SNAGNAY ++

MAJOR PROJECT REPORT

Submitted in partial fulfillment of the requirements for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

by

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NEW DELHI – 110053

May 2022

CANDIDATE DECLARATION

It is hereby certified that the work which is being presented in the B. Tech Major Project Report entitled **"SNAGNAY ++"** in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** and submitted in the **Department of Computer Science & Engineering** of **Dr. Akhilesh Das Gupta Institute of Technology & Management**, **New Delhi (Affiliated to Guru Gobind Singh Indraprastha University, Delhi)** is an authentic record of our own work carried out during the period from **February 2022 to May 2022** under the guidance of **Dr Shipra Varshney, Assistant Professor.**

The matter presented in the B. Tech Major Project Report has not been submitted by us for the award of any other degree of this or any other Institute.

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This is to certify that the above statements made by the candidates are correct to the best of my knowledge. They are permitted to appear in the External Major Project Examination.

(Dr Shipra Varshney)	**(Dr. Anupam Kumar Sharma)**
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The B. Tech. Major Project Viva-Voice Examination of **(Samar Gupta, Chetan Singh, Osheen)** has been held on **……**

(Signature of External Examiner)

ABSTRACT

SNAGNAY ++ is the online examination system and the updated version of Snagnay. Snagnay++ is a web based examination system where examinations are given in online mode.The main goal of this online examination system is to effectively evaluate the student thoroughly through a totally automated system that not only reduce the required time but also obtain fast and accurate results. Snagnay++ is additionally add some of the required features in it with the help of that students can more easily give exams in online mode.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATION

EMS	Exam Management System
SIETTE	System of Intelligent Evaluation using Tests for Tele - Education
OTP	One-Time Password
ML	Machine Learning
MySQL	My Structures Query Language
UI	User Interface
API	Application Programming Interface
CSS	Cascading Style Sheet
OES	Online Examination System
CBTS	Computer Based Test System

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

SNAGNAY++ (Here Snag means ‘glitches and Nay means ‘No’ or ‘less’ and ++ is the updated version of Snagnay) so aiming to have less glitches as possible, Online Examination System is considered a fast-developing examination method because of its accuracy and speed. It also needs less manpower to handle the examination. Almost all organizations today, are managing their exams by online examination system, since it reduces student's time in examinations. Organizations can also easily monitor the progress of the student that they give through an examination. As a result of this, the result is calculated in less time. It also helps diminishing the need for paper.

According to today’s requirement Online examination system is significantly important to the educational institution to prepare the exams, saving the time and effort that is required to check the exam papers and to prepare the results reports. Online examination system helps the educational institutions to monitor their students and keep eyes on their progress. The best use of this system in Scholastic Institute and training centers because it helps in managing the exams and get the results in easy and an efficient manner.

1.2 MOTIVATION

Online examination system is one of the methods of taking exams which does not require any kind of piece of paper and pen. Speed and accuracy are the reason behind the fame of this method. Many different researches have focused on the subject of an online examination system this work can be represented as following SIETTE: Guzman and Conejos (2005) proposed an online examination system called System of Intelligent Evaluation using Tests for Tele-education (SIETTE). SIETTE is a web-based environment to generate and construct adaptive tests. It can be used for instructional objectives, via combining adaptive student self-assessment test

questions with hints and feedback. SIETTE supports secure login and portability features. On the other hand, the other features: resumption capability, multi-instructor, random question selection, random questions distribution and random choices distribution are missing.

EMS: Rashad Et. Al. (2010) proposed a web-based online examination system called Exam Management System (EMS). EMS manages the examination and auto-grading for students' exams and supports conducting exams, collects the answers, auto mark the submissions, and produce the reports for the test. EMS supports secure login, multi district, and portability features. However, the other features: resumption capability, random question selection, random questions distribution, and random choices distribution are missing.

Arvind Singh, Niraj Shirke, Kiran Shette 2011: The project evaluates the examiners by using the online examination system concept. The exams will be totally customization.

This system will check results automatically basing on students' answers.

CBTS: Fagbolaet. al. (2013) developed a Computer Based Test System (CBTS). CBTS is a web-based online examination system developed to address issues such as lack of timing flexibility for automation candidates log-off upon expiration of allowed time, result integrity, guaranty, stand-alone deployment, need for flexibility, robustness, designed to support the examination processes and overcome challenges framing the conduct of examination, auto- marking, auto- submission, and generation report of examination result.

1.3 OBJECTIVE

- Snagnay++ is a technology-driven way to simplify examination activities online. It is basically online examination platform.It aims to build a user-friendly system which makes it easier for the judge as well as the participants to create a healthy and secure environment for online education schema.
- Candidates can appear for the exam using any desktop, laptop, or mobile device with a browser. Exam results can be generated instantly for the objective type of

exam.It can simplify overall examination management and result in generation activity.

- ❖ It aims to achieve a less or no glitches examination system i.e, because it is names Snagnay (snag means glitches and nay means no).
- ❖ It conduct exam effortless, the functionality of snagnay++ software such as user friendly dashboard, detailed reporting, give feedback option, automatic instant results help in smooth conduction.
- ❖ It reduce exam anxiety amongst test takers as they can take exam any time of the day that preffered sleep/wake cycle and also take exam at specific exam date time.
- ❖ It reduce administrative burden , organizing and running exams online not only reduce an organization's administrative burden but also save cost and time. Online examination with its objective to make evaluation massive but simple, cost effective and faster has replace the pen paper-based assessment.

1.4 SUMMARY

Snagnay++ helps students of schools/ College/ Institutes to offer a quick and easy way to appear for the exam. It also provides the results immediately after the exam. The students has to enter valid user-id and password to attend the exam. This examination project provides time limit to finish the exam. The user can see their results after completing the exam. It works on python Django technology. It is easy to use because of very simple UI. It has feedback option from the user either teachers or students ,they can provide their feedback.

This system architecture consist of 3 sections:- frontend, backend and database server. For the design of the system we used interpreted programming language python, client-side Ajax techniques, in order to send and retrieve data from the server, CSS for the styling of web pages and the relational database management system MySQL.

Snagnay++ provide the functionality of gaze tracking feature.It is a process of measuring the point of gaze or the position of eyes and collecting the eye features from an individual and it is recorded in the form of data, which is comprehensive statistics such as fixation counts, first fixation, and fixation duration.

These recorded data can be analyzed by using visual analytic approaches to study and extract the eye features.It is there for catching the eye moment of the candidate and providing the additional support to the invigilator.

CHAPTER 2: LITERATURE SURVEY

A literature review revealed research and studies based on implementation of a variety technologies in college courses. “The internet has opened many possibilities for the classroom instruction but it can also be a barrier to teaching as well” (Bugeja, 2006). The new innovative technologies provide opportunities to improve learning and create a more exciting and motivating environment (Connors, 2007).

According to a case study by Ralph, Buskirk, and Schmidt (2007) regarding the use of online projects, students in favor of online projects indicated that the accessibility to the professor for fast and easy feedback was a great asset. Futhermore, the study revealed that when implementing technology students were concerned with the expense of the technology, the necessity for internet access, and the reliability of the technology.

Research on student perceptions and satisfaction with online courses provide insights to student reactions and satisfaction with implementation of an online exam. Hale (2007) found that student satisfaction surveys reveal that the most important reason for taking a distance education course is its convenience. In addition, Steinman (2007) indicated that “students’ perceptions of online courses can be negative if they experience large transactional distance with the instructor and with other students and can influence whether a student will stay in or drop out of a class.”

Steinman (2007) also found that “many students choose to enroll in online courses and the demand for online courses is high. Taking an online course can provide educational experiences that would otherwise be unavailable, especially for students who live in rural areas and do not have convenient access to schools.” Rowh (2007) also found that “online courses offer convenient learning and that students who take online classes are working hard. They're just doing it at their own pace, on a schedule and in a setting that works for them.”

Walker (2007) indicates that the “widespread availability of computers and the Internet provide considerable enrichment in terms of variety of material and formats for presentation over what was possible with the old correspondence courses”. The

Chronicle for Higher Education (2007) reported that a university stated that they “use electronic education to add on to their curriculum, not as the main basis.” This lends to the implementation of an online exam into a traditional classroom where students still get the face-to-face interaction with the instructor and classmates but the control of time and location to take their exams.

Patterson (2006) conducted a post-examination survey of students completing an online exam. The study “found a large majority of students were able to easily access the online exam, found the testing tool easy to use, and were able to complete the comprehensive exam with little difficulty. The future use of online assessment for the comprehensive exam was supported by 87% of respondents.” Furthermore, Patterson found that the “Web-based comprehensive exam procedures employed made it possible for students to take the exam at the time and place of their choosing”. The exam was able to reduce stress for students by giving them the ability to choose time and location of taking the exam according to Patterson. Patterson (2006) also acknowledged that the “challenges to test items security and the creation of procedures to minimize the possibility of collaboration and cheating on this type of "high-stakes" examination remains to be fully met.

A study of online exams by Luecht (2001) “identified six challenges of Web based testing:

1. test-taker identity and testing materials security risks,
2. measurement of problem-solving and complex skills,
3. implementation of advanced item selection and test construction algorithms,
4. management and processing of test response data,
5. deployment of "high-bandwidth" multimedia tests and,
6. optimization of the "usability" of Web based testing interfaces.” Luecht (2001) also identified several “strengths of Web-based testing including rapid test development and deployment, around-the-clock test access, prompt results reporting, and decreased need for test administration personnel.”

A study by Hay (2002) reports that an online exam is one in which questions are answered on, stored on and often marked by computers. Hay discovered the following keys to taking an online exam:

1. Do not be tempted to access software other than that prescribed during the exam.
2. Sometimes attempting to use other packages interferes with the exam software, thereby jeopardising your answers.
3. Even if you have finished your exam and are waiting to leave it is unwise to use the computer in any ways other than those required for the exam.

CHAPTER 3: DESCRIPTION ABOUT PROJECT

3.1 PROBLEM STATEMENT

Since the traditional Examinations systems have many drawbacks such as time consuming, Difficulty of analyzing the test manually, more observers are required to take exam of many students, Results are not accurate since calculations is done manually, the chance of losing exam's result is higher in current systems, checking of result is time consuming since it done manually, Limitation of no of student can give examination at a time. with the development of information technology and use it in an orderly and properly helps to overcome the existing error in the manual system. Online examination system saves the exams information in a database, and this make it an easier way to give exam teachers can add their exams rules, and student can give exam in a totally automated system.

3.2 PROPOSED MODEL

Online Examination System (Snagnay++) saves the exams information in a database, teachers (or admins) can add/delete questions, set the correct answer, specify the exam period, register students, delete students, show questions for students randomly, calculate and show the final result for students. Also for security the features of OTP verification, ML video verification is added and also email and phone validity will be check.

3.3 SYSTEM DESIGN

Online Examination System (Snagnay++) is a web-based application system used to create and evaluate examination. This system architecture consists of 3 sections: - frontend, backend and database server. For the design of the system we used interpreted programming language Python, client-side Ajax techniques, in order to send and retrieve data from the server, CSS for the styling of web pages and the relational database management system MySQL. The whole system is divided into three modules: administrator module, teacher and student module.

3.3.1 Administrator Module

The admin can control the execution of the whole system where he/she can add courses, can modify teachers and students' data according to use. The main controller of whole Snagnay++.

3.3.2 Teacher Module

The teacher module includes test Management module, automatic organizing of examination paper, examination-paper management, paper analysis, result and so on. The teacher can register and use Snagnay++ to take exams and give the instant results by adding courses and questions.Teacher also have the option to send us feedback regarding the exam.

3.3.3 Student Module

The student module has login option to attend the exam and after completing and submitting the exam the result is immediately generate. The student can take exams and get the marks instantly and can know about the courses he/she is enrolled into etc. Students also have the option to send us feedback in our email id.

3.4 DATABASE DESIGN

To fully use MySQL server technology, it is essential to make sure that the database is well designed. The files names chosen to label all the tables created within the database attempt to reflect the table's purpose and, therefore, contribute to well-design system. The initial step in designing was to decide, according to the requirements and specifications of the project, which tables should be created, and what type of information each one should hold.

3.5 FUNCTIONALITY

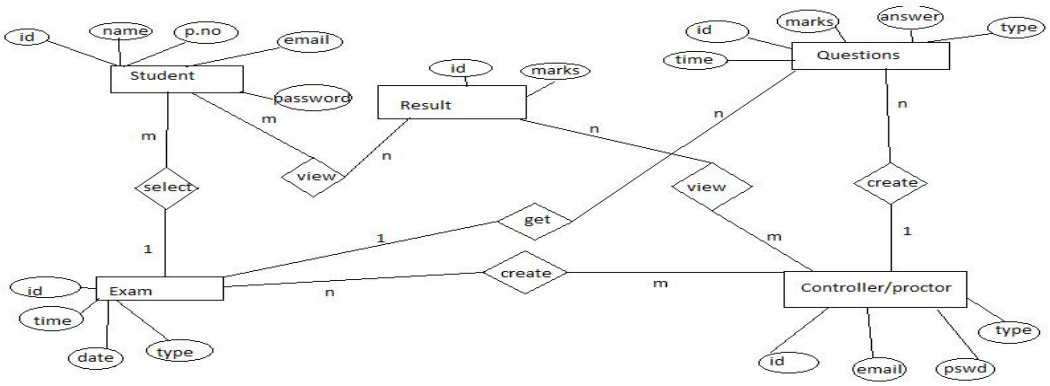

Figure 3.5: ER Diagram

From this ER Diagram we can know the functionality which we are going to achieve.

Our Model will include the facility of Admin, Teacher and Student, Contact of the admin.

- ADMIN: The admin can control the execution of the whole system where he/she can add courses , can modify teachers and students data according to use.
- TEACHER: The teacher can register and use Snagnay++ to take exams and give the instant results by adding courses and questions .
- STUDENT: The Student can take exams and get the marks instantly and can know about the courses he/she is enrolled into etc.
- CONTACT :In case of any glitch or issue one can immediately mail/dial numbers to get hassle free solution.

3.5.1 Admin Activities

Admin activities contain the following things:

1. Add teachers and Students based upon their registrations.
2. Can modify/ delete the data related to teachers and students.
3. Can decide the number of courses and update them according to the need.

4. Can Set the answers and questions also for additional reviews.

3.5.2 Students Activities

Students contain these main operations:

1. Register Themselves: include inserting the information of each student (student name, email, and password) to complete the registration process.
2. Give Exam.
3. Get the scores for particular exams.
4. Give Feedback

3.5.3 Teachers Activities

Teachers contain these main operations:

1. Register Themselves: include inserting the information of each teacher (student name, email, and password) to complete the registration process. And only after getting approval by admin he/ she can join the institute to take the exam.
2. Set Exam, add questions.
3. Set the answers for particular exams.
4. Give Feedback

3.6 FEATURES OF SNAGNAY++

Snagnay++ aim to provide the user friendly environment to the user and it has some features which is very useful for any online examination system. There are following features :

- User Friendly UI - Snagnay++ can be easily run in any device (laptop,mobile,tablet) and user can easily understand all the functionality of this application
- Feedback Feature - The email for feedback from the user either teacher or student is received and they can provide their feedback by contact us page and mailing them to official mail ID of Snagnay++.

- Gaze Tracking Feature - It is a process of measuring the point of gaze or the position of eyes and collecting the eye features from an individual and it is recorded in the form of data, which is comprehensive statistics such as fixation counts, first fixation, and fixation duration. These recorded data can be analyzed by using visual analytic approaches to study and extract the eye features.It is there for catching the eye moment of the candidate and providing the additional support to the invigilator.

3.7 SECURITY

- The Login panel achieves this by using validation of ID and Passwords.
- The additional feature of OTP verification is cherry on cake.
- Additionally the machines learning face recognition , voice recognition etc .will be there to recognize the right student and teacher to enter into the Examination System.
- Later on More Security features will be there like gaze tracking, video monitoring , etc.

3.8 NATURE OF THE PROJECT

TABLE 1.1: Nature of project

Software	**Hardware**
Windows XP and others	Processor:Atleast 2.0 above
Visual studio code	Ram:2GB or more
Google chrome	Hard disk: 20GB free Space or more
SQLite	

3.9 TOOLS AND PLATFORM

3.9.1 Python and its basic functions

Python is a high-level, interpreted, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation.Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-

oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library.Guido van Rossum began working on Python in the late 1980s as a successor to the ABC programming language and first released it in 1991 as Python 0.9.0.

Sublime Text is a shareware cross-platform source code editor. It natively supports many programming languages and markup languages. Users can expand its functionality with plugins, typically community-built and maintained under free-software licenses. To facilitate plugins, Sublime Text features a Python API.

1. NUMPY

Numpy is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.The ancestor of NumPy, Numeric, was originally created by Jim Hugunin with contributions from several other developers. In 2005, Travis Oliphant created NumPy by incorporating features of the competing Numarray into Numeric, with extensive modifications. NumPy is open-source software and has many contributors. NumPy is a NumFOCUS fiscally sponsored project.

NumPy targets the CPython reference implementation of Python, which is a non-optimizing bytecode interpreter. Mathematical algorithms written for this version of Python often run much slower than compiled equivalents due to the absence of compiler optimization. NumPy addresses the slowness problem partly by providing multidimensional arrays and functions and operators that operate efficiently on arrays; using these requires rewriting some code, mostly inner loops, using NumPy.

Using NumPy in Python gives functionality comparable to MATLAB since they are both interpreted,[21] and they both allow the user to write fast programs as long as most operations work on arrays or matrices instead of scalars. In comparison, MATLAB boasts a large number of additional toolboxes, notably Simulink, whereas NumPy is intrinsically integrated with Python, a more modern and complete programming language. Moreover, complementary Python packages are available; SciPy is a library that adds more MATLAB-like functionality and Matplotlib is a plotting package that provides MATLAB-like plotting

functionality. Internally,both MATLAB and NumPy rely on BLAS and LAPACK for efficient linear algebra computations.

Python bindings of the widely used computer vision library OpenCV utilize NumPy arrays to store and operate on data. Since images with multiple channels are simply represented as three-dimensional arrays, indexing, slicing or masking with other arrays are very efficient ways to access specific pixels of an image. The NumPy array as universal data structure in OpenCV for images, extracted feature points, filter kernels and many more vastly simplifies the programming workflow and debugging.

2. PANDAS

Pandas is a fast,powerful,flexible and easy to use open source data analysis and manipulation tool,built on top of the Python programming language.Pandasis a Python library for data analysis.Started by Wes McKinneyin 2008 out of a need for a powerful and flexible quantitative analysis tool,pandas has grown into one of the most popular Python libraries.It has an extremely activecommunity of contributors.Pandas is built on top of two core Python libraries—matplotlib for data visualization and NumPy for mathematical operations. Pandas acts as a wrapper over these libraries,allowing you to access many of matplotlib's and NumPy's methods with less code.For instance,pandas'.plot combines multiple matplotlib methods into a single method,enabling you to plot a chart in a few lines.Before pandas,most analysts used Python for data munging and preparation,and then switched to a more domain specific language like R for the rest of their workflow.Pandas introduced two new types ofobjects for storing datathat make analytical tasks easier and eliminate the need to switch tools:Series,which have a list-like structure,and Data Frames,which have a tabular structure.

3. Dlib

Dlib is a general purpose cross-platform software library written in the programming language C++.Its design is heavily influenced by ideas from design by contract and component-based software engineering.Thus it is,first and foremost,a set of independent software components.It is open-source software released under a Boost Software License.Since development began in 2002,Dlib has grown to include a wide variety of tools.As of 2016,it contains software components for dealing with networking,threads,graphical user interfaces,data structures,linear algebra,machine learning,image processing,data mining,XML and text parsing,numerical optimization,Bayesian networks,and many other tasks.In recent years,much of the development has been focused on creating a broad set of statistical machine learning tools and in 2009 Dlib was published in the Journal of Machine Learning Research.Since then it has been used in a wide range of domains

CHAPTER 4: RESULTS AND DISCUSSION

4.1 RESULT SCREENSHOTS

4.1.1 Student login of Snagnay:

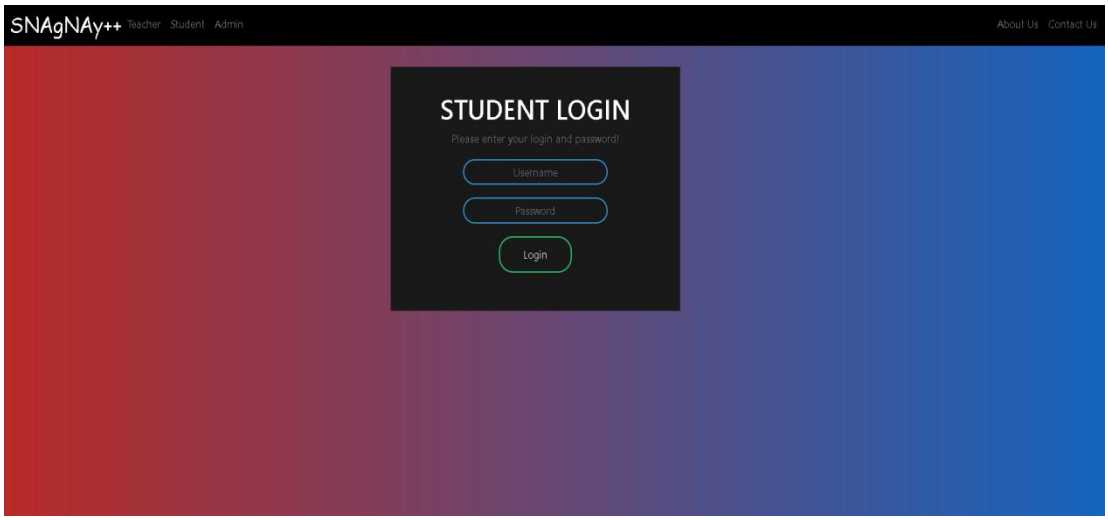

Figure 4.1.1: Student Login Page

4.1.2 Student page:

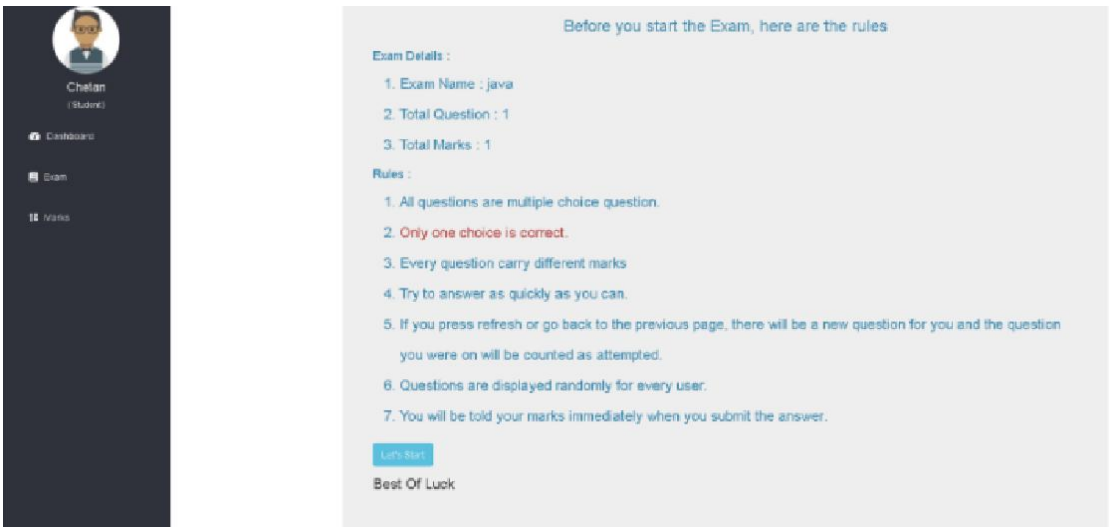

Figure 4.1.2: Student page where students can give the exam

4.1.3 Feedback Page:

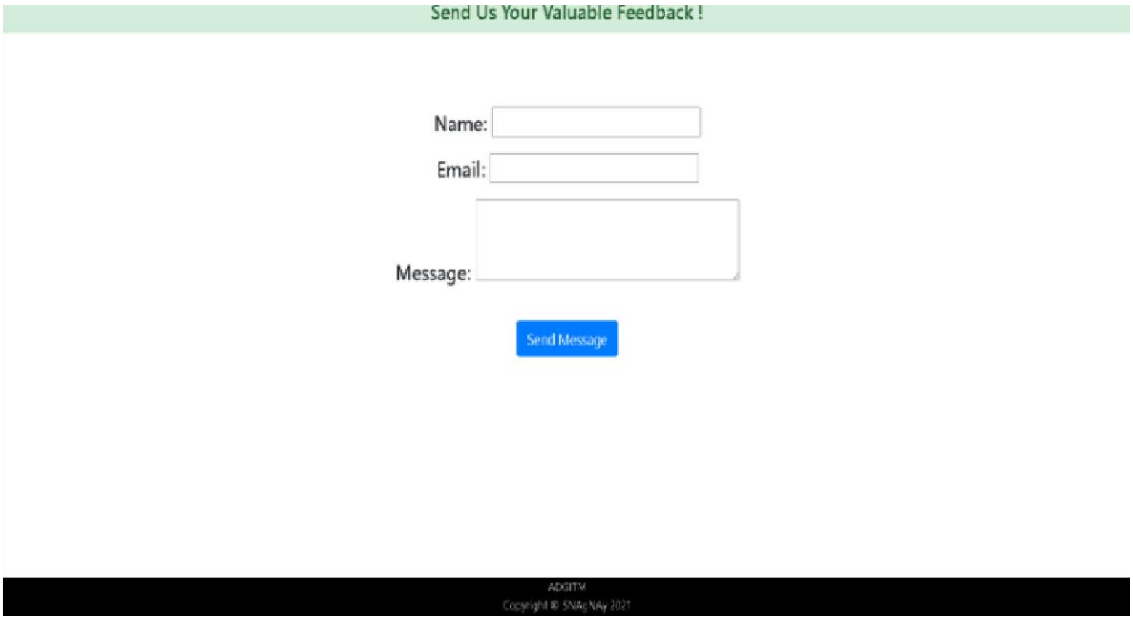

Figure 4.1.3: Feedback Page

4.1.4 Student Exam Page:

Figure 4.1.4: Student Exam Page

4.1.5 Dash-Board of snag nay in Mobile:

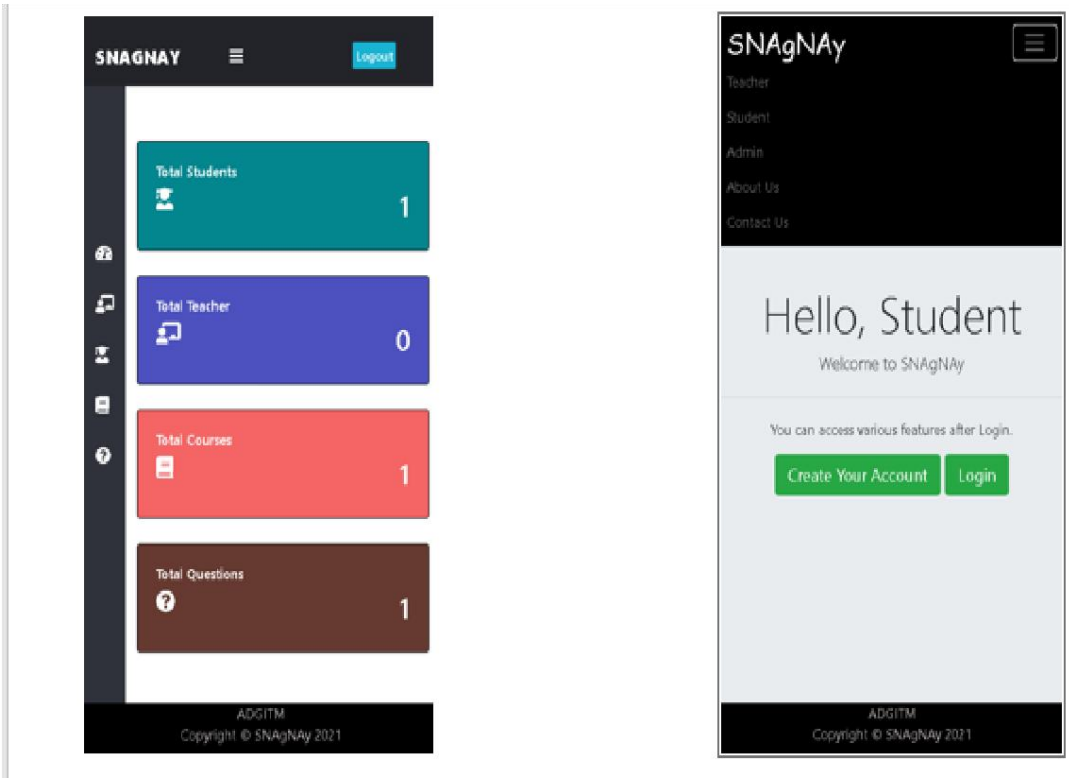

Figure 4.1.5:Dash-board of snagnay in mobile

4.1.6 Email Received for Feedback

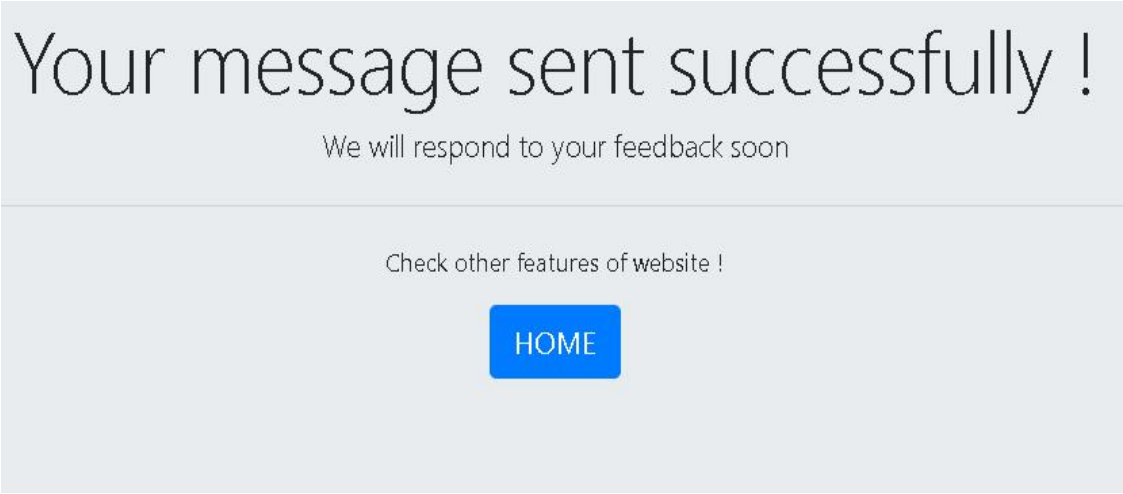

Figure 4.1.6 : Successfully message

Figure 4.1.6 : Email Message

4.1.7 Gaze Tracking:

Figure 4.1.7: Gaze image(1)

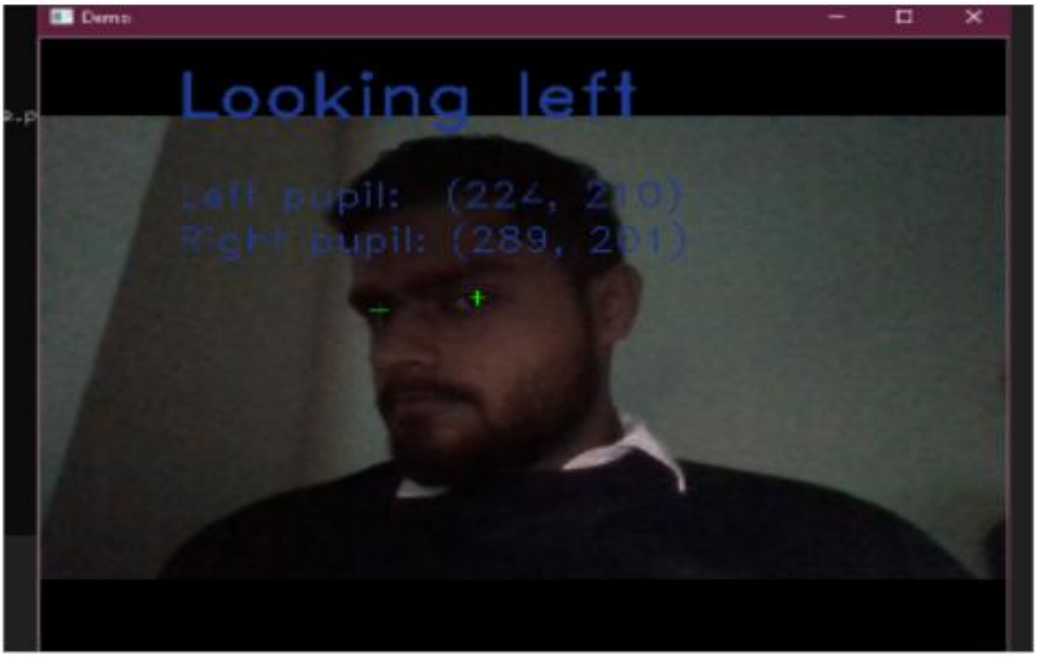

Figure 4.1.7: Gaze image(2)

4.1.8 Teacher and student profile:

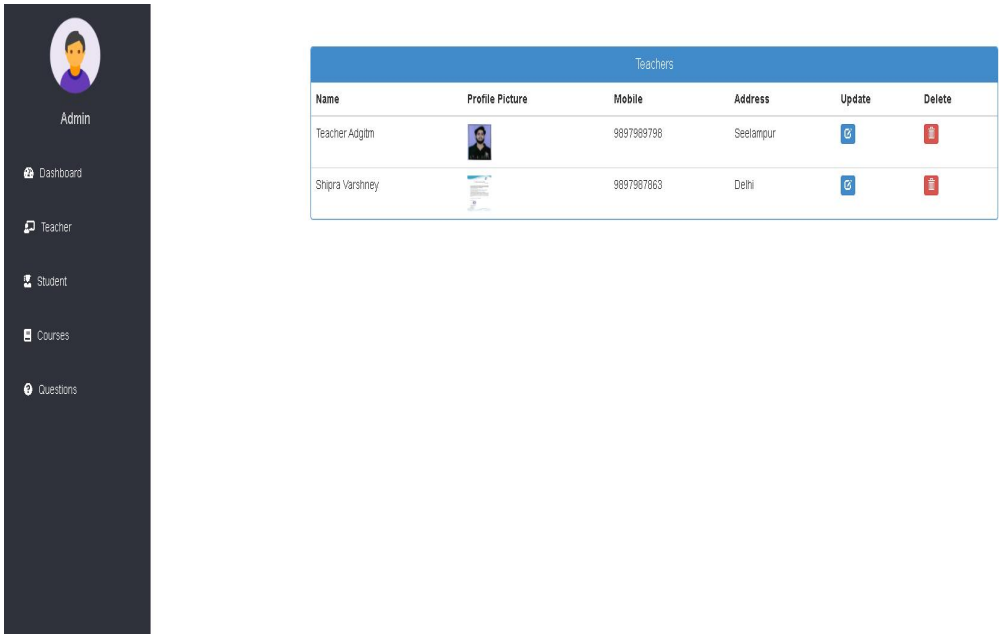

Figure 4.1.8: Teacher Profile

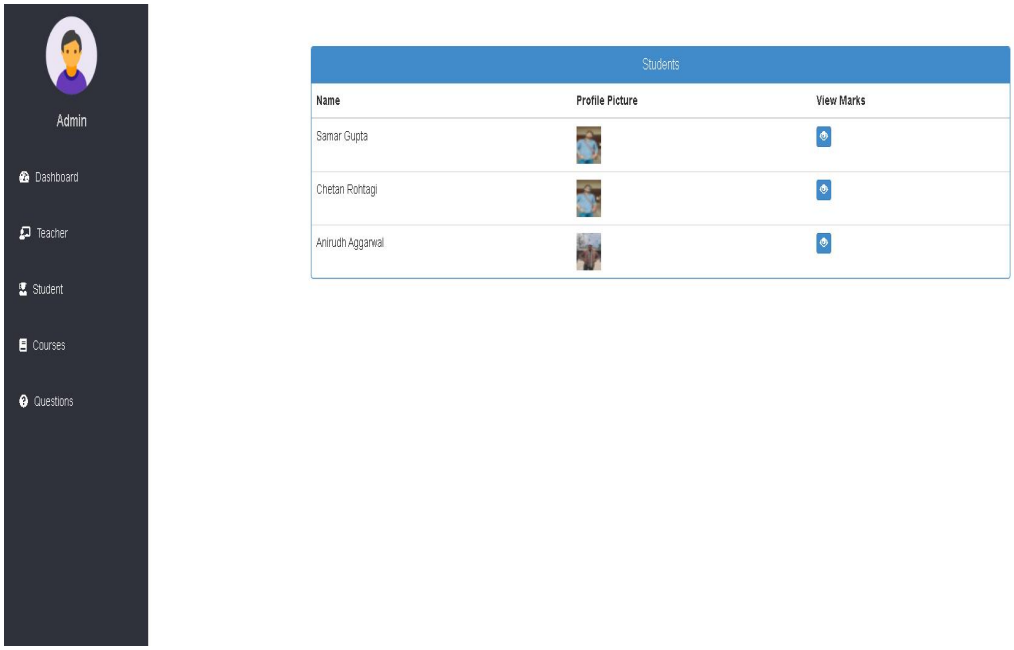

Figure 4.1.8: Student Profile

4.1.9 Teacher SignUp Page:

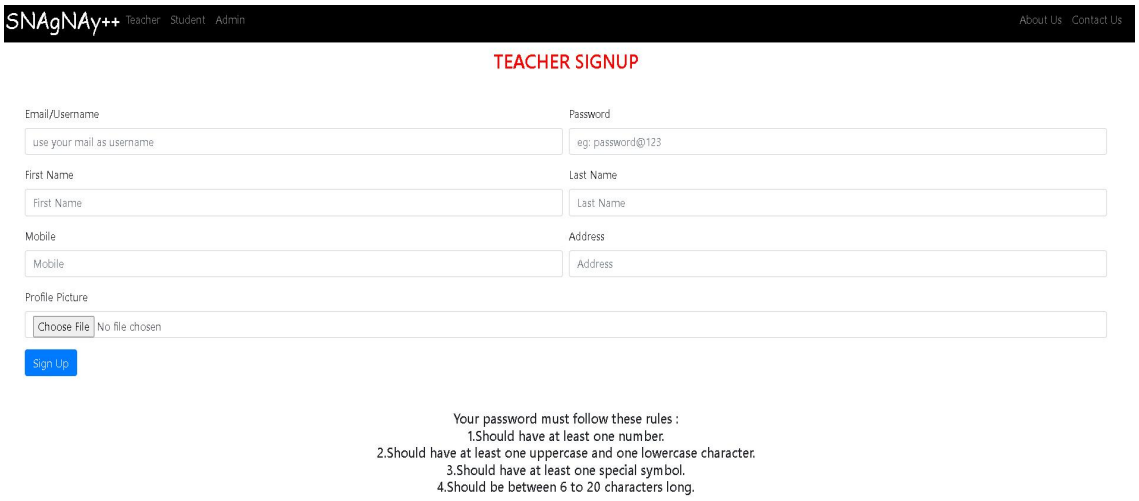

Figure 4.1.9: Teacher SignUp Page

4.1.10 Invalid form Submission:

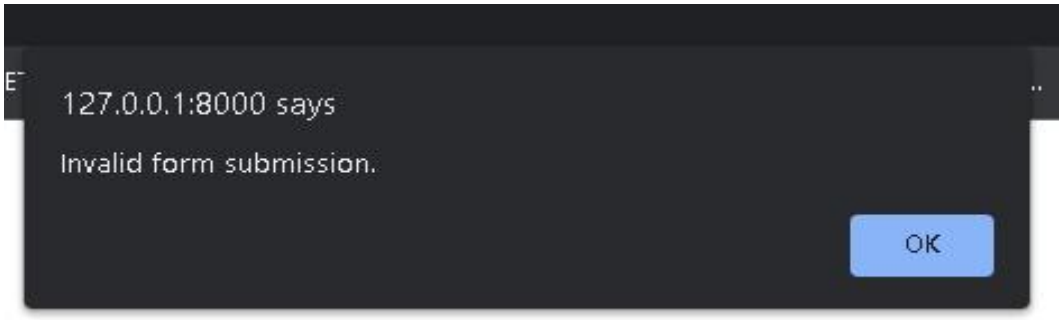

Figure 4.1.10: Invalid form submission when details are not correct and up to the mark

4.2 DISCUSSION

4.2.1 In Favour

- Online examination system can make the student's life easier because they don't need any paper and pen for examination.
- It is eco-friendly and forward-thinking an approach to daily processes is essential in a world where students can graduate into an environmental crisis caused by climate change. Students will imbibe these values over the course of their education.
- online examination can be effective and efficient. The students don't waste so much time to answer the questions because they only click on the best answer that is provided.
- Great features with this exam conducting system is that there is not any compromise with data security.
- Question paper leak in online examination is not possible at all. All can full believe on examination process over its security feature.
- In this online system, set of question papers are a lock in a security system and that will only open at the time of examination.
- The sheer number of resources that can be used to set up a single exam is mind boggling from teachers setting the test to administrators ensuring that all students receive enough copies of the exam paper.
- The online examination system removes many of these procedures and the related labor costs, which have a significant and positive impact on the bottom line of the method implementing educational institution.
- Another advantage of online examination is that we can know our scores just after the exam. Student can give online exam anytime anywhere.
- The major feature which adds up to the online examination, it is scalable over a larger region. It can serve a larger audience and has the potential to do so. Sometimes, instructors can be very busy on a given day and do not have any time to check the exams. Online examination can solve this problem. The instructor does not need to check all of the exams. It can be easily accessed 24/7 over the open test period.
- It give immediate test feedback when a test is submitted. Student can check their progress on a single click. This enables you to track the report and progress of a

child just on a click. Improvement in a child is checked through a progress report made by the software.

4.2.2 Not in Favour

- Network Issue: One of the biggest challenges in conducting online examinations is connectivity. If any network issue occurs during the exam, the online test can be delayed or postponed. The exams can indeed be taken some other time, but it negatively affects the students' minds.
- Security Issue: In online examinations, data are shared online and stored in cloud-based storage. But being in a totally online environment brings the risk of data breach and hacking. Suppose Hackers can get into the online examination system. In that case, they can completely sabotage the data and may even extract question papers.
- Not every type of question can be checked automatically with the Online examination system. While online evaluation is excellent for short multiple-choice questions, they are not useful for broad questions. Teachers have to manually check the answers and grade the students.
- Accessibility: India is still a developing country. And rural areas are yet not connected through the internet or have computer systems. Under such conditions, conducting online examinations in such places is a faraway dream.

CHAPTER 5: CONCLUSION

5.1 CONCLUTION

This system aims at the popular examination system research at present, designing a set of common examinations for the college platform and providing a good condition for organizing all kinds of tests, and also have a great reference value for other colleges and universities. Using an open-source language gives us more flexibility, but at the same time it required more time to be programmed. The proposed Online Examination System (OES) can be easily adopted by universities and institutions in order to make the exam more secure and more flexible. The system subdivided into two main subsystems (student and administrator) that are designed to give the system maximum benefit by demonstrating carefully each subsystem service. The administrator's functions are clearly identified to be able to manipulate user's information such as add (register), delete users and managing the exam materials and content such as add, delete questions, Thus the proposed system is easy and flexible because for future maintenance and development because each subsystem can be handled separately without influence on other system.

5.2 FUTURE SCOPE

The online examination system application is vast. It is used in various sectors, schools, colleges, tuition centers, or individual tutors. Online Examination System is widely used as compared to other exams. Online examination system can be used in private institutes as well as educational institution. As it is user friendly web base application it can be used anywhere and anytime. Every software may have some cases of bugs, errors, security related problems or system faults. There are many problems or system faults for example; computer collapse or crashes due to power supply problem will invalidate efforts of number of students. There are large numbers of chances in which software may produce wrong results or may display invalid data. These bugs must be identified and solved for improving quality of

software. So in future we can develop more secure software by using advanced technologies

Scope of this project is very broad in terms of other manually taking exams. Few of them are:-

- This can be used in educational institutions as well as in corporate world.
- Can be used anywhere any time as it is a web based application (user location doesn’t matter).
- No restriction that examiner has to be present when the candidate takes the test.

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