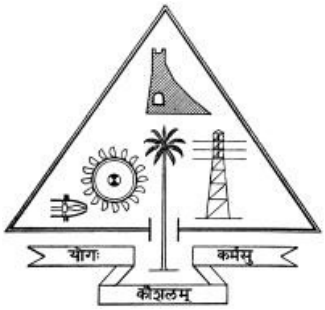

CERTIFICATE

This is to certify that the main project titled **"STUDENT PERFORMANCE PREDICTION AND FEEDBACK ANALYSIS"** *is a bonafide work done by* **ANSHA ANTONY (TCR19MCA008)** *under my supervision and guidance, and is submitted in May 2022 in partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications from APJ Abdul Kalam Technological University(KTU).*

Hredya Sundaran	Soumia Chandran M	Dr. Sminesh C N
Project Guide	**Project Coordinator**	**Head of the Dept.**

Place : THRISSUR
Date : 13-05-2022

DECLARATION

I hereby declare that the main project named, **STUDENT PERFORMANCE PREDICTION AND FEEDBACK ANALYSIS**, is my own work and that, to the best of my knowledge and belief, it contains no material previously published another person nor material which has been accepted for the award of any other degree or course of the university or any other institute of higher learning, except where due acknowledgement and reference has been made in the text.

Place : THRISSUR

Date :13-05-2022

Signature

ANSHA ANTONY(TCR19MCA008)

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ABSTRACT

Advances in Information and Communications Technology (ICT) have increased the growth of Massive open online courses (MOOCs) applied in distance learning environments. High ranking universities have adopted MOOCs as an efficient dashboard platform where learners from around the world can participate in such courses. The students learning progress is evaluated by using set computer marked assessments. In particular, the computer gives immediate feedback to the student once he or she completes the online assessments. The researchers claim that student success rate in an online course can be related to their performance at the previous session in addition to the level of engagement. Insufficient attention has been paid by literature to evaluate whether student performance and engagement in the prior assessments could affect student achievement in the next assessments and examine the feedbacks made by students then provide meaningful information to the instructor that helps them to improve the effectiveness of MOOCs. In this project it detects participants' attitude towards aspects of a course (e.g. professor, course, assessment,materials) at a context and displays the results.

CONTENTS

LIST OF FIGURES

NOMENCLATURE

LDA	Linear Discriminant Analysis
MOOCs	Massive Open Online Course
OULAD	Open University Learning Analytics Dataset
VADER	Valence Aware Dictionary and sEntiment Reasoner

CHAPTER 1
INTRODUCTION

Massive Open Online Courses attract and enroll a high number of students.High ranking universities have adopted MOOCs as an efficient dashboard platform where learners from around the world can participate in such courses.One of the essential and most challenging issues for these educational institutions is the prediction of students performance and collecting the feedback from the students while the course is underway. This could be very useful in e-learning platforms to improve and manage the courses.The ability to detect and understand student feedback is especially pertinent for MOOCs given the high rate of attrition that has been reported. Real-time feedback and the ability to make suitable changes accordingly can be a useful mechanism to curb disengagement.

Various tools have been utilized to deliver interactive content including pictures, figures, and videos that can motivate the learners to build new cognitive skills. High ranking universities have adopted MOOCs as an efficient dashboard platform where learners from around the world can participate in such courses. The students learning progress is evaluated by using set computer marked assessments. In particular, the computer gives immediate feedback to the student once he or she completes the online assessments.

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CHAPTER 2
LITERATURE REVIEW

2.1 Detecting at-risk students with early interventions using machine learning techniques

Massive Open Online Courses (MOOCs) have shown rapid development in recent years, allowing learners to access high-quality digital material. Because of facilitated learning and the flexibility of the teaching environment, the number of participants is rapidly growing. However, extensive research reports that the high attrition rate and low completion rate are major concerns. In this paper, the early identification of students who are at risk of withdrew and failure is provided. Therefore, two models are constructed namely at-risk student model and learning achievement model. The models have the potential to detect the students who are in danger of failing and withdrawal at the early stage of the online course. The result reveals that all classifiers gain good accuracy across both models, the highest performance yield by GBM with the value of 0.894, 0.952 for first, second model respectively, while RF yield the value of 0.866, in at-risk student framework achieved the lowest accuracy. The proposed frameworks can be used to assist instructors in delivering intensive intervention support to at-risk students.

2.2 Predicting Instructors intervention in MOOC forums

Instructor intervention in student discussion forums is a vital component in Massive Open Online Courses(MOOCs), where personalized interaction is limited. This paper introduces the problem of predicting instructor interven-

tions in MOOCSs forums. We propose several prediction models designed to capture unique aspects of MOOCs, combining course information, forum structure and posts content. Our models abstract contents of individual posts of threads using latent categories, learned jointly with the binary intervention prediction problem. Experiments over data from two Courses MOOCs demonstrate that incorporating the structure of threads into the learning problem leads to better predictive performance.

2.3 Using opinion mining as an educational analytic: An integrated strategy for the analysis of student's feedback

The analysis of students' feedback written in natural language has been poorly considered in academic institutions, looking more frequently at students' ratings as a base to evaluate courses and instructors. Statistical text analyses offer the possibility of exploring text collections from a quantitative viewpoint. Particularly interesting is Opinion Mining (OM), a family of techniques at the crossroads of Statistics, Linguistics and Computer Science. OM allows evaluating the sentiment of individual opinions, highlighting their semantic orientation. In an educational context, this approach allows processing students' comments and creating powerful analytics. This paper aims at introducing readers to OM, presenting a strategy to compute the sentiment polarity of students' comments.

CHAPTER 3
ENVIRONMENTAL STUDY

3.1 System Configuration

System configuration describe the hardware and software requirement of the system for development

3.1.1 Hardware Requirements

- Memory : 4 GB of RAM
- Processor : Intel Core i3 or equivalent CPU
- Speed : 2.4 GHz
- Proper Internet Connection

3.1.2 Software Requirements

- Operating system : Windows
- Frame Work : Flask
- Front End : Html,Java script,Python
- IDE Used : Pycharm
- Database : SQLyog

3.2 Software Specification

3.2.1 Python

Python is an interpreted, excessive-stage, widespread-purpose programming language. Created by means of guido van rossum and first launched in 1991, python's design philosophy emphasizes code readability with its extraordinary use of significant white space. Its language constructs and item-oriented approach aims to help programmers write clean, logical code for small and huge-scale projects. Python is dynamically typed and rubbish-accrued. It supports multiple programming paradigms, together with procedural, item-oriented,and purposeful programming. Python is regularly defined as a "batteries included" language due to its comprehensive preferred library.Python is meant to be an effortlessly readable language. Its formatting is visually uncluttered, and it frequently uses English key phrases in which different languages use punctuation.In contrast to many other languages, it does now not use curly brackets limit blocks, and semicolons after statements are non-compulsory. It has fewer syntactic exceptions and unique instances than c or pascal. Python uses white space indentation, as opposed to curly brackets or keywords, to delimit blocks.An growth in indentation comes after positive statements; a decrease in indentation indicates the end of the present day block. Thus, the program's visual shape appropriately represents this system's semantic shape. This feature is likewise every now and then termed the off-side rule.

3.2.2 Flask Framework

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational

mappers, form validation, upload handling, various open authentication technologies and several common framework related tools

3.2.3 Pycharm IDE

PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python programming language. It is developed by the Czech company JetBrains (formerly known as IntelliJ). It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems (VCSes), and supports web development with Django as well as data science with Anaconda.

PyCharm is cross-platform, with Windows, macOS and Linux versions. The Community Edition is released under the Apache License, and there is also an educational version, as well as a Professional Edition with extra features

- Coding assistance and analysis, with code completion, syntax and error highlighting, linter integration, and quick fixes.
- Project and code navigation: specialized project views, file structure views and quick jumping between files, classes, methods and usages
- Python refactoring: includes rename, extract method, introduce variable, introduce constant, pull up, push down and others
- Integrated Python debugger
- Support for scientific tools like Matplotlib, NumPy and SciPy

3.2.4 SQLyog

SQLyog Ultimate is the most powerful manager, admin and GUI tool for MySQL, combining the features of MySQL Query Browser, Administrator, phpMyAdmin and other MySQL Front Ends and MySQL GUI tools in a single intuitive interface. SQLyog is a fast, easy to use and compact graphical tool for managing your MySQL databases. SQLyog Ultimate was developed

for all who use MySQL as their preferred RDBMS. Whether you enjoy the control of handwritten SQL or prefer to work in a visual environment, SQLyog makes it easy to get started and provides you with tools to enhance your MySQL experience.SQLyog has many advanced features that other enterprise-class database management systems offer, such as

- User-defined types
- Table inheritance
- Sophisticated locking mechanism
- Foreign key referential integrity
- Nested transactions
- Multi-version concurrency control
- Asynchronous replication

3.2.5 HTML

HTML, or Hypertext Markup Language, is a markup language for documents designed to be displayed in a web browser. When used in conjunction with other technologies like CSS and JavaScript, it creates the vast majority of content seen on websites. HTML is used for a huge variety of things on the web, from building complex websites that offer email and calendar functions to constructing a simple course website or resume. We recommend at least a basic understanding of HTML for anyone who wants to publish on the web.

3.2.6 Java Script

JavaScript is a lightweight, interpreted programming language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and cross-platform.Javascript is the

most popular programming language in the world and that makes it a programmer's great choice. Once you learnt Javascript, it helps you developing great front-end as well as back-end softwares using different Javascript based frameworks like jQuery, Node.JS etc.Javascript helps you create really beautiful and crazy fast websites. You can develop your website with a console like look and feel and give your users the best Graphical User Experience.

3.3 Functional Requirements

The system should be designed to predict the student performance based on the activities they engaged and to collect the feedback from the students and categorize them into different aspects that helps the instructor to improve and manage their course.

3.4 Performance Requirements

The system would need least 4 GB of RAM. Less RAM will result in the poor performance of the system. For running the application pycharm must be installed and python should be pre-installed.

CHAPTER 4
SYSTEM ANALYSIS

System Analysis by definition is a procedure of deliberate examination to accumulate information, deciphering the realities, diagnosing the issue and utilizing this data to either manufacture a totally new framework or to prescribe the enhancements to the current framework.

A good system investigation includes the way toward looking at a business circumstance with the purpose of improving it through better strategies and systems. In its center sense, the investigation stage characterizes the necessities of the framework and the issues which client is attempting to explain independent of how the prerequisites would be practiced.

4.1 Requirements Analysis

Requirements analysis, likewise called requirements engineering, is the way toward deciding client desires for another or changed item. These highlights, called necessities, must be quantifiable, significant and itemized. In programming designing, such prerequisites are frequently called useful determinations. The point of the undertaking is to make accurate performance prediction and to see helpful and informative feedback analysis.

4.2 Existing System

The existing system of performance prediction of MOOCs predict the student performance only on the the basis of marks they obtained on the previous assessments and student performance has been evaluated in online course using only two targets: “success” and “fail”. Most MOOCs are still taught by

an individual instructor or a relatively small team of instructors.Due to the high student-to-teacher ratio in MOOCs, traditional methods for feedback are not efficient. Consequently, an innovative approach is needed to manage the course, especially to monitor student progress and analyze student feedback.

4.3 Limitations of existing system

- Lack of latest technologies
- Need more human intervention
- Time consuming
- Lack of accuracy
- Slow decision making

4.4 Proposed System

A predictive model have been designed namely students performance prediction this model can be used to predict the performance that influence students' learning achievement in MOOCs for this the model evalutes all student activities in the learning platform and predicts the performance with three-class labels "success", "fail" and "withdraw". And also propose a model to categorize the students feedback that allows instructors to improve their course by analysing the sentiment and thereby categorizing the feedback into 4 different categories such as assessment,instructor,course,material.

4.5 Advantages of proposed System

- Flexible
- Less human intervention
- Time saver

- Centralization
- Better user interfaces

4.6 Feasibility Study

A feasibility study is a significant level container form of the whole System examination and Design Process. The examination starts by grouping the problem definition.Feasibility is to decide whether the task is worth attempted. When an acknowledgment issue definition have been created, the expert builds up a legitimate model of the framework. A quest for choices is dissected carefully.There are 3 sections in feasibility study

4.6.1 Technical Feasibility

Technical feasibility is an investigation of function performance and requirements that may influence the capacity to accomplish an adequate framework. It is every now and again the most troublesome area to evaluate at this phase of framework advancement process. During specialized examination, the investigator assesses the specialized benefits of the system idea, while simultaneously gathering extra data about performance,reliability, viability and reducability, the principle specialized issues generally raised during attainability phase of examination incorporate.Understand the different progressions related with the proposed framework before starting the task the framework must be clear about what are the advances that are to be required for the advancement of the new framework.Current technical resources are sufficient for the new system.By considering these facts this project is technically feasible.

4.6.2 Operational Feasibility

The project is profitable only if it can be converted into information systems that will satisfy the needs of the organization. In short, this crash test check whether the system will work if it is build and installed.Here are some points

to evaluate the project's performance:

- If the existing system is so popular and used to the extent that people are blind to the reasons for change, there can be opposition.
- If the existing business techniques is not admissible to the user.Then users can accept changes that will make more efficient systems.
- Timely involvement decreases the likelihood of a program failure and generally improves the chances of a successful system. As the plan proposed was helpful to decrease the difficulty

4.6.3 Economical Feasibility

Cost-benefit-analysis is among the most significant data contained in a feasibility study, which is an appraisal of economic justification or a PC based framework project cost-benefit-analysis investigation portrays costs for projects advancement and loads them against tangible and intangible of system. To create system actually for the utilization it need money related advantages or on the other hand surpasses the expenses or made equivalent. The inquiries raised with the end goal of evaluating are

- Cost to conduct a full system investigation
- Cost of hardware and software for the class of application being considered
- Benefits in the form of reduced costs or few costly errors

This system provides results in a secure manner and there is no bandwidth usage .Thus the system is economically feasible

CHAPTER 5
SYSTEM DESIGN

5.1 Applications Architecture

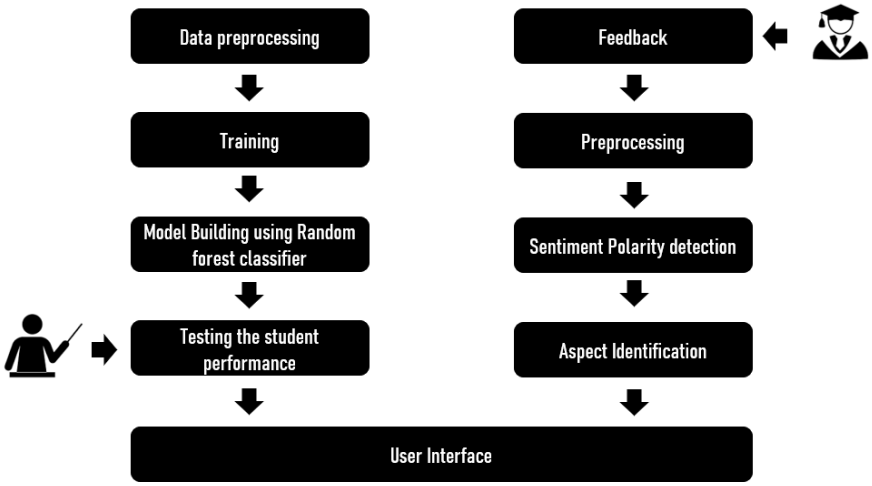

Fig. 5.1: Architecture Diagram

Fig. 4.1 is the architecture of the proposed system . In the developed system, tutors are added by the admin and students can register into system.Tutor can add the exams,upload study materials,view feedback analysis and can check student performance .Students can login to the system using the user name and password given at the time of registration and then they can attend the exams,submit the activities,enter the feedback for the registered course.

5.2 Input Design

Input design refers to the relationship between the user and information system. It consists of determining set of inputs, validates the data, minimizes the data entries and provides multi-user facilities. Input design is performed in a way that gives security and ease of use by maintaining privacy.Errors entered by the data entry operators can be controlled by input design.Here an image from the system is given as input.All the input data are validated and if any data violates any conditions, the user is warned by a message.

5.3 Output Design

If an output meets the user needs and shows the details directly then it can be considered as a quality output. In a system the processed results are shown to users or to another system as the output. When designing output it is decided how this information will be distributed for instant requirement and also for hard copy of the output. It is most dominant and straight information to user.

5.4 DataFlow Diagram

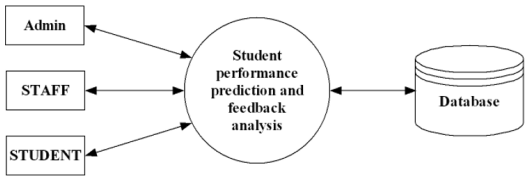

Fig. 5.2: Level 0 - Data-Flow Diagram

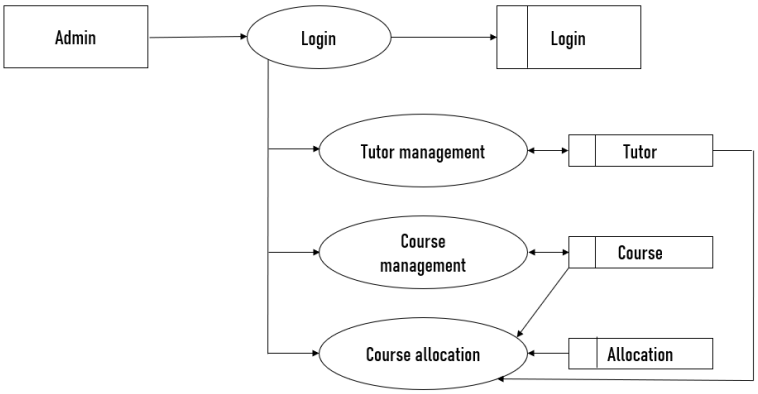

Fig. 5.3: Level 1 - Data-Flow Diagram

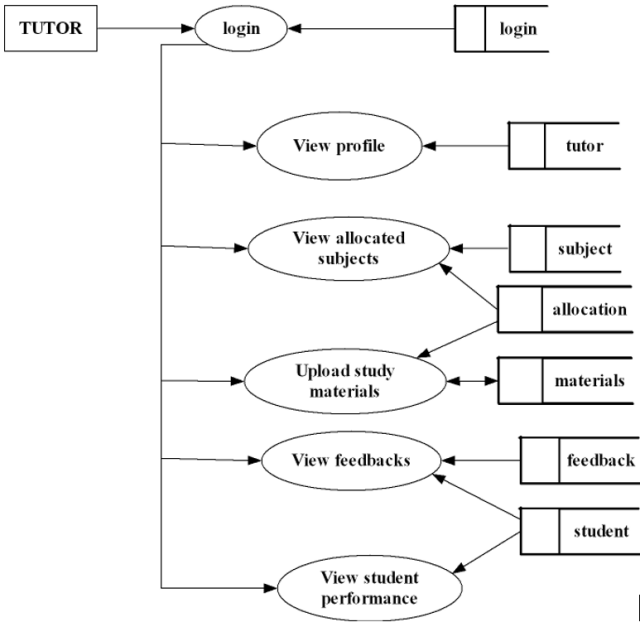

Fig. 5.4: Level 2 - Data-Flow Diagram

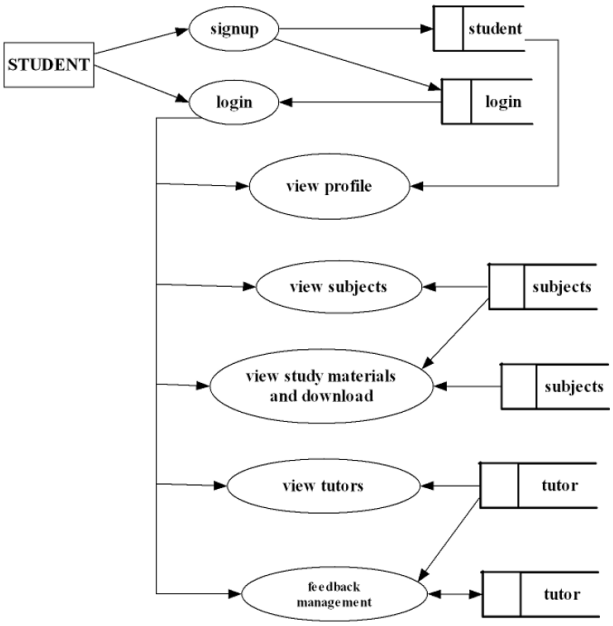

Fig. 5.5: Level 3 - Data-Flow Diagram

Fig 4.2 shows the level zero data-flow diagram of the system. The end users interacting with the system. Database store all data entered by the users.Student performance prediction and feedback analysis model take the respective input and give the results.

Fig 4.3 shows the level one data-flow diagram .Functions of admin module.

Fig 4.4 shows the level two data-flow diagram .These are the functions of tutor module.

Fig 4.5 shows the level three data-flow diagram .These are the functions of student module.

5.5 List of Modules

The proposed system consists of mainly 3 modules. They are:

- Admin
- Tutor
- Student

5.5.1 Admin

Admin has all the control over the system. Admin will log in using user name and password. Here default Flask admin dashboard is used to implement the admin module. Admin can do the following activities.

- Add tutor
- Add/Delete/Allocate Courses
- View Course details
- Delete tutors

5.5.2 Tutor

Any tutor added by the admin can use this system. One tutor can be allocated to more than one course,tutor can select the course and can perform the following activities.

- View the profile
- Add exams and activities
- Upload study materials
- Check the student performance
- View the feedback for the allocated courses

5.5.3 Student

Students can register into the system by selecting courses and thereby can login into system using the username and password entered at the time of student registration.After selecting the course they can perform following activities

- Attend the exams that are scheduled by the tutor
- View the marks

- Download and view the study materials
- Upload the activities
- Provide feedback for the selected course

CHAPTER 6
SYSTEM IMPLEMENTATION

6.1 System Implementation

Implementation is the way toward bringing a recently formed framework or formulated into operational one. It is the functional activity of trying a hypothetical structure. The new framework and its parts are to be tried by an educational institution and arranged way. The usage phase of a project is frequently mind boggling and tedious and a lot more individuals are engaged with the previous stages. This includes cautious arranging, examination of the present framework and limitations of usage, making good , introducing equipment, preparing the working stages in the changeover methods before the framework is arrangement and running

A basic factor in the change isn't disturbing the working of the organization. In software engineering, a usage is an acknowledgment of a specialized determination or calculation as a program, programming part, or other PCframework through PC programming and sending. The usage period of a task covers the period from the acknowledgment of the tried plan to its acceptable activities, bolstered by the fitting client and administrator's manual.It is a significant activity over the entire hierarchical structure and require a lot of arranging. The implementation plan includes the following:

1. Testing to confirm effectiveness
2. Detection and correction of errors
3. Making necessary changes so as to satisfy the requirement

6.1.1 Loading Data set

OULAD data set is utilized to train the student performance model.Data set which contains approximately 26000 students details, in that 5 attributes of the dataset is used for the training such as number of days studied,number of activities completed ,total number of clicks,total assessments completed,average assessment score.22700 are used for training and 3250 are used for testing the model.

6.1.2 Model Creation

Modeling in machine learning is an iterative phase where a data scientist continually train and test machine learning models to discover the best one for the given task.Generate a model using Random forest classifier for the performance prediction in the following steps

- Create random classifier
- Fit the dataset on classifier
- Perform prediction

Generate another model using Vader Sentiment analysis and Linear Discriminant analysis for the feedback analysis in the following steps

- Create Vader sentiment Analysis
- Generate polarity of each feedback
- Create LDA for feedback classification
- Draw pie chart based on the sentiment and aspect.

6.2 Testing

Software Testing is the process of evaluation of the application to that of the user preference or requirements, and evaluating whether the requirements are met. It is performed along with the stages of development, as each

individual changes introduced are tested multiple times to make sure the desired output is generated. Software is tested on various levels:

6.2.1 Unit testing

The process of testing each and every individual units of modules is called Unit Testing. It is used to make sure that the application runs error free and effortlessly after actual deployment.

6.2.2 Integration testing

Integration Testing is the process that ensures that each of the individual units were tested during Unit testing functions error-free when it runs with other modules as well. It checks the result of combined performance, and evaluates based on expected value. If the requirement is not met, the system is modified accordingly.

6.2.3 Functionality testing

Functionality testing is to check how efficient the software is. It checks the performance related to time taken, to evaluate the accuracy of the desired output. This is naturally done through Load Testing and Stress Testing, which mainly accounts for the time taken for processing certain tasks.

6.3 Validation

Validation is procedure of inspecting whether the product fulfills the client prerequisites. It is completed toward the end of the Software development life cycle. If the software matches the prerequisites,it is validated.

Validation of user inputted responses are done. It checks whether an image is given or the inputted response is in text format. If no text input is given, the user is warned by a message to add response.

6.4 Verification

Verification is the process of confirming if the software is meeting the business requirements, and is developed adhering to the proper specifications and methodologies verified the authentication mechanism with all possible test cases. Tests can be conducted based on two approaches:

1. Functionality testing
2. Implementation testing

CHAPTER 7

RESULTS AND DISCUSSION

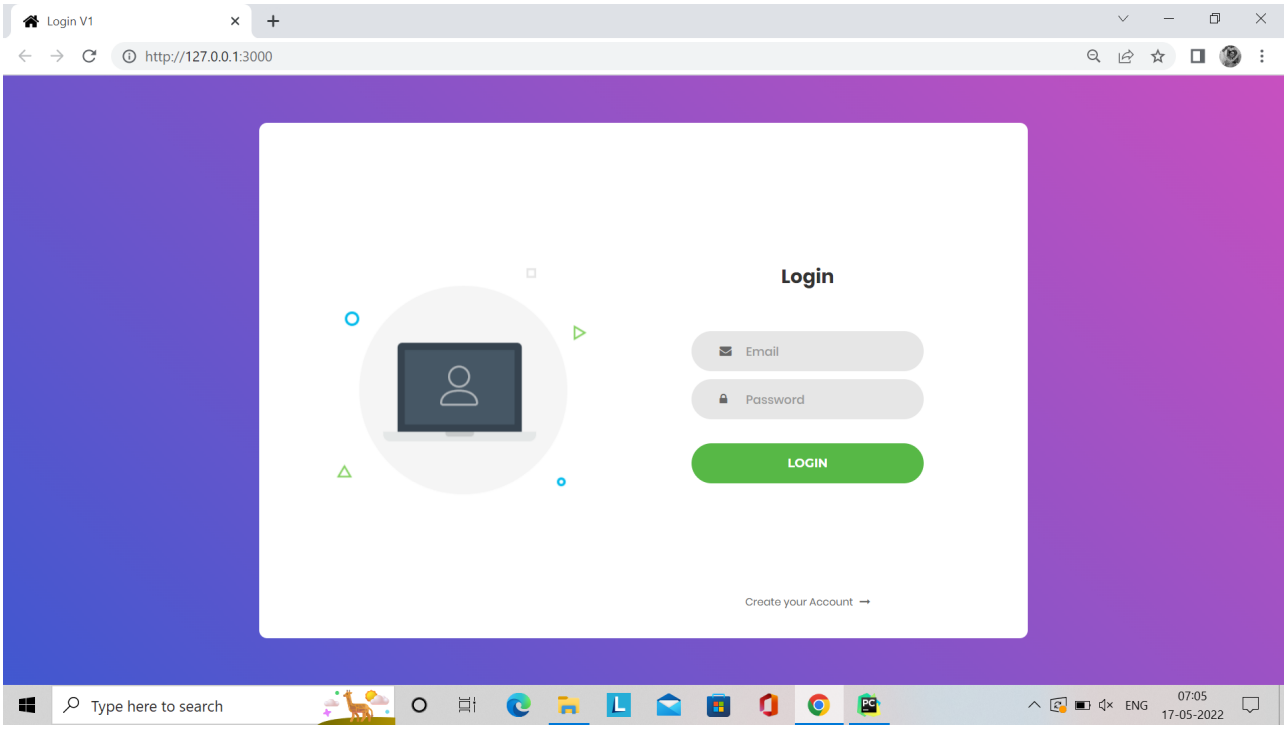

Fig. 7.1: Application Login Page

Admin,tutor and students can login to their dashboard by using the username and password through this page.

Fig. 7.2: Admin Dashboard

Admin has a dashboard.Side navigation bar displays all the activities that can be done by the admin.By clicking each navigation menu it navigates admin to the next page.

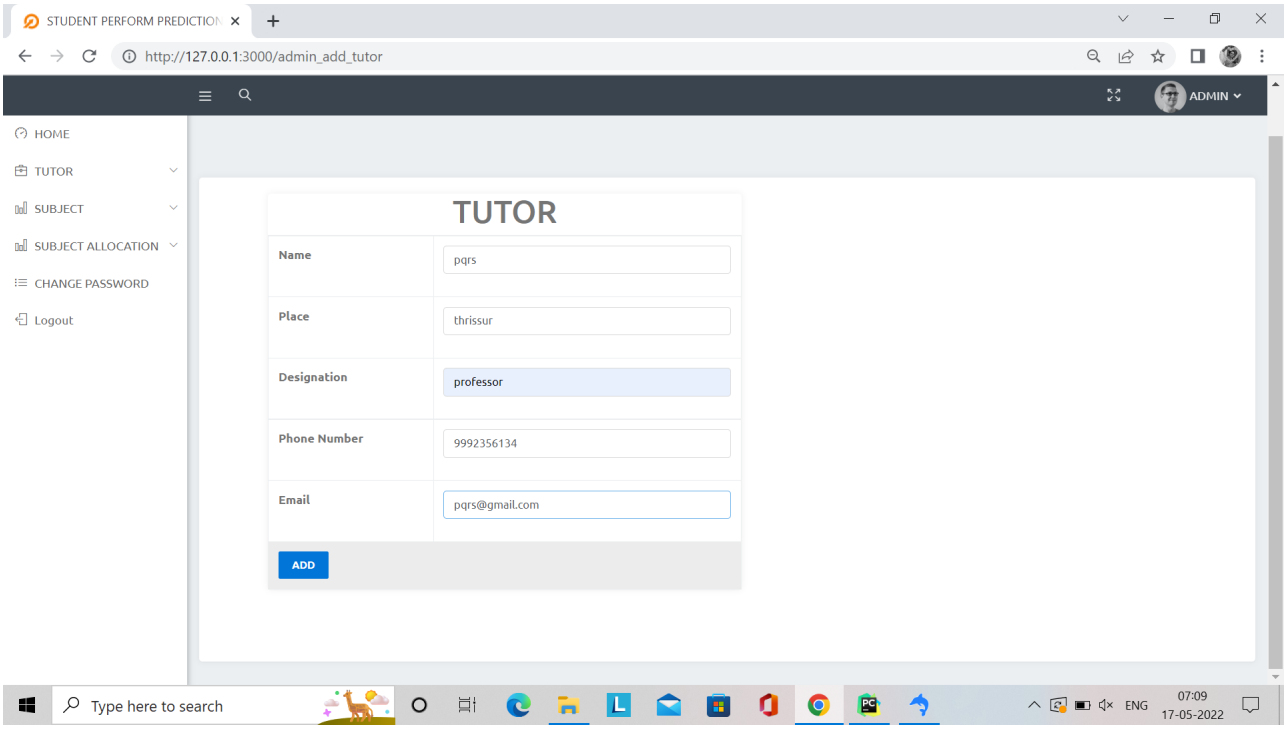

Fig. 7.3: Adding Tutor by admin

Here, admin can add tutor by filling the required details of the tutor.

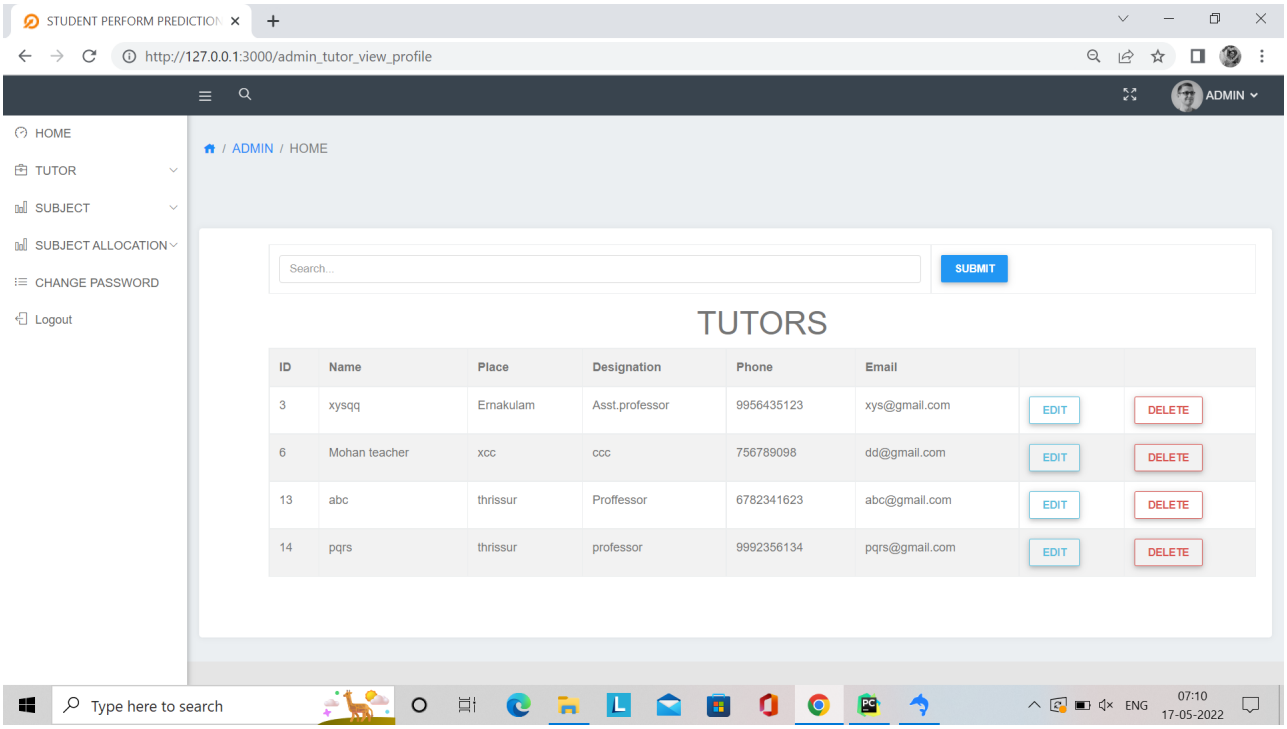

Fig. 7.4: View Tutors

Here, admin can view the tutor.Admin can edit the details of the tutor and also delete the tutor from the system if it is necessary.

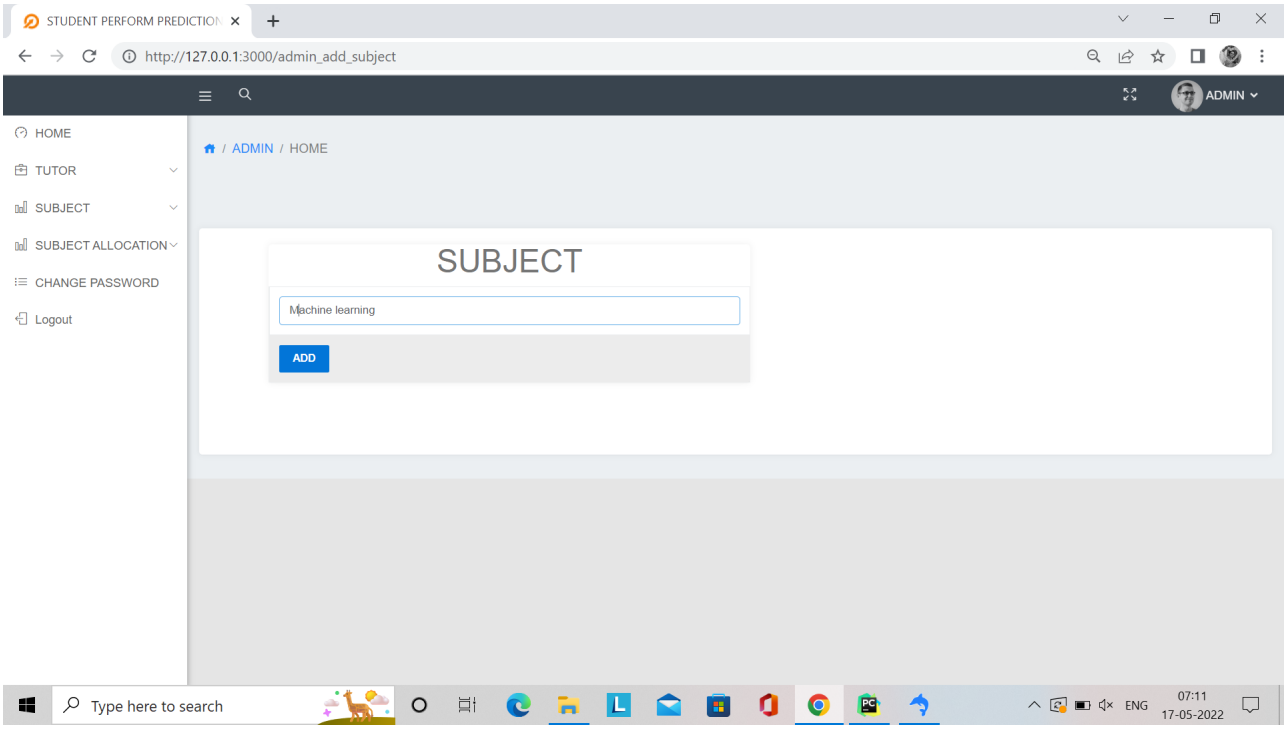

Fig. 7.5: Adding subject

Here , admin can add the subjects to the system.

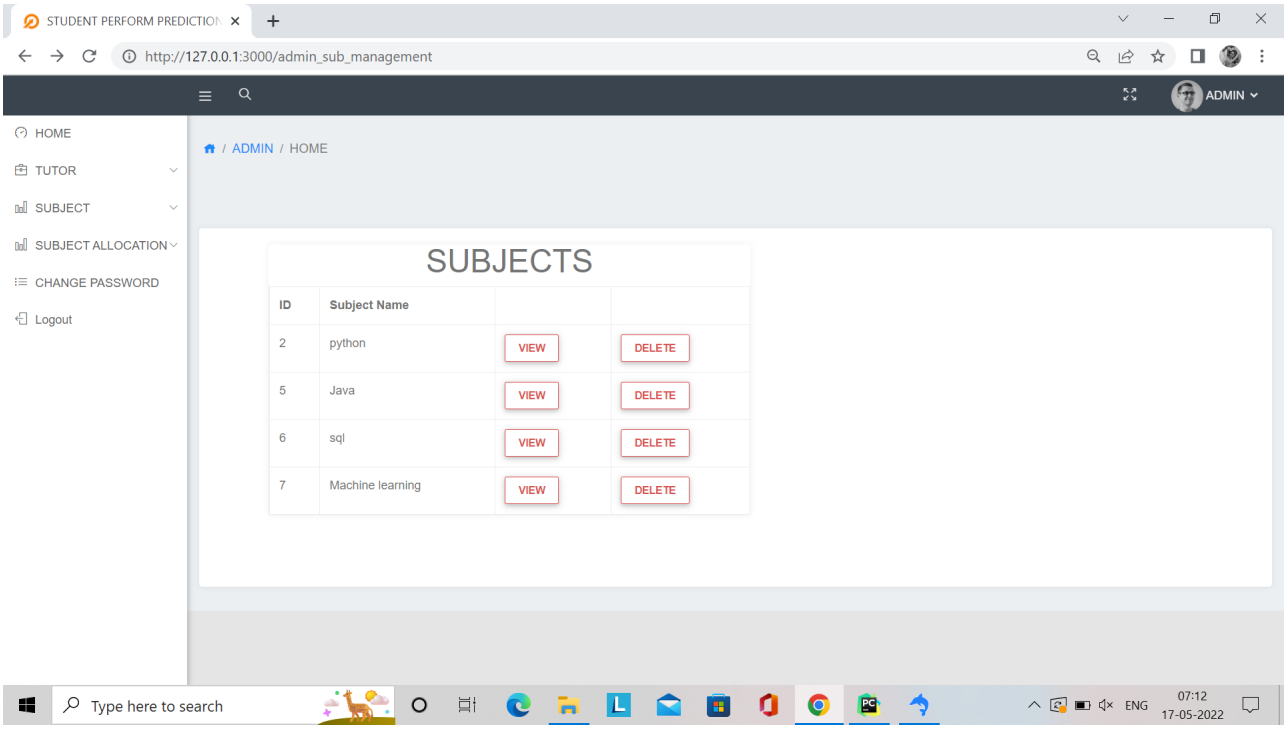

Fig. 7.6: View Subjects

Admin can view the added subjects through this page.Admin can view the performance predictions of each subject by clicking the view button correspond to the each subject and also admin can delete the subject by clicking the delete button.

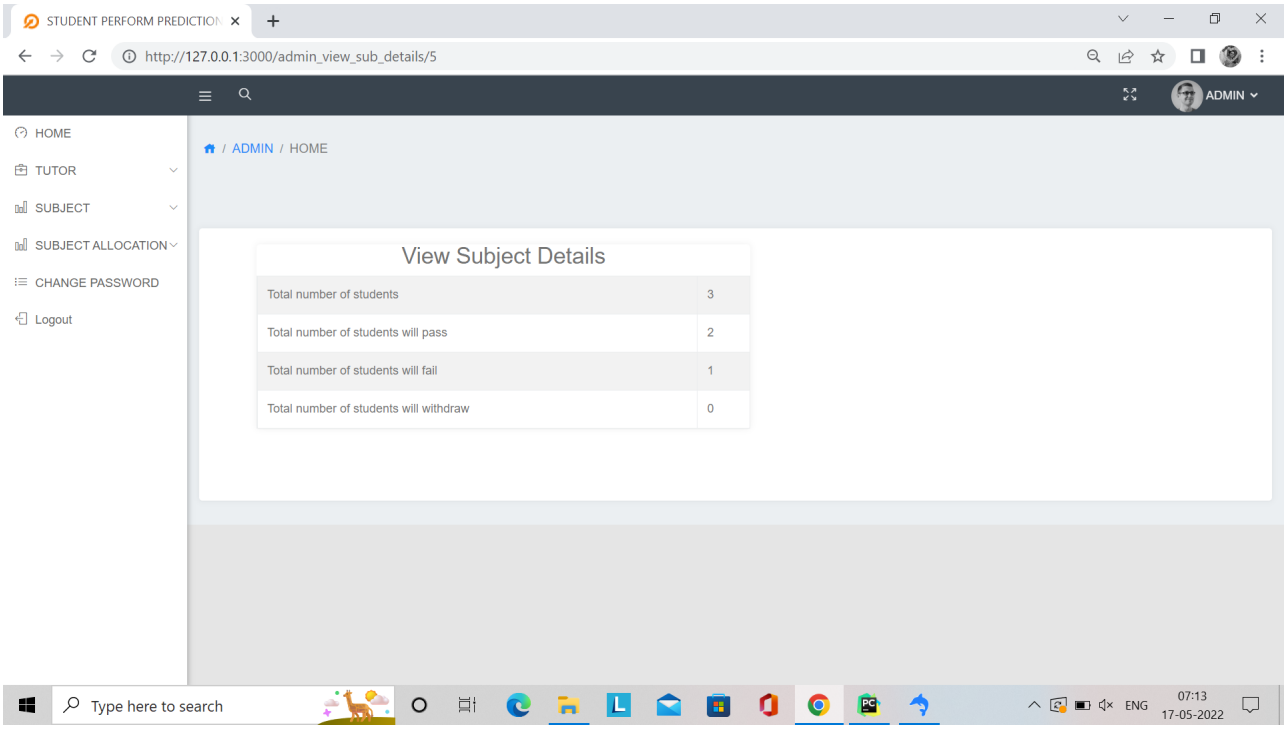

Fig. 7.7: View Predictions

Here, admin can view this page by clicking the view button in View subject page and here admin can view the overall predictions of each course.In this page it displays the total number of students registered for this subject,total number of students will pass in the subject,total number of students will fail in the subject and total number of students will withdraw the subject.

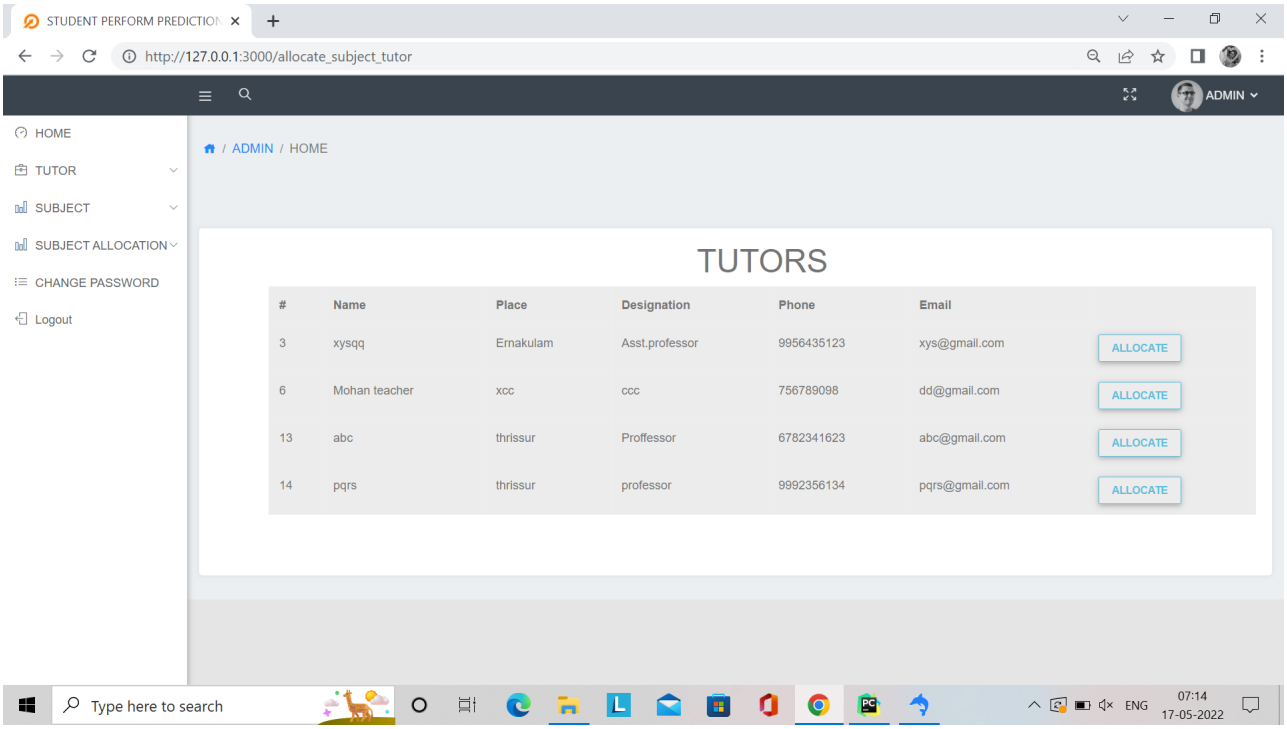

Fig. 7.8: Allocating subjects to the tutor

Here admin can allocate subjects to the tutors .Allocate button redirects to the next page where admin can allocate subject to each tutor. and then admin can choose the subjects that appears in the next page then by clicking the allocate button subjects are allocated to the tutor.

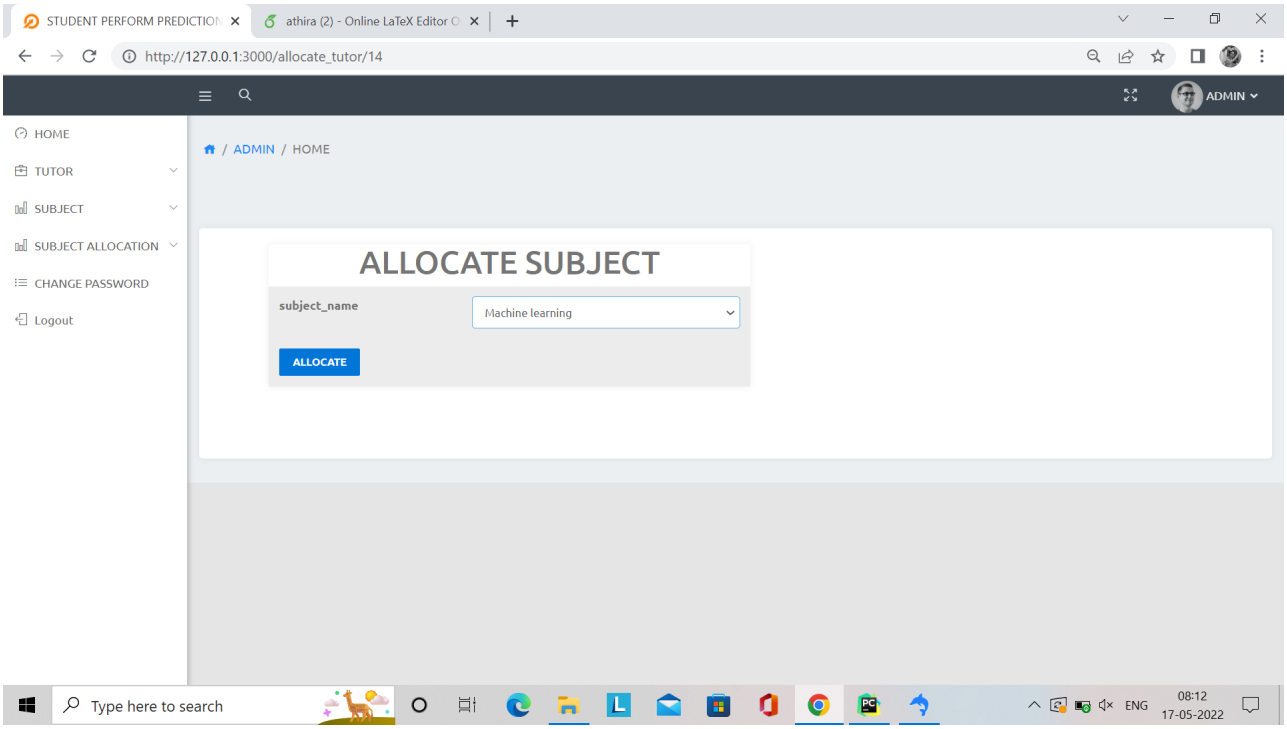

Fig. 7.9: Allocated subjects

Here, admin can choose the subjects from the drop down list and then by clicking the allocate button subjects are allocated to the tutor.

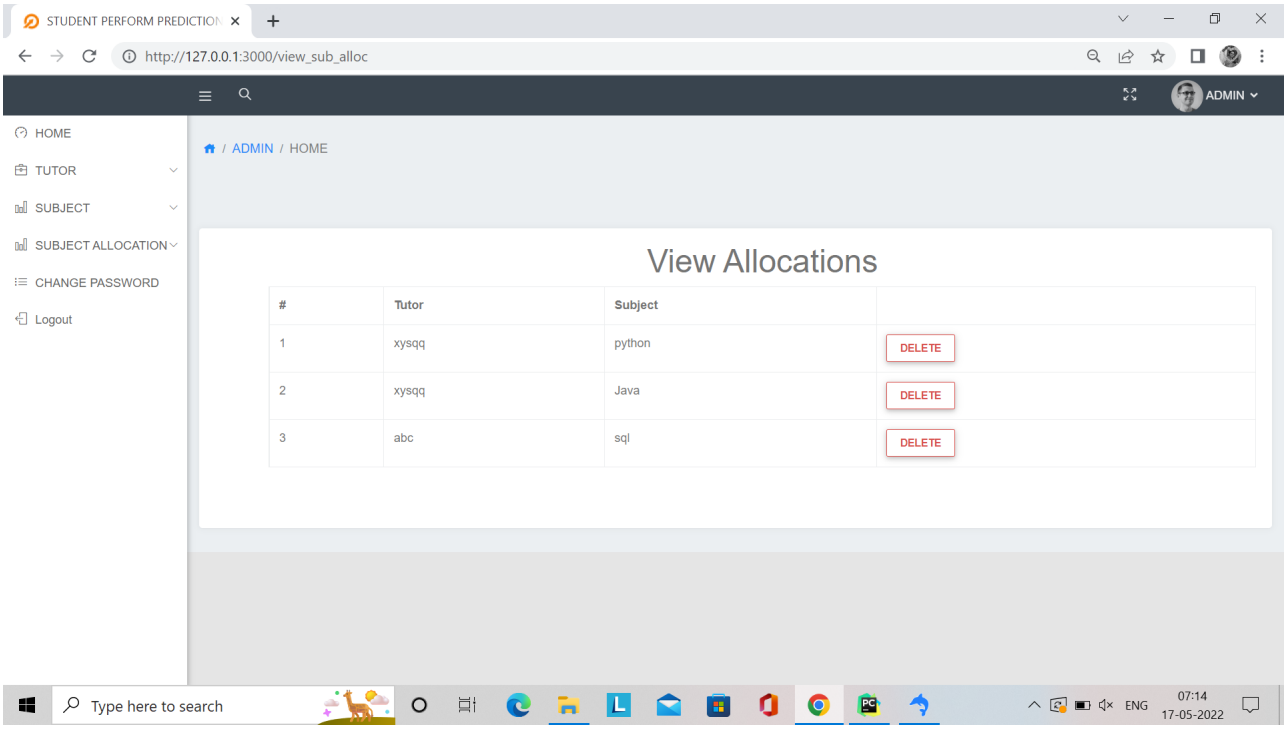

Fig. 7.10: View allocated subjects

It displays the details of subject allocations of each tutor.Delete buttons deletes the allocation of the corresponding tutor.

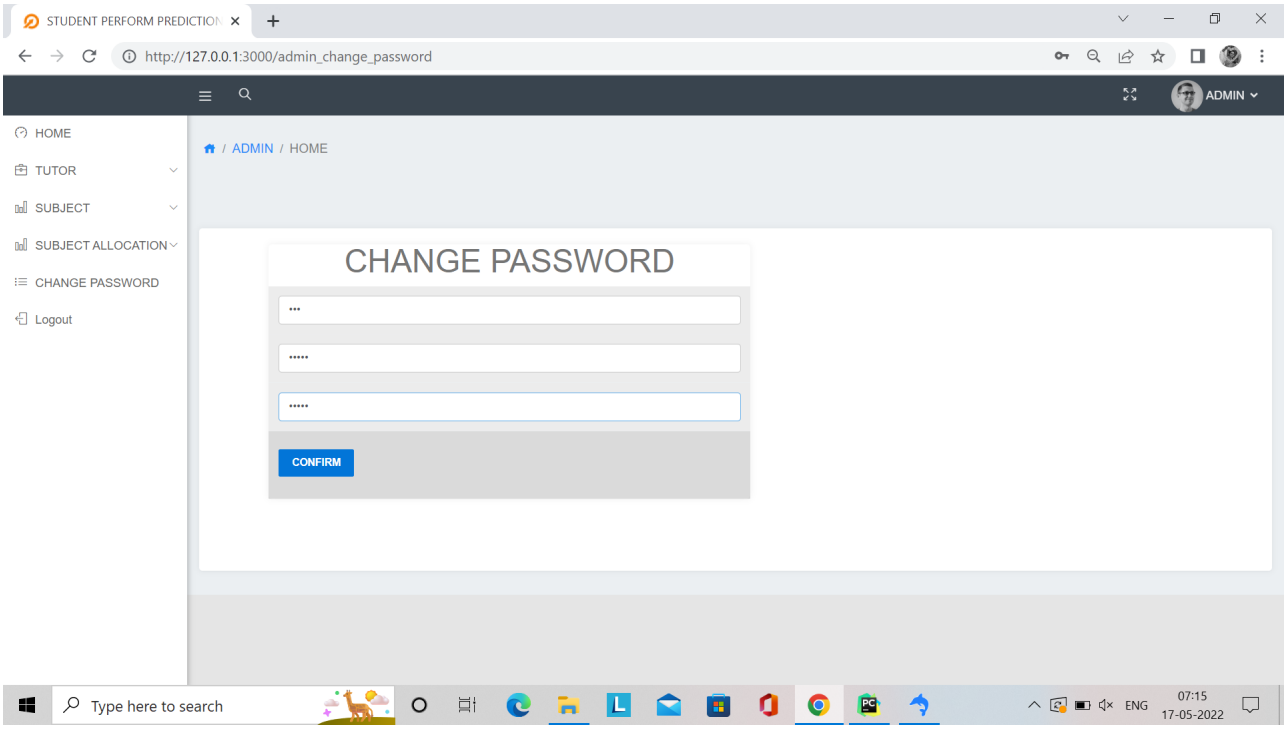

Fig. 7.11: Change admin password

Admin can change the password by entering required details and thereby clicking the confirm button.

Fig. 7.12: Tutor dashboard

Dashboard for tutor.

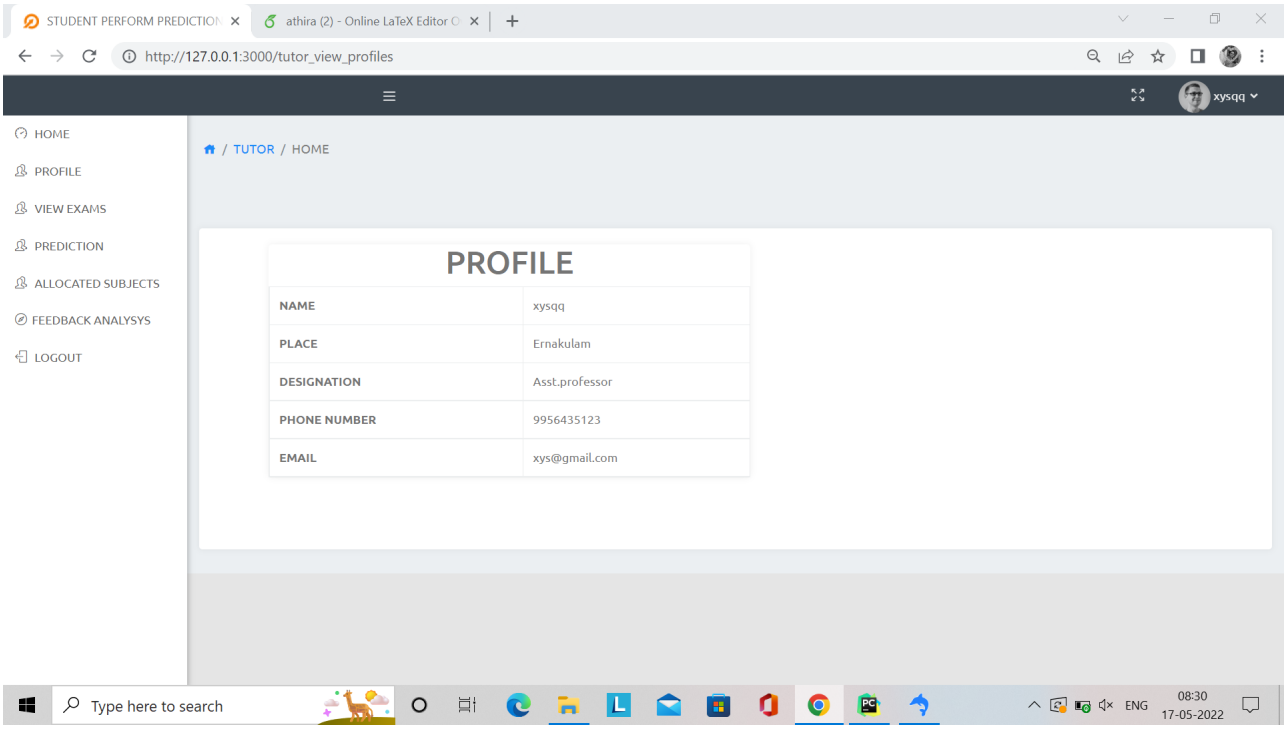

Fig. 7.13: View Profile of tutor

Here tutor can view the profile .

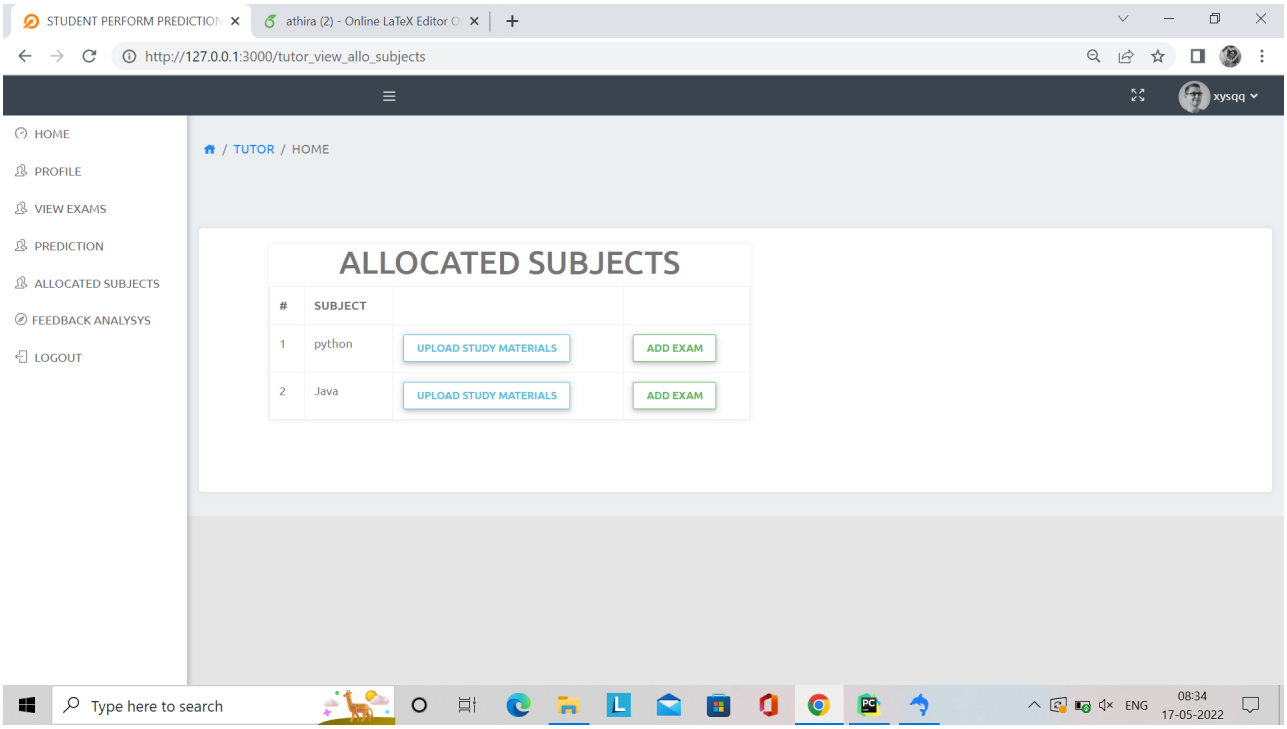

Fig. 7.14: View allocations

Here tutor can view his/her subject allocation.Upload study materials button redirects to the next page where tutor can upload study materials and Add exam button redirects to the next page where tutor can add new exam for the subject.

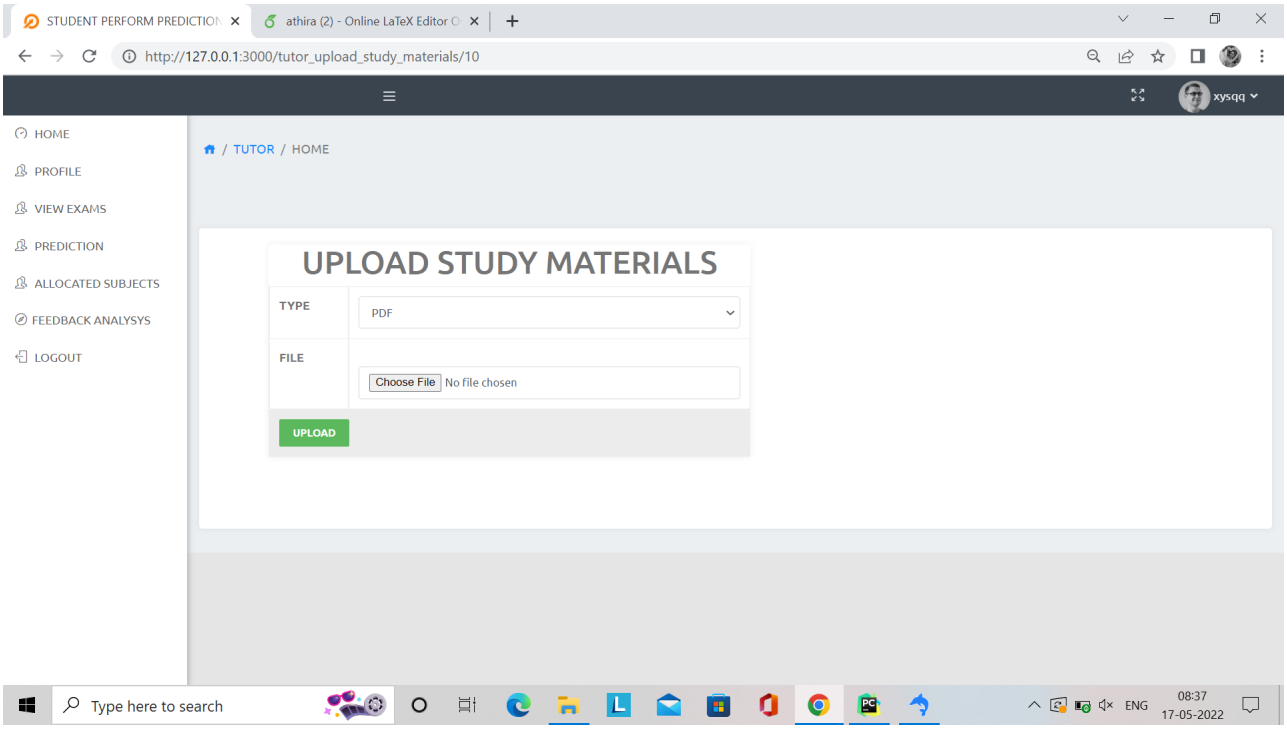

Fig. 7.15: Upload study materials

Here tutor can Upload the study materials .Tutor can choose the type of the material from the drop down list and then choose the file from the system ,upload button will upload the material.

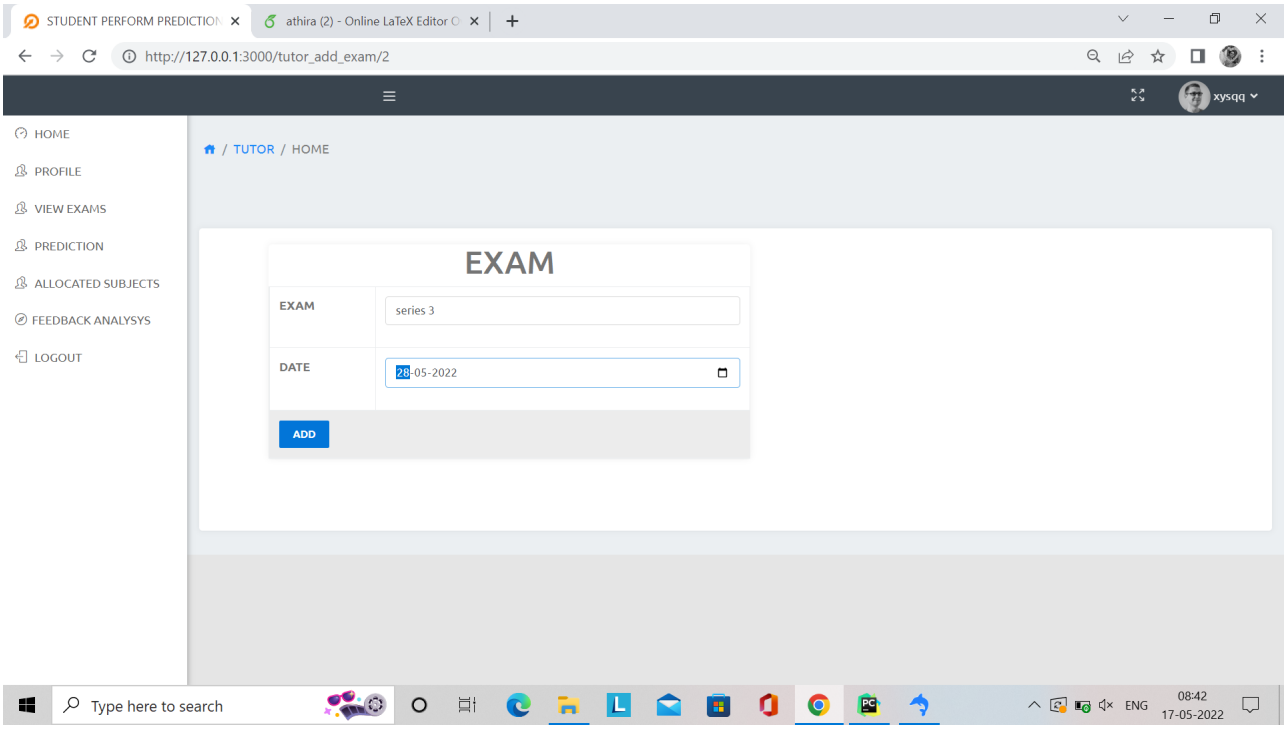

Fig. 7.16: Add exams

Here tutor can add exams.Enter the name of the exam and then schedule the date of the exam.Add button redirects to the page where tutor can add the questions for the exam.

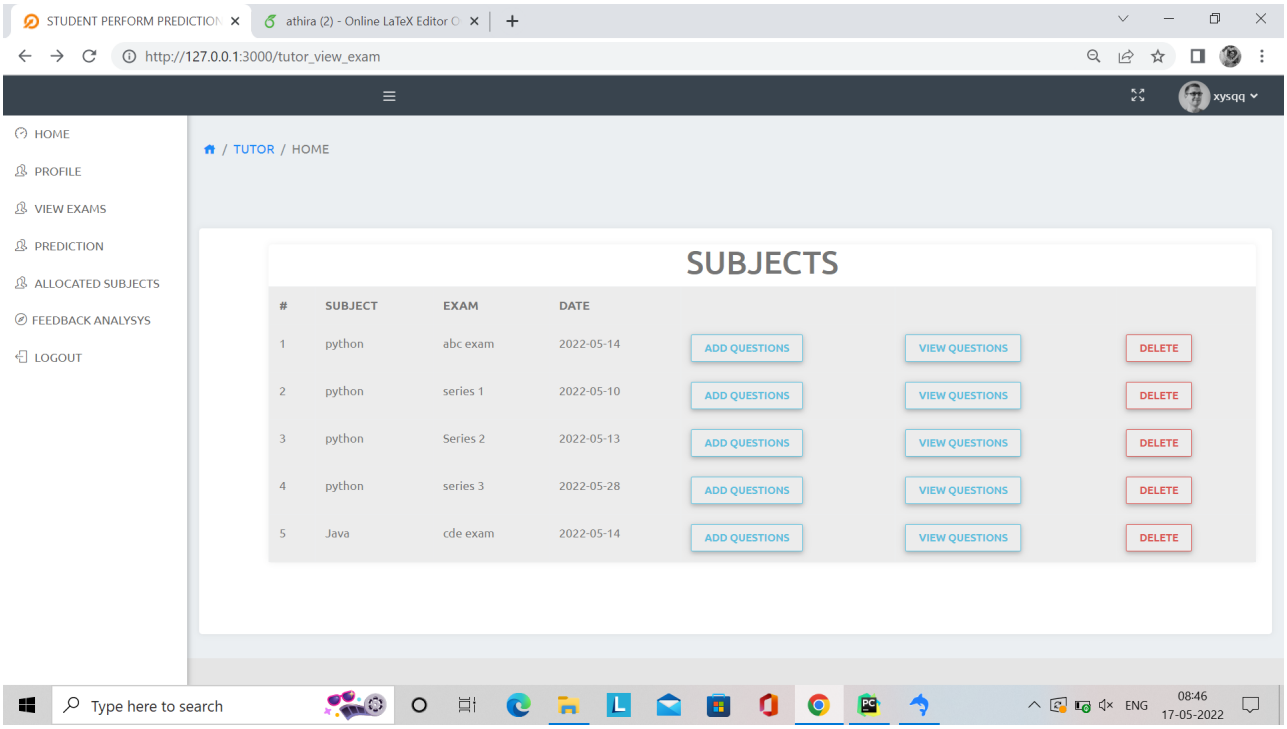

Fig. 7.17: Add exam questions

Here tutor can view the exams that are scheduled and then by clicking the Add questions button tutor can new questions for the exams.View questions button show all the questions.Delete button deletes the exam.

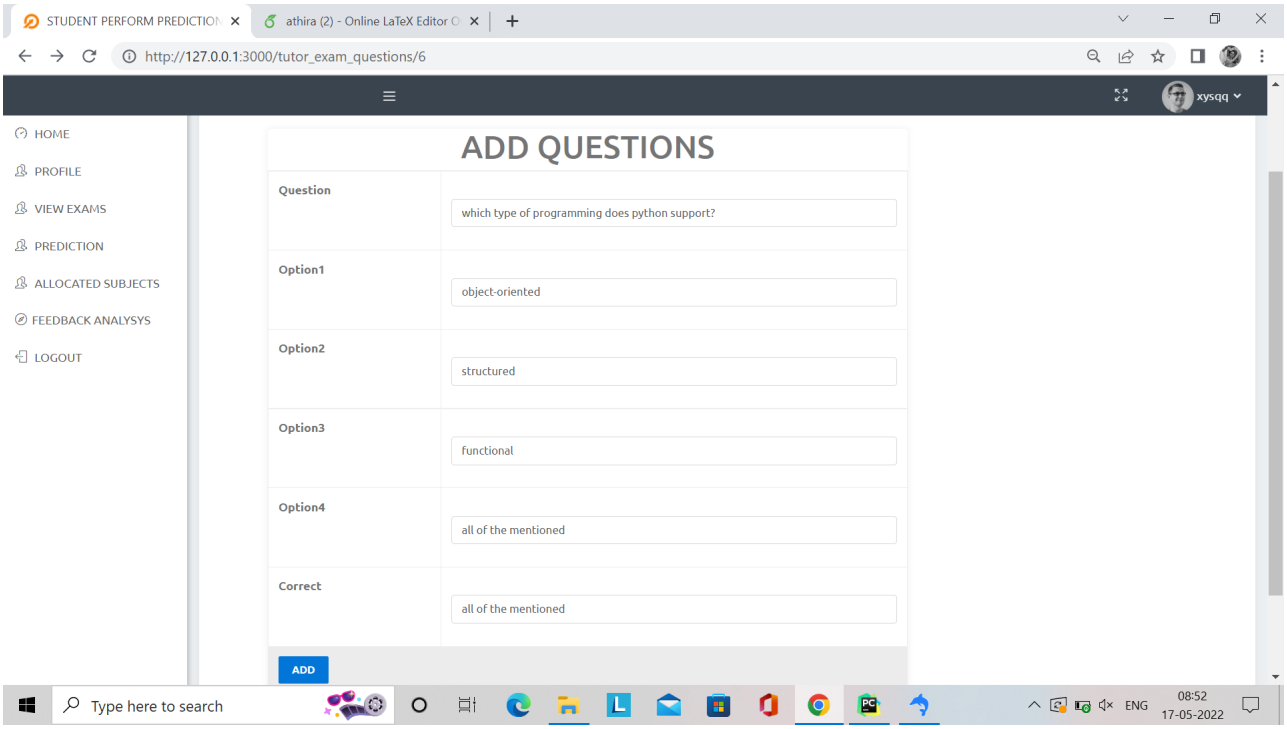

Fig. 7.18: Add exam questions

Tutor can add the new multiple choice questions.Enter the question and its four choices following the correct answer of the question. Add button add the question to the exam.

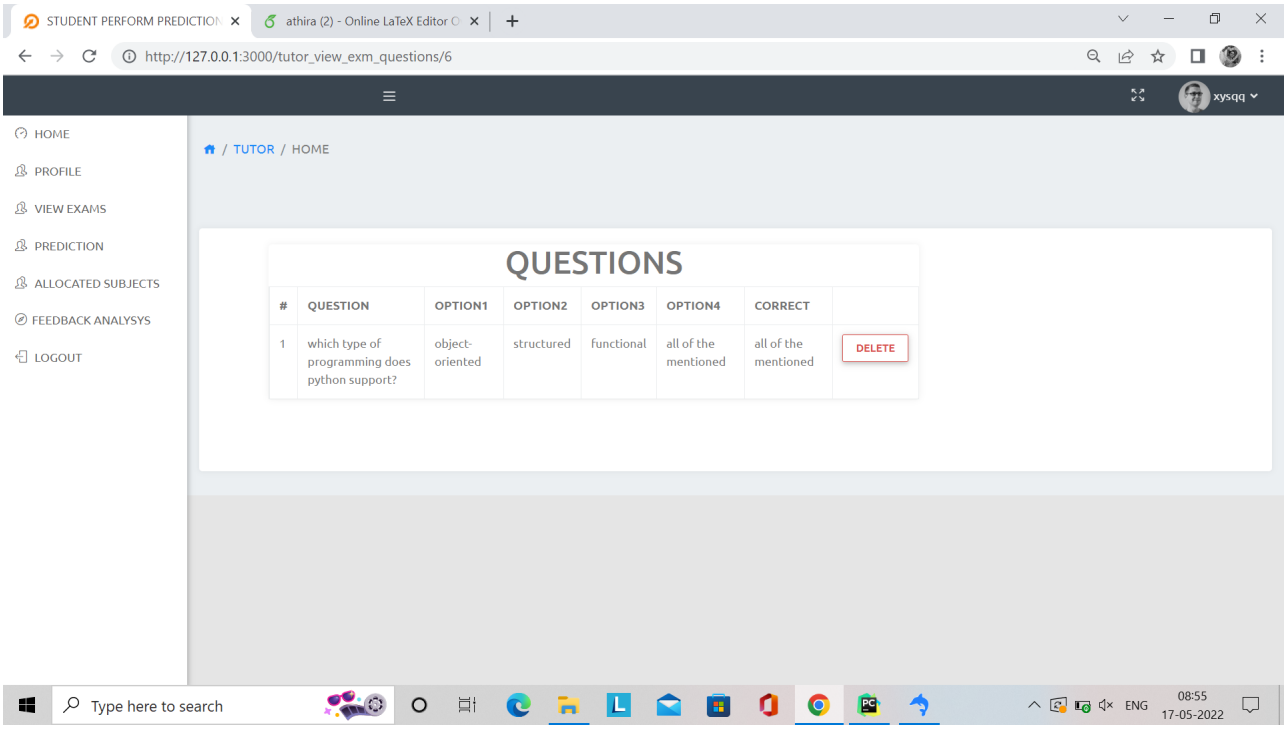

Fig. 7.19: View questions

In this page tutor can view the added questions and can delete the question by clicking the delete button.

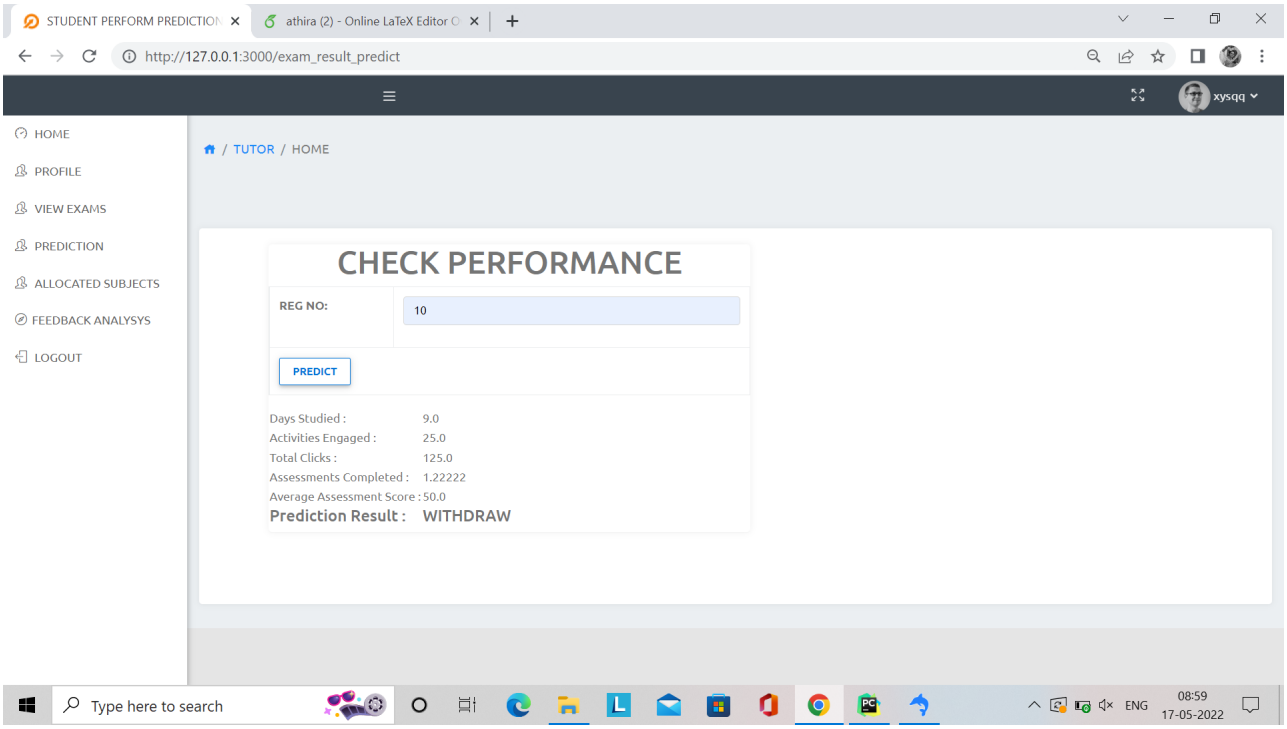

Fig. 7.20: Tutor view the student performance

In this page tutor can view the student performance by entering the student register number and thereby clicking the predict button it will show all the details of the student regarding to the performance prediction such as number of days studied studied, total number of activities engaged by the student, total number of clicks by the student in the study materials uploaded by the tutor,total number of assessments completed, average score for the assessment and the prediction result of the student.

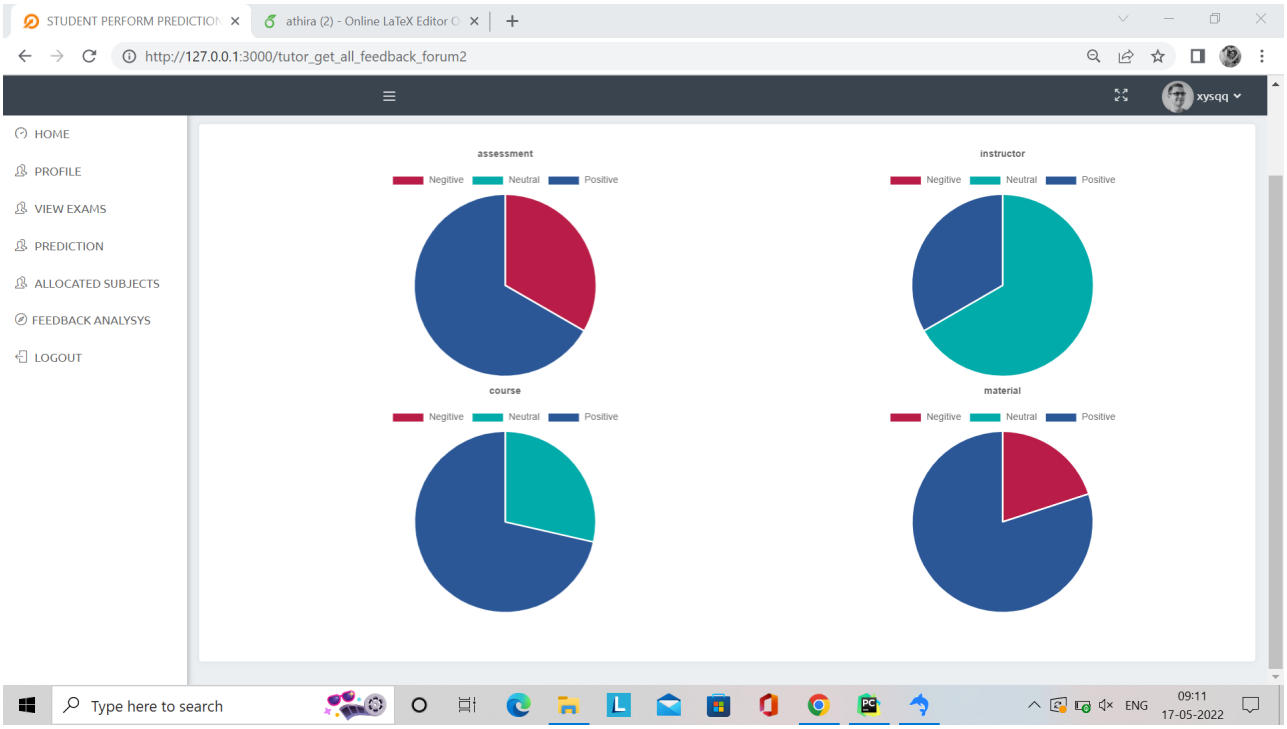

Fig. 7.21: Tutor view the student feedback

In this page tutor can view the feedback analysis of the student feedback.Here feedback are categorize to four different aspects such as assessment,instructor,course,materials and then the feedback are shown as pie chart with three different colours that implies negative,positive and neutral,Blue colour implies positive,red implies negative and cyan implies neutral feedback .

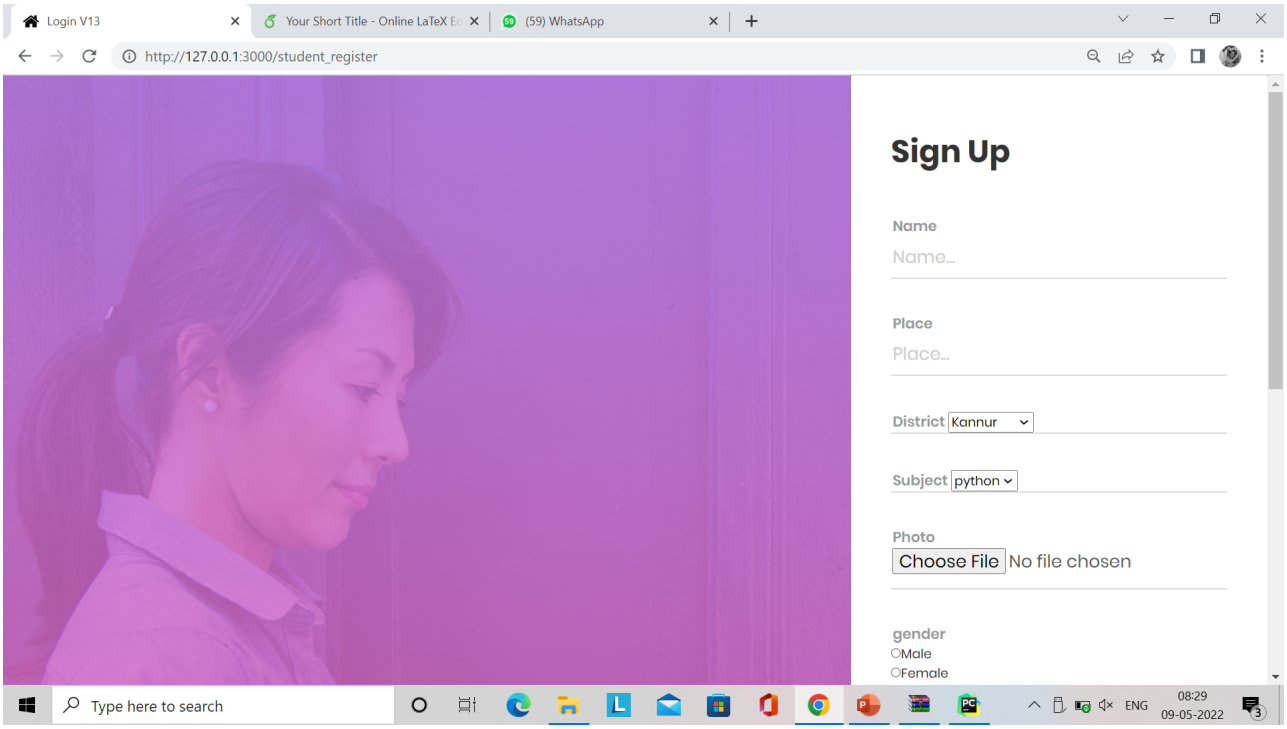

Fig. 7.22: Student registration page

Students can register into the system using this page.Sign in button redirects to the login page.

Fig. 7.23: Student dashboard

This page shows the student dashboard

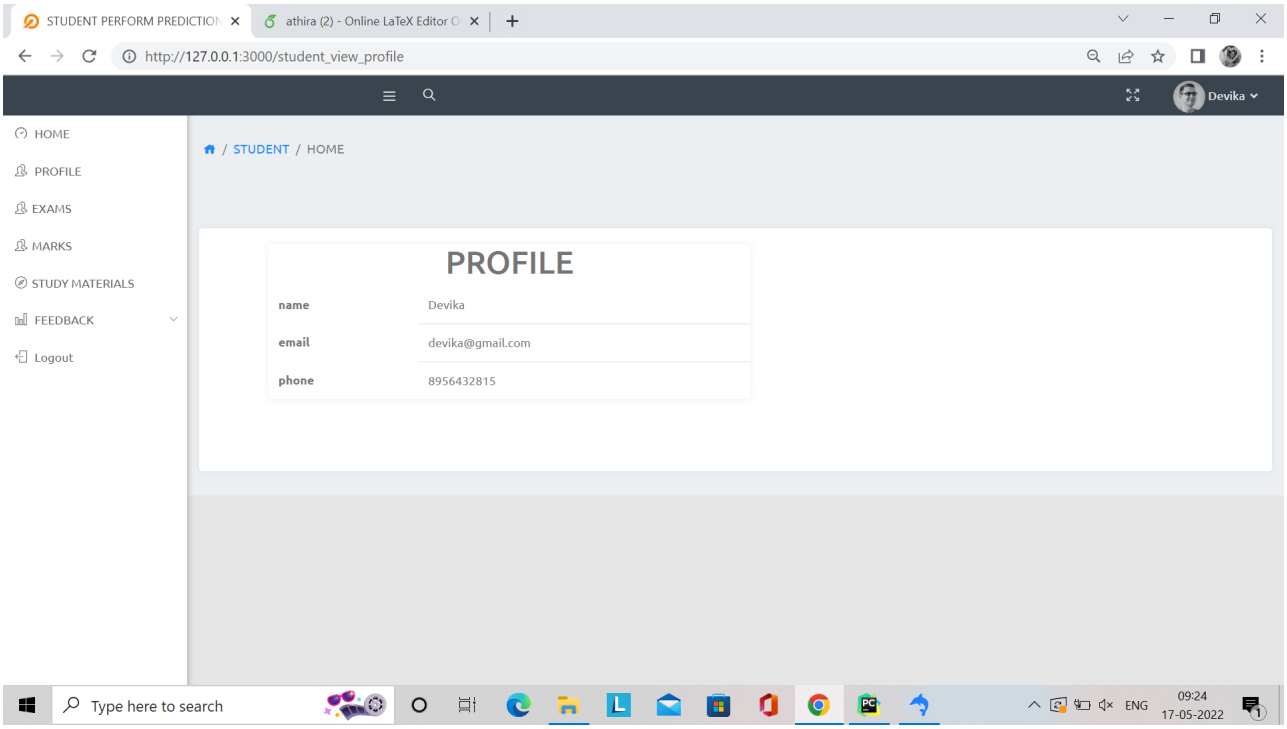

Fig. 7.24: View student Profile

Here student can view their profile.

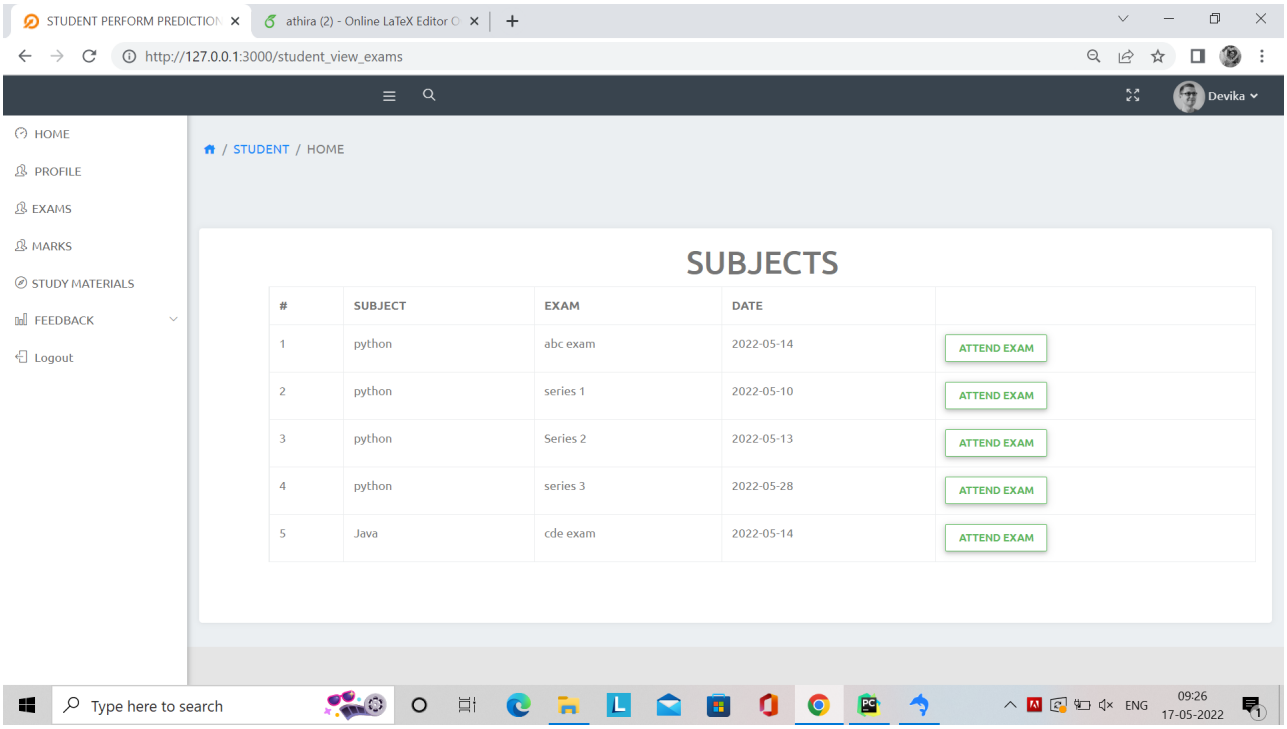

Fig. 7.25: View exams

In this page students can view the exams that are scheduled for exam subjects.Attend exam button redirects to the next page where student can attend can the exam.

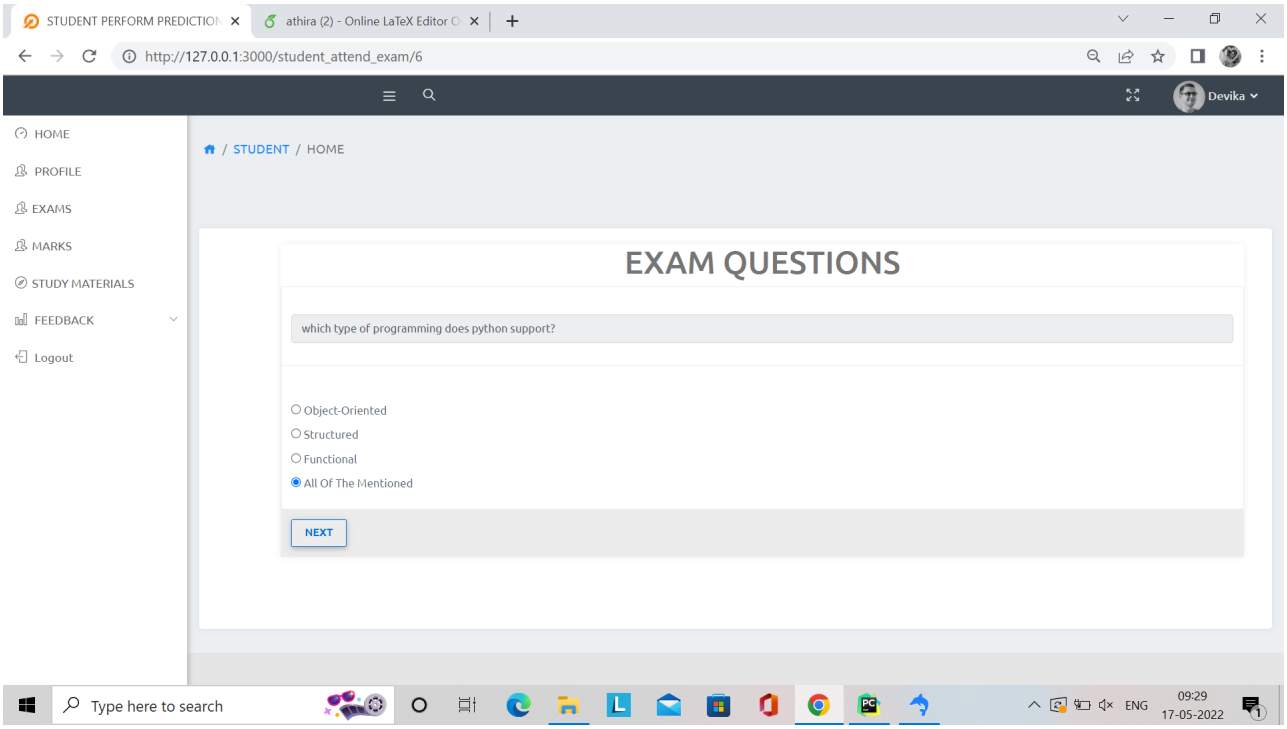

Fig. 7.26: Attend exams

Here student can attend the exams by choosing the answer and then clicks the next button to view the question at last student can exit the exam by clicking the exit button.

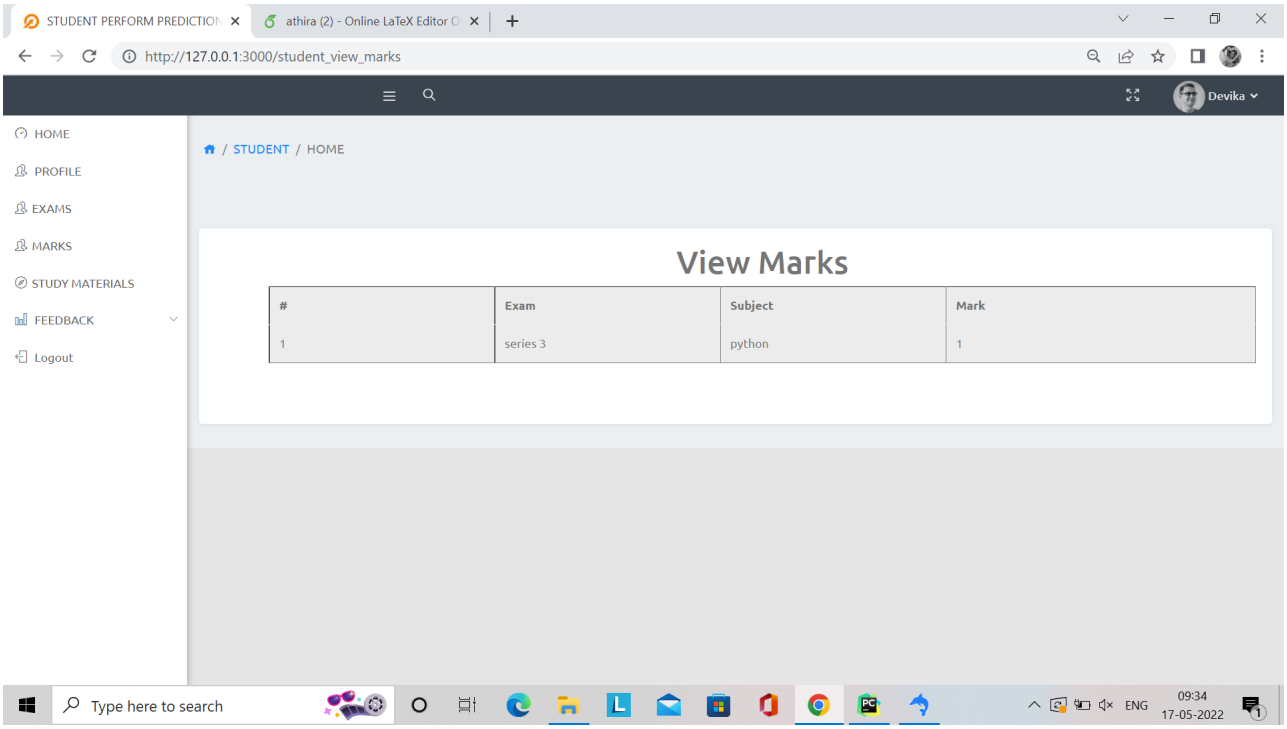

Fig. 7.27: View exam marks

In this page student can view the marks of the exams they attended.

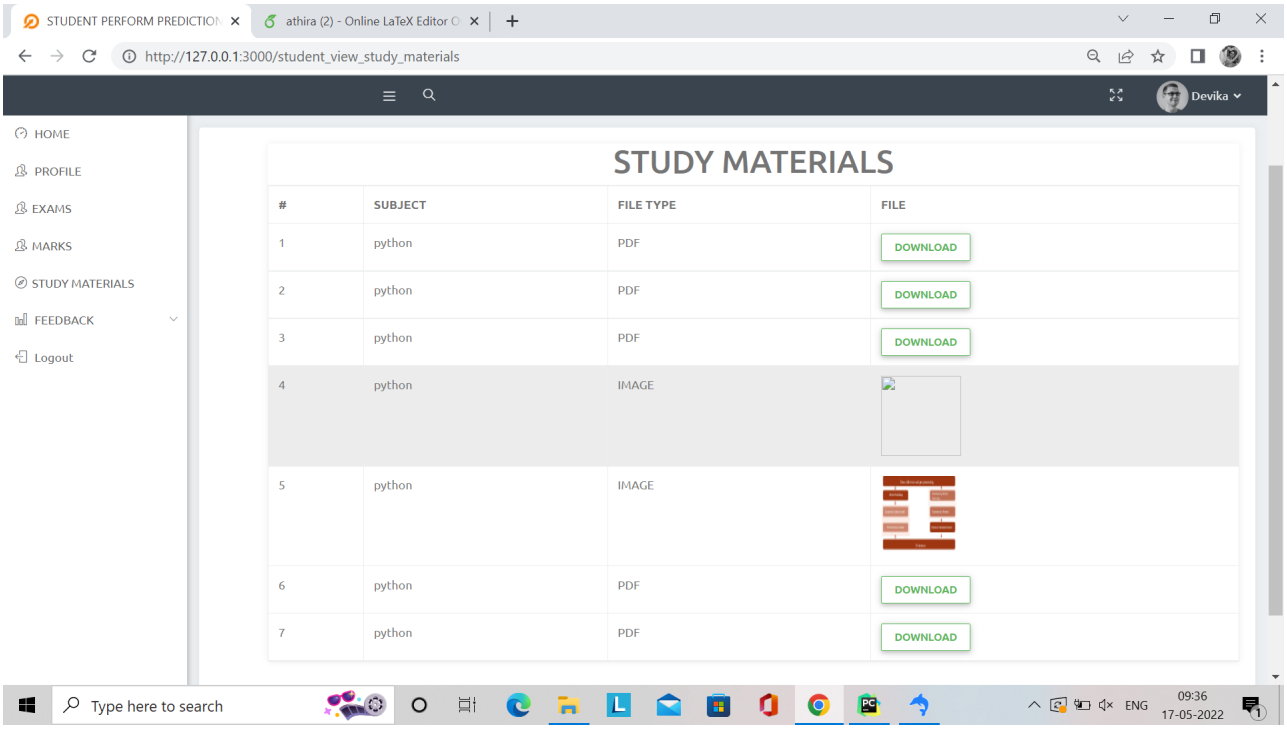

Fig. 7.28: View study materials

In this page student can view the study materials that are uploaded by the tutor.Pdf notes can be downloaded by using download button , images can be viewed by clicking on the image .

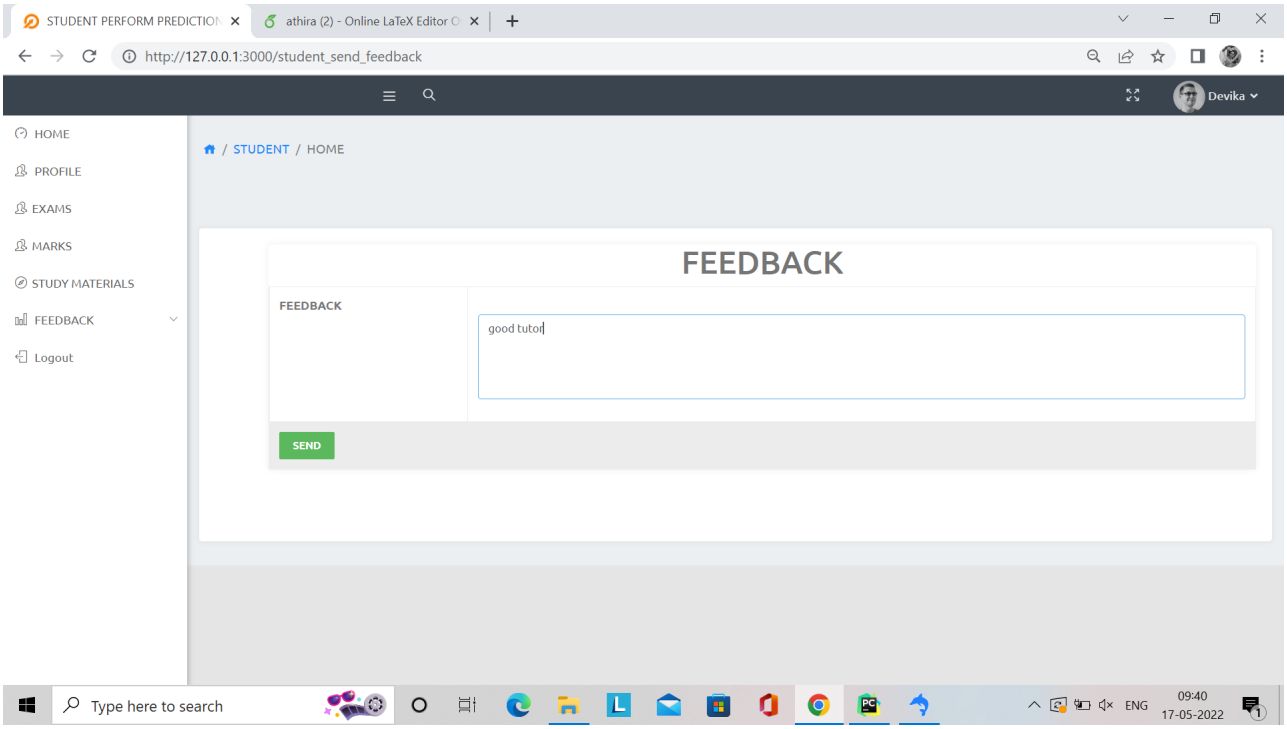

Fig. 7.29: Send feedback

Here students can send the feedback about the tutor,assessments,course and materials .

7.1 Evaluation Measures

Classification accuracy is the total number of correct predictions divided by the total number of predictions made for a dataset. As a performance measure, accuracy is inappropriate for imbalanced classification problems.The main reason is that the overwhelming number of examples from the majority class (or classes) will overwhelm the number of examples in the minority class, meaning that even unskillful models can achieve accuracy scores of 90 percent, or 99 percent, depending on how severe the class imbalance happens to be.Here precision and recall used as evaluation measures.

7.1.1 Precision

Precision attempts to answer the following question: What proportion of positive identifications was actually correct?Precision is defined as follows

$$\text{Precision} = \frac{TP}{TP + FP}$$

Student performance model got .8567 as precision value

7.1.2 Recall

Recall attempts to answer the following question:What proportion of actual positives was identified correctly?Recall defined as follows

$$\text{Recall} = \frac{TP}{TP + FN}$$

Student performance model got .8634 as recall value

So overall accuracy will be 85 percentage

CHAPTER 8
CONCLUSION

Student performance prediction and feedback analysis project for predicting students' final performance and feedbacks is useful for course providers,tutors and students.The final student performance predictive model revealed that student engagement with digital material has a significant impact on their success in the entire course.The findings' results also demonstrate that long-term students' performance achieves better accuracy.

The aspect sentiment analysis at the sentence/context level has achieved a good performance using VADER with few modifications.This work if applied in real-time can assist instructors to better manage the course through the detection of learners' attitudes . The immediate feedback about the course can be used to help instructors assess, adjust and improve the current and future iterations of the course.

CHAPTER 9
SCOPE FOR THE FUTURE ENHANCEMENT

The proposed system is highly flexible for future enhancement. This system can be extended to be used by any Open Universities, e-learning platforms ,colleges etc .To help the course providers to identify the student performance and to get the student feedback about the different aspects of the course.

When it comes to current project the things that will be handled in future include accurate and effective feedback analysis and also collects suggestions and opinion of the students about the course from the discussion forum to provide suggestion summary which helps the instructor to improve the course by using the advanced machine learning algorithm.

Future research direction involves the use of temporal features for predicting students' assessments grades model. With temporal feature time series analysis will be taken, might be more advanced machine learning will be utilized.

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[2] Omaima Almatrafi, Aditya Johri Department of Information Systems, King Abdulaziz University, Jeddah, Saudi Arabia,Department of Information Sciences and Technology, George Mason University, Fairfax,USA*"Improving MOOCs Using Information From Discussion Forums: An Opinion Summarization and Suggestion Mining Approach"* (IEEE),January 15, 2022

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