A Final Year Project Submitted in Partial Fulfillment of the

Requirement for the Award of the Degree of Bachelor of Computer Science and Engineering

PROJECT TITLE:

Techie Tribe Theatre

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SUPERVISOR

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Date of Submission: 29th August 2022

Department of Computer Science and Engineering

LEADING UNIVERSITY

Approval

The project is "Techie Tribe Theatre" submitted by Muhammad Tanvir Ahmed Shakib & Mayeesha Farzana respectively to the Department of Computer Science and Engineering, Leading University, has been accepted as it satisfies the partial fulfillment for the requirement of the degrees of bachelor of Computer Science and Engineering.

Head of the Dept.	**Convenor of Project Committee**	**Supervisor**
Rumel M. S. Rahman Pir	Arafat Habib Quraishi	Md. Ebrahim Hossain
Associate Professor	Lecturer	Assistant Professor
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Recommendation Letter from the Project Supervisor

The project entitled ‘Techie Tribe Theatre’ submitted by the students

1. Muhammad Tanvir Ahmed Shakib

   ID 1822020020

2. Mayeesha Farzana

   ID 1812020235

is a record of project work carried out under my supervision and I, hereby, approve that the report is submitted in partial fulfillment of the requirements for the award of their Bachelor Degrees.

Signature of the Supervisor:

…….....
Md. Ebrahim Hossain

Assistant Professor

Department of Computer Science and Engineering

Date: 29th August, 2022

Abstract

Background: Online education in its various modes has been growing steadily worldwide due to the confluence of new technologies, global adoption of the Internet, and intensifying demand for a workforce trained periodically for the ever-evolving digital economy. Online education is on track to become mainstream soon. The ubiquity of information technology has been influencing almost all aspects of our lives: the way we work, interact with others, process data into information, analyze and share information. E-evolution or e-revolution has witnessed e-mails, e-commerce, e-government, and now e-education. E-education or online education is changing the way we approach teaching and learning. Changes in education delivery models have been rapid and transformational. As institutions worldwide adapt to these changes, a very dynamic education landscape has generated immense interest among researchers, educators, administrators, policymakers, publishers, and businesses. Online classes were popular only in developed countries but Covid-19 situation changed the scenario of education system all over the world. All govt. had to announce complete lockdown to save lives, classes were shut down. On that time govt. and educational institutes came up with the idea to take classes on online platform like Zoom and Google meet to continue study as education is known as the backbone of a nation. But both teachers and student faces several issues. Firstly, it was not possible to provide class links to students individually. So, some teachers made Whatsapp group, some used Google Classroom to organize students, their tasks, exams in class or course wise. Basically teachers need to use lot of apps/website to maintain this overall process. It's good that all of these are free to use but they are using our data for profit.

Purpose: Here we came with an idea of a web based educational platform, where we will be able to do everything Google classroom offers, but with some extra features and more security. An individual institution will own this platform so the database. Both teachers and students database will be secured and they don't need to use several apps or sites. This one platform will perform everything a teachers or needs. Teacher just needs to create a class and distribute the class code among students. Then it's almost like Google classroom, very easy and convenient to use.

Methods: Our proposed project is a dynamic web application built in Python based Django framework with a powerful back end. This system is fast and optimized for searching engines.

Acknowledgment

The journey to this goal was long, with many obstacles and detours but after countless challenges. Expressing our gratitude towards the Almighty will never be enough for giving us this opportunity for accomplishing our project. This achievement is dedicated to all those who have been part of my journey to this point in time. From our family and friends, who've loved and supported us throughout the semesters of work it took to arrive at this milestone, to our department teachers who inspired a desire for lifelong learning. This milestone is also dedicated to those who may be starting to navigate a long path or just began dreaming about it- you can do it! It is not easy but one day you will arrive at the destination where you were intended to be.

We are grateful to so many, especially to our honorable supervisor Md Ebrahim Hossain Sir for his meritorious supervision. Without his help, support and guidance we could not have completed this project.

Dedication

This project is dedicated to our parents who have never failed to give us financial & moral support, all the teachers, students and staff of the Department of Computer Science and Engineering at the Leading University, for giving all our needs during the time we developed our system for teaching us that even the largest task can be accomplished if it is done one step at a time. Our appreciation goes to our project supervisor Assistant Professor Md. Ebrahim Hossain for his guidance and constant supervision as well as for providing necessary information regarding the project and also for his support in completing the project.

Table of Content

Chapter 1

Introduction

1.1 Project Motivation

The project is entitled the 'Techie Tribe Theatre'. The project description was 'to build a web based application in a team of pair'. Although this is a group project, the assessment is individual. Hence each member of the team was set specific tasks that will count as an individual project, but eventually would join together to make our project. One of the advantages of this group approach is that a meaningful project can be attempted, which can be continued by us to build this website into a solid shape we dreamt at the very beginning. Individual projects have a tendency to make limited progress and therefore not to be continued in the future.

1.2 Aims and Objectives

The core objectives which have been designated as fundamental to the project are:

- It will be the virtual home for both teachers and students of our university.
- Developing a platform, reliable for users as data will be safe with university authority.
- In addition, the advanced aims which are desirable if time is permitting are:
  - Making Android based platform of this website.
  - Adding Real time video call feature.
  - Examination Feature.

1.3 Report Structure

- Chapter 2 gives information about all the programming and non-programming languages used in our project. It describes all benefits and the reason of choosing these languages in our work. And also shows literature reviews here.
- Chapter 3 describes the project methodology and gives an overview of the design and implementation of the application developed.
- Chapter 4 defines the system requirements. For development of our website we have used minimum software, web browsers and operating system to display and function correctly.
- Chapter 5 shows the user interface and its design.
- Chapter 6 gives the system design with ER diagram and DFD diagram.
- Chapter 7 gives testing and shows results.
- Chapter 8 identifies the future works.
- Chapter 9 evaluates the objectives and aims of this project and gives a final thought.
- Chapter 10 provides all resources and references we have used.

1.4 About the Project

Our projects idea is simple and already similar platforms are available in market. But we wanted to make a platform where we will be our authority, and our data will be safe. In one single platform we will be able to do all tasks we do in a normal day of university. It can be another home of our university which we are saying a complete virtual home. There will be no need of using multiple sites or applications, which will save storage.

1.4.1 Project Features

- Create Class
- Add in class with Class Code
- Assignments/Tasks
- Update Profile
- Announcements
- Responsiveness.
- Both Create and Join Class for teachers.
- Forgot Password.
- Add Course Video
- Comment on Announcement
- Show People for teachers.

1.5 Achievements

This project claims the following achievements:

Our main purpose is to make a platform both in web and mobile application based. The idea to create ‘Techie Tribe Theatre’ came from our frustration in using several applications for different teachers and each from the concern of our personal data as Company like Google are well known for using user’s personal data. There are indeed many other online class websites and applications out there, but here we are thinking about more advanced version which integrates multiple ideas in one platform. The key feature that differentiates our website from similar application is its admin panel will run by our university authority and in future it will be a large application with an integration of several. This and a combination of other features make ‘Techie Tribe Theatre’ a well-received tool. This project is our very own indigenous web based application, for which we are proud of.

Chapter 2

Background Study

2.1 Literature review

We have tried our best to our project. Our main aim and motivation for the project is to make an easy platform for both teachers and students. It is basically an implementation platform where we tried to keep some basic implementation of the core subject of CSE. It is a web based project. There are many sites we can found where the brief description of a topic exists. But in our project we have our very own database, direct admin control and many features. Even we have much future work where we will give our project extraordinary advanced facts that will be more efficient, usable and useful for the users and students. It is actually a huge project and we think we can make it best for the students.

In traditional online classes both teachers and students need to install several apps, like zoom, google classroom. Sometimes few teachers prefer Google meet while some prefer zoom. So students need to install both applications. Our work is going to help students to get relief from those problems because whole institution will use same application, so the students will. Admin can monitor and control literally everything. Exam controller can monitor exams, results. Finally Tech giants like Google is making everything to be paid. Here our platform will be free to everyone. Overall we hope our work will be more useful and efficient for academic studies and also for the students.

2.2 Programming Language

To develop our project we need some specialized tools and software to support our requirements. For front end we have used-

- HTML
- CSS
- Bootstrap

For back end we have used-

- Python
- Django (Python Framework)
- SQLite3 for Database (Built in)

2.2.1 Django

Why Django?

- Django is a back-end python web development framework for building complex and scalable websites, and it might be the reason for python´s rise in popularity in the last years. Django uses the model-view-template (MVT) architecture, a pattern based on a set of best practices for organizing your code.

    - **Model:** The model is what binds your application to the database. Normally a model represents a table in the database and defines what and how your application accesses the database. It simplifies the tasks of creating, deleting or updating table entries.

    - **View:** The view is the user interface. It renders the templates and defines what you see and the behavior of it. It is composed of HTML, CSS, and JavaScript files.

    - **Template:** Is the desired static HTML structure file with special syntax. It describes the inserted content.

- Django follows a "batteries included" philosophy, which means that standard functionalities for building web applications should come with the frameworks. So, by just installing Django on the device, it will allow you to have access to: user authentication system, URL routing, the template engine, Object Relational-Mapper (ORM), and database schema migrations. This makes the initial application setup very fast and, if you require additional tools, Django has more than 4000 extra downloadable packages that can be used according to your project needs.
- In addition to this, Django has a very detailed documentation. With it being around for a long time (2005), many helpful practice tutorials are readily available on the internet. Being proficient in Django will make application development pragmatic, fast, and clean. Over the years, many popular websites were built using Django - that's the case of Spotify, Instagram, and Youtube.

Chapter 3

Project Methodology

Project Methodology

A methodology was developed based upon a combination of the available literature and the experiences we have gained from our past projects and research. The following section presents the stages of the methodology.

3.1 Phase One: Analysis Phase

One is concerned with the development of a Web strategy and an analysis of how a Web-site may achieve this strategy. Research by Keil has indicated that the two main reasons for software project failures are the lack of top management commitment to a project and misunderstanding the system requirements. Phase One aims to reduce these risks by setting in place some strategic goals and objectives, and then designing a system to achieve them.

The decision to develop a Website by an organization should ideally form part of the corporate information strategy. It is imperative that the Web-site developer be involved with the formulation of this strategy at its conception if the myths about the Web as an organization's information panacea are to be dispelled. The developer/consultant can also explain the total cost of ownership involved with supporting a Web-site, which may far outweigh the initial development costs.

Step One: Development of a Web Strategy

The developed strategy is to be realised in a Strategic Planning Document which outlines three core elements that describe the goals of the site. These elements are useful for guiding the rest of the development process. These elements as:

- A well defined statement of where the developer wishes to be.
- An assessment of where the developer is now.
- A brief implementation plan of how to get from the "now" to the "where".

This step is iterative as the strategy set out by management may have unrealistic goals (which is why the inclusion of a Web developer/consultant can save time and resources during this phase). This phase is probably the most crucial phase of the methodology, since mistakes or omissions here could prove costly later.

Step Two: Defining Objectives

Once the developers Web strategy has been agreed upon and a Strategic Planning Document has been produced, the ways in which the development will achieve these goals can now be identified. At this stage, the Web developer is fully involved with the running of the project and should be aware of the current Internet and Web technologies in order to fulfill these objectives effectively.

The output from this stage is an Objectives Document that outlines the objectives of the site along with any other factors that may enable the developers to assess the viability of the site post-implementation.

Step Three: Objectives Analysis

During this step the objectives described above, together with the available resources, are analysed in order to ascertain to what extent they are achievable. This analysis can be sub-divided into six tasks, which are as follows:

- Technology Analysis - identification of all technological components and tools required to construct, house and support the site.
- Information Analysis - identification of any information that the user requires, whether static (Web page) or dynamic (fed "live" from a database server).
- Skills analysis - identification of all the differing skill sets required to complete the project
- User Analysis - identification of all intended users of the site. This is a much more complex process than with traditional information system development as the range of users, and technologies used by the users, may vary considerably.
- Cost Analysis - an estimated cost for the development of the site is calculated, or an estimate of what is achievable with a predefined budget.
- Risk Analysis - an analysis of any major risks involved with the development of the site.

Once this analysis has been completed a more refined set of objectives can be documented. Any objectives that cannot presently be satisfied are documented in a Wish List that forms part of the Objectives Document. This will later form part of the iterative process during the next cycle of the methodology.

3.2 Phase Two: Design

Once the analysis phase has been completed, the development process can move on to the design phase, which is driven by the Objectives Document. As Websites grow incrementally, many of which are lacking in terms of good design architecture, the site can quickly become unmanageable. The site should be designed with the knowledge that it is likely to have sections and processes added to it during its lifetime as requirements change and new technologies emerge. The methodology takes account of this through the process of iteration.

Step One: Design

The design of the Web-site can be broken down into two main tasks:

- Information Design, this may be as simple as designing a set of hyper-linked Web pages, or it may involve the design of a database or CGI (Common Gateway Interface) script to cope with more complex data structures or processes.
- Graphic Design, whereby the "look and feel" of the application is designed for its intended audience. Screen layout, colors, images and animations etc. are all designed during this step.

The output of Step One is a detailed Design Document that describes the structure of the Web-site, the data structures of any databases that require development, and the functions of any CGI scripts required.

Step Two: Design Testing

Testing during the early stages of development is far more cost effective than testing the coded software, and so for this reason the design is now tested to discover any inconsistencies or faults. This involves testing the Website design against the goals and objectives described in the initial three steps outlined above, in order to ascertain whether the system can acceptably produce the information required by the user.

The two steps within Phase Two are iterative and the output is a refined Design Document. There is also an iteration loop between Phases One and Two since it would be far too complex or expensive to design a system to fulfill the objectives described in the Objectives Document, then Phase One will be revisited to re-assess these objectives. Any objectives removed from the Objectives Document will be added to the Wish List.

3.3 Phase Three: Generation Phase

Three of the methodology is focused around the generation of the Web-site and is driven by the Design Document.

Step One: Resource Selection

All the resources for the development of the site, such as hardware, software, communications links and the necessary personnel, will be selected during this step. A number of different applications and servers may need to be integrated, so the technical specifications should be examined to ensure compatibility.

Step Two: Design Review

During Step Two, the Design Document from Phase Two is compared with the available resources from the previous step to ensure the design can be achieved with the resources selected. If incompatibilities are found, the Design Phase and Resource Selection are reviewed. This is an iterative process, and if problems arise, Phase One can be re-visited.

Step Three: Code Generation & Installation

The coding step sees the generation of all of the software connected with the site and its installation onto relevant Web servers. This may just involve simply posting the site onto a Web server, but it could also involve more complex tasks, such as database connections.

Step Four: Testing

Testing is one of the most complex and difficult areas of any Web project. It is even more complex than with a traditional information system, since Web applications are often developed for a wide group of users (often unknown) in different technological environments. The Web-site must be tested against as many of these environments and combinations of technologies as possible in order to maximise the potential audience.

3.4 Phase Four: Implementation

The Implementation Phase is ongoing and runs throughout the lifecycle of the Web-site. This is probably the simplest, yet arguably one of the most important phases. To ensure a constant supply of visitors that wish to return, a site's presence must be felt and the content must be of perceived value.

Step One: Implementation

To fully implement the Web-site, its target audience must be aware of its presence. During this phase the site should be registered with the major search engines, along with any other promotion methods such as notifying relevant newsgroups, the printing of the Web-site domain address on stationery, business cards, etc.

Step Two: Maintenance

With web sites in particular, many are in a constant state of maintenance with new entries being added on an almost daily basis. As the site grows, the cost of maintenance will increase significantly. The information presented on a Web-site must be timely. For this reason it is essential that the site is monitored regularly to ensure that information and links, particularly external links, are up-to-date.

Step Three: Objectives Review

There is an ongoing process for Web developers' to assess new technologies as they become available. These can be assessed with respect to the objectives outlined in Phase One, particularly any objectives that were unable to be implemented at that time and were documented in the Wish List.

A reiteration of the whole process can then begin to implement any new features and increment the functionality of the Web-site.

Phase Four demonstrates how any Web-site development methodology needs to be iterative and utilised in a nonlinear fashion. The Objectives Review could have been carried out during Phase Three and the Wish List reexamined. This would have meant the development process would move back to Phase One.

Chapter 4

System Requirements

4.1 Minimum Hardware Requirements

Any modern day Smartphone, Tab or PC should be capable of running our web application smoothly. But we will suggest some basic requirements as this application is going to be larger in future and will require more ram and powerful processor to run lag free and smooth.

Device Type:	Minimum Ram Requirement:	Minimum Storage Requirement:	Minimum Processor Requirement:
Smartphone:	4 GB	64 GB	Snapdragon 665, MediaTek Helio G80, MediaTek Dimensity 1200, A12 Bionic
Tab:	4 GB	64 GB	Snapdragon 665, MediaTek Helio G80, MediaTek Dimensity 1200, A12 Bionic
Personal Computer:	4 GB	120 GB (SSD-Solid State Drive)	Intel Core i3, A12 Bionic, AMD Ryzen 3

Here is some hardware combination and their performance given below.

Performance Table

Processor	Storage	RAM	Can perform	Comment
Pentium	SSD Suggested	2/4GB	Yes	Too slow
Celeron	SSD Suggested	2/4GB	Yes	Slow
Dual core/Athlon	SSD Suggested	2/4GB	Yes	Little slow
Core i3/Ryzen 3	SSD Suggested	4/8GB	Yes	Faster
Core i5/Ryzen 5	SSD Suggested	8/16GB	Yes	Faster
Core i7/Ryzen 7	SSD Suggested	8/16GB	Yes	Faster
Core i9/Ryzen 9	SSD Suggested	8/16GB	Yes	Fastest
Bionic	64 GB	3/4/….GB	Yes	Fastest
Snapdragon 600/MediaTak	64 GB	4/6/8GB	Yes	Faster

80				
Snapdragon 700/MediaTak 85	64 GB	4/6/8GB	Yes	Faster
Snapdragon 800/MediaTak 95	64 GB	6/8/12GB	Yes	Fastest

4.2 Minimum Software Requirements

Currently our project is still a web application (we are dreaming to make mobile application version). So running web application users need web browser. A web browser is a software application that enables a user to display and interact with HTML documents hosted by web servers or held in a file system. Popular browsers available for personal computers include Microsoft Internet Explorer, Mozilla Firefox, Opera, Chrome and Safari. A browser is most commonly used kind of user agent. The largest networked collection of linked documents is known as World Wide Web (WWW). As a web application our project can be run in any web browser from any kind of device.

Recommended Browsers

We recognize the diverse Operating Systems, Devices, and Internet browsers people are using. While we want every user to have the best possible experience, we recognize that it is impossible to develop applications that work identically, efficiently, and effectively with all browsers and versions. We also recognize that testing on every browser version and device combination is no longer possible as many new browser versions are deployed on aggressive weekly or bi-weekly schedules. We recommend the following Web Browsers:

- Chrome
- Microsoft Edge
- Firefox
- Safari

Minimum Web Browser Requirements for our Web Based Applications

Operating System	Supported Browser List
Windows Workstation Browsers	
Windows 7 SP1	Chrome (current version1) Firefox (current version1) Internet Explorer 11
Windows 8.1	Chrome (current version1) Firefox (current version1) Internet Explorer 11
Windows 10	Chrome (current version1) Edge (current version1) Firefox (current version1) Internet Explorer 11
Windows 11	Chrome (current version1) Edge (current version1) Firefox (current version1) Internet Explorer 11
Windows Server Browsers	
Windows Server 2008 SP2	Chrome (current version1) Firefox (current version1) Internet Explorer 9
Windows Server 2008 R2 SP1	Chrome (current version1) Firefox (current version1) Internet Explorer 11
Windows Server 2012	Chrome (current version1) Firefox (current version1) Internet Explorer 10
Windows Server 2012 R2	Chrome (current version1) Firefox (current version1) Internet Explorer 11
Mac Browsers	
Mac OS X 10.6 through Mac OS X 10.11oug	Chrome (current version1) Firefox (current version1) Safari 5 through Safari 9
Chrome OS Browsers	
Chrome OS (current version1)	Chrome (current version1)
Microsoft Office	
Windows & Mac	Office 2003/ 2007/ 2010/ 2013 / 2016

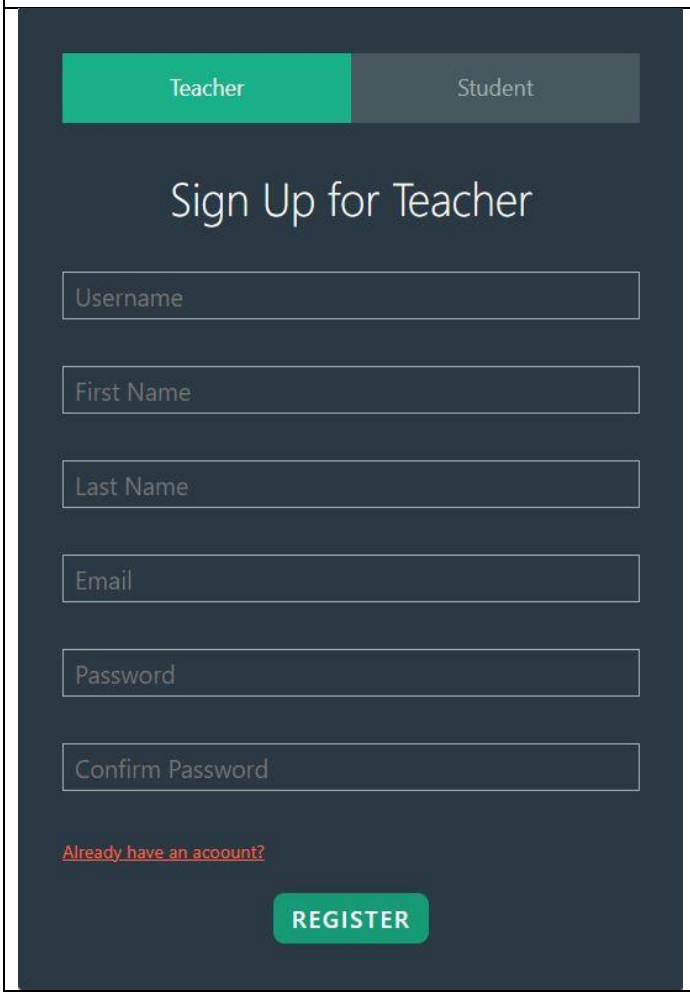
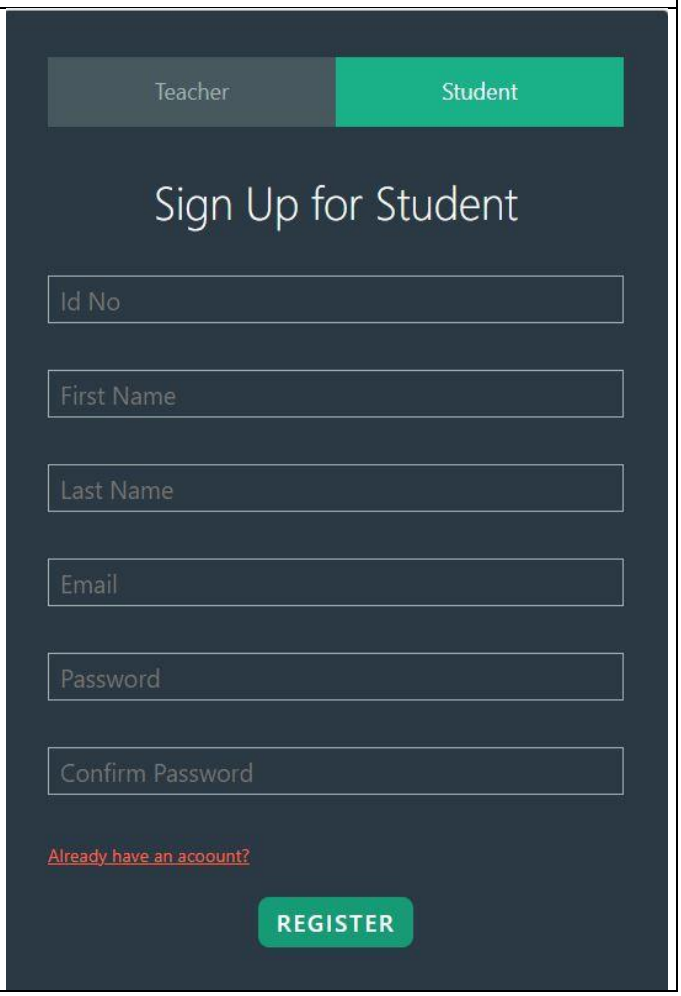
Chapter 5

Design Specification

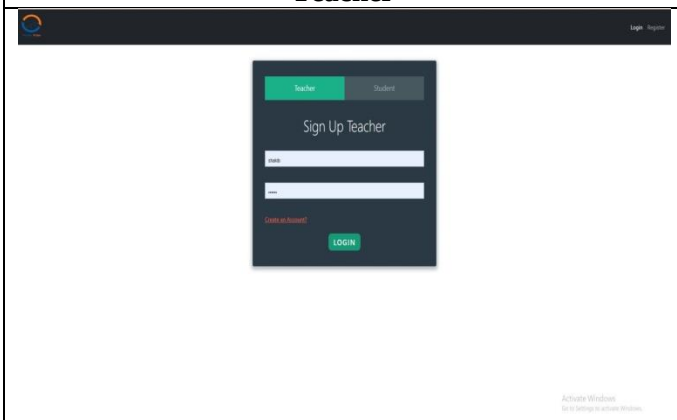
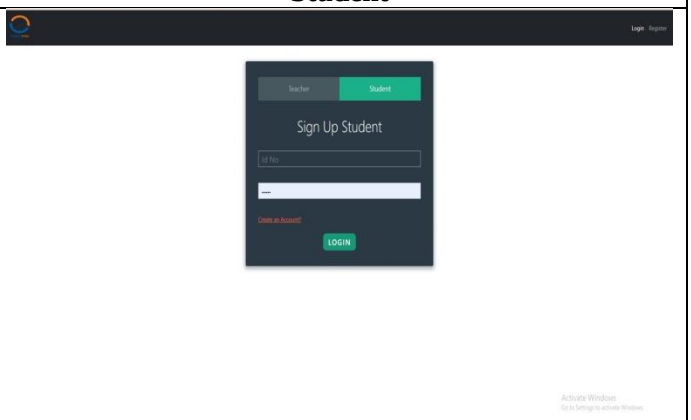
Design Specification

As our project is a web based application, users will use this on different kind of devices with different kind of screen size. So, for users flawless experience we made our project completely responsive. We made our projects design simple with simple color mixture as different user has different choices. Here we added some screen shots from different pages to demonstrate our projects user interface.

5.1. Registration Page

Teacher	Student
	

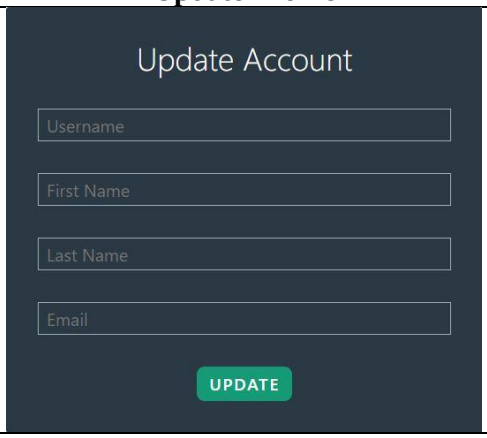
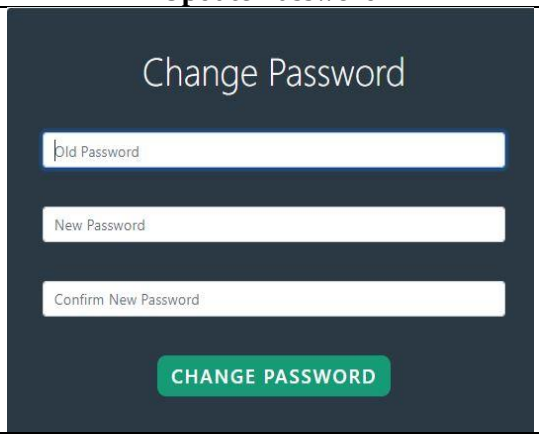
5.2. Login Page

Teacher	Student
	

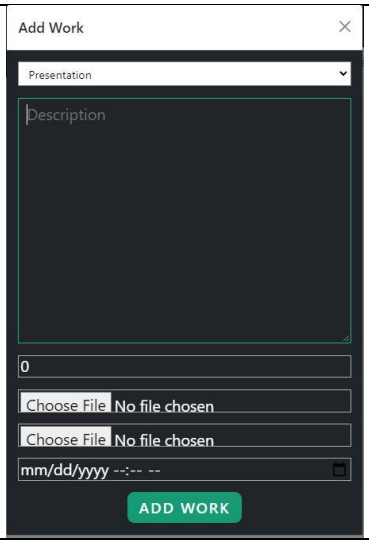
5.3. Class (Create/Join)

Create Class	Join Class
	

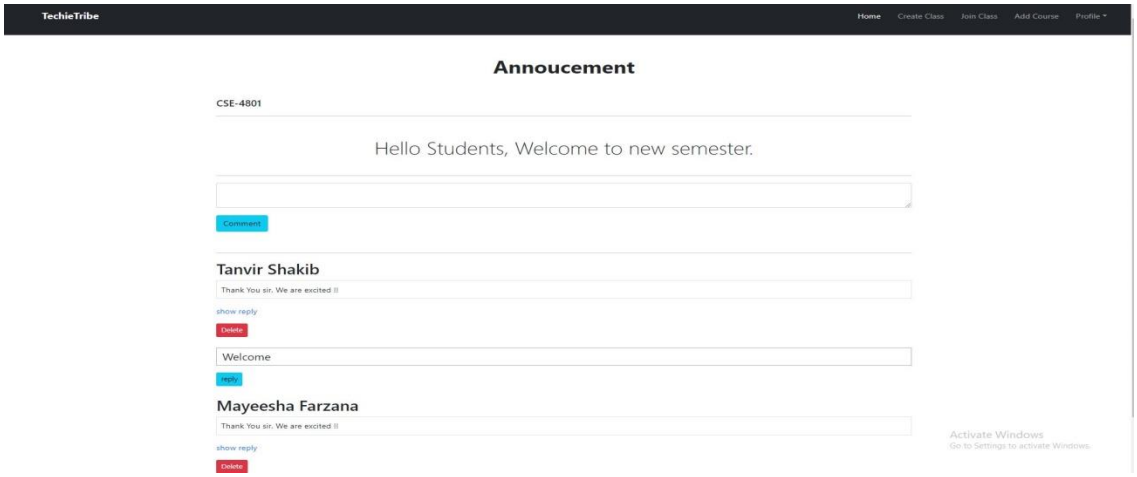
5.4. Update

Update Profile	Update Password
	

5.5. Add Announcement/Task

Announcement	Task
	

5.6. Comment on Announcement, Teachers Reply on Comment



5.7. Submit Assignment

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5.8. Admin Site (Super User)

As our Project is developed using django, so our project has admin panel. An admin literally can control every user.

Here are some actions admin can do:

1. Create/Delete User.

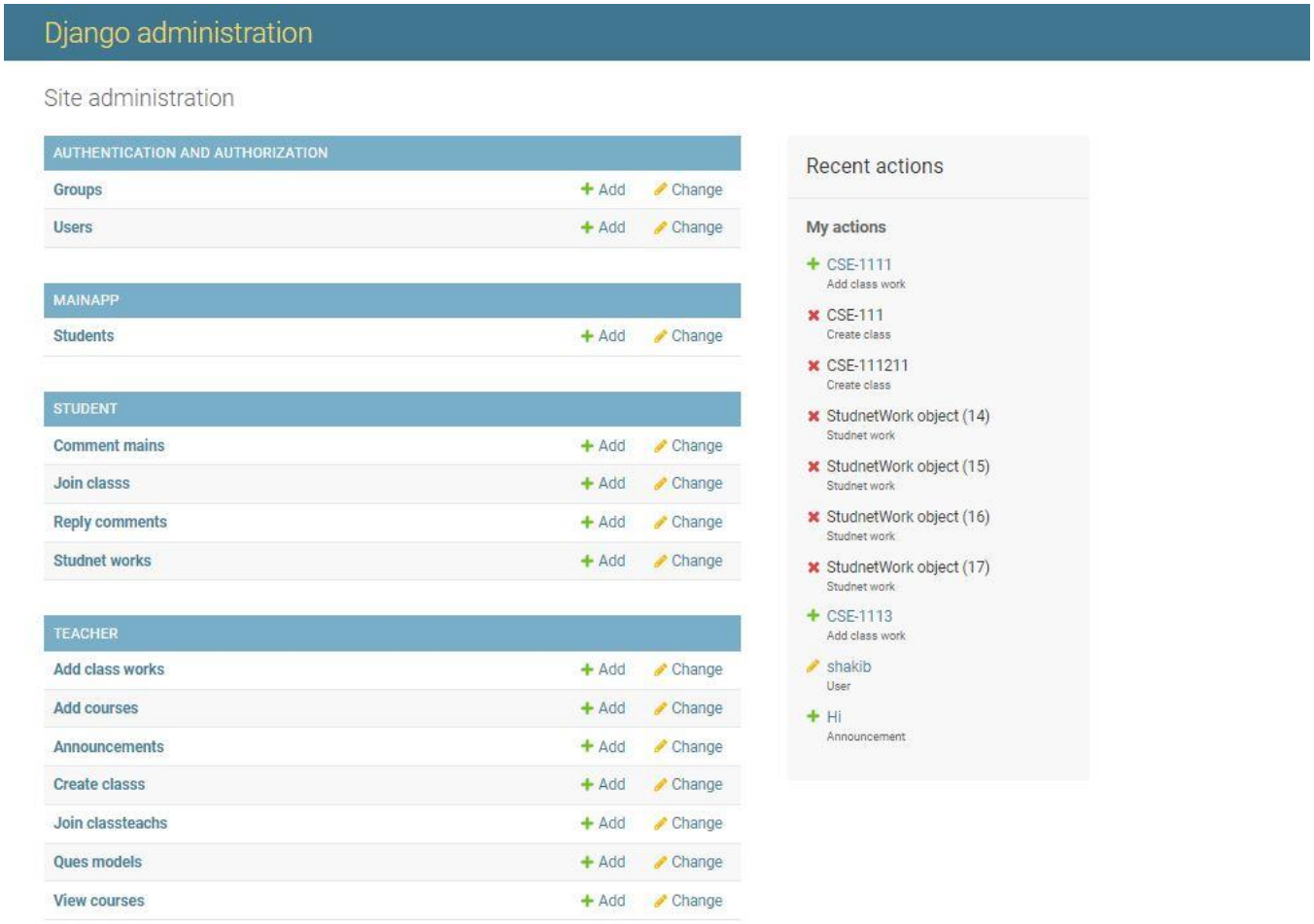
2. Modify Users Data

3. Delete User

4. Add Course

5. Add/Delete Task

Here is the Screen Shot of Admin Site:



Chapter 6

System Design

6.1. Use Case Diagram

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally. The use cases are represented by either circles or ellipses.

Purpose of use case Diagram:

- Specify the context of a system.
- Capture the requirement of a system.
- Validate a systems architecture.

Use Case Diagrams are important because they present information visually. The adage " picture is worth a thousand words" applies when it comes diagrams. This handout provide a few hints on understanding information visually.

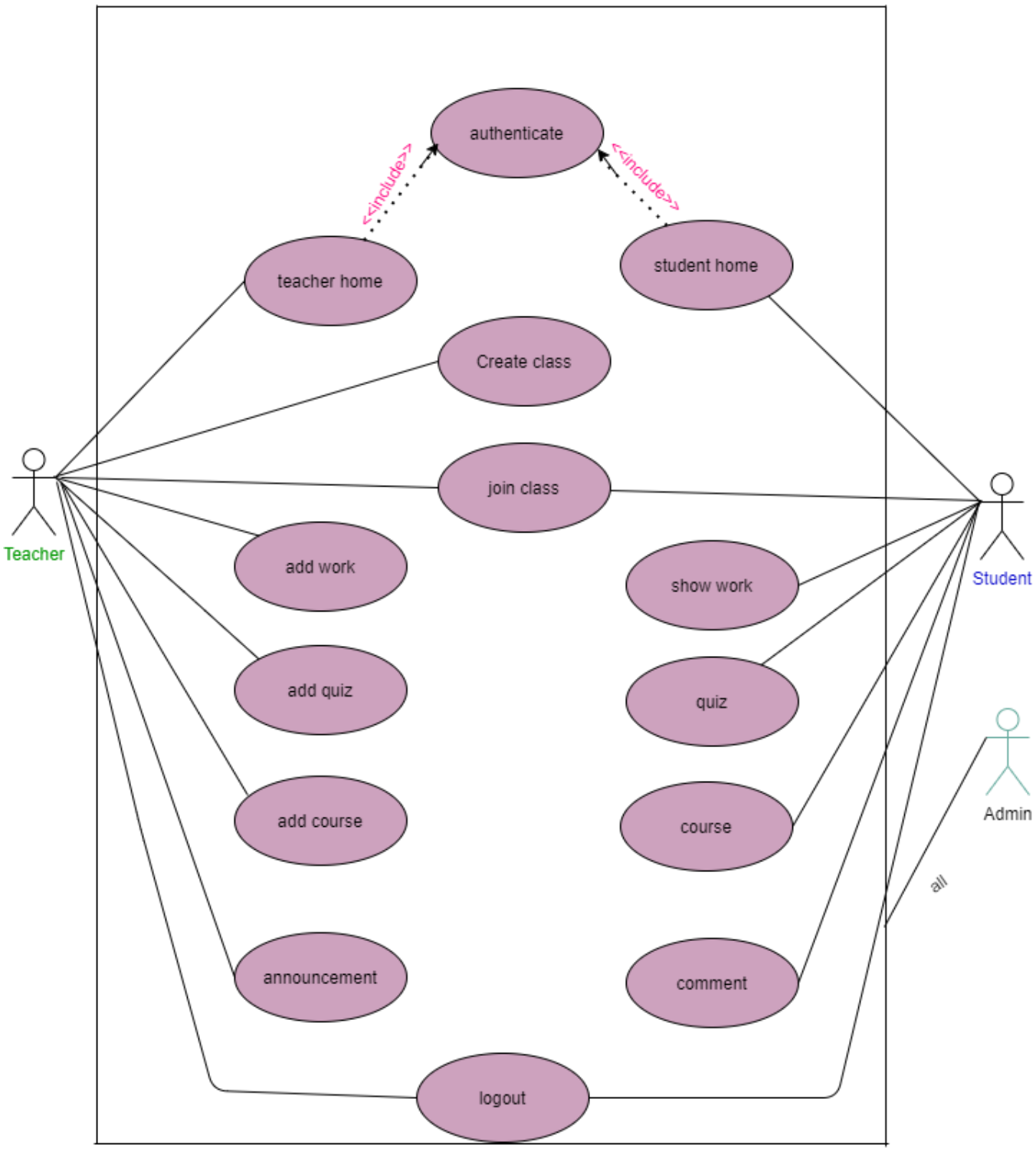


Fig: Use Case Diagram

6.2. Entity Relationship Diagram

An entity-relationship diagram is crucial to creating a good database design. It is used as a highlevel logical data model, which is useful in developing a conceptual design for databases. Some advantages of ER diagrams:

- Easy to understand.
- Simple.
- Good DBMS support.
- Popular.

An entity-relationship diagram, or ER diagram, is essential for modeling the data stored in a database. It is the basic design upon which a database is built. ER diagrams specify what data we will store: the entities and their attributes. They also show how entities relate to other entities.

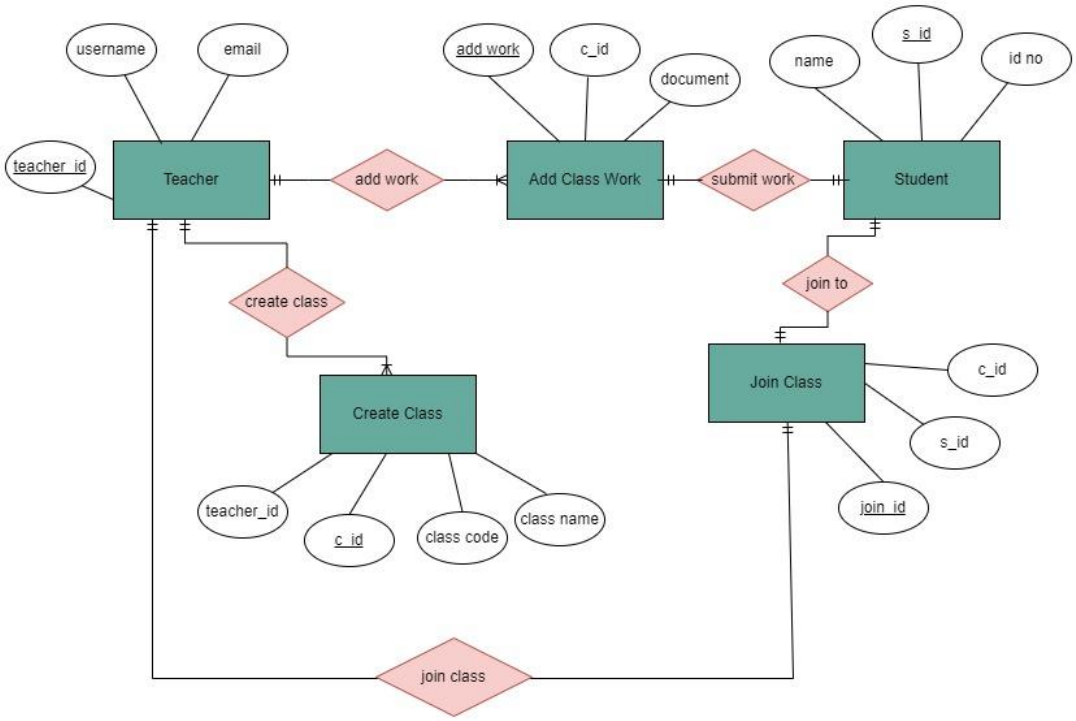


Fig: ER Diagram

6.3. Data-Flow Diagram

A data flow diagram (DFD) is a graphical or visual representation using a standardized set of symbols and notations to describe a business's operations through data movement. DFDs make it easy to depict the business requirements of applications by representing the sequence of process steps and flow of information using a graphical representation or visual representation rather than a textual description . When used through an entire development process, they first document the results of business analysis. Then, they refine the representation to show how information moves through, and is changed by, application flows . Both automated and manual processes are represented.

6.3.1 Context Level Diagram

It’s designed to be an abstraction view, showing the system as a single process with its relationship to external entities. It represents the entire system as a single bubble with input and output data indicated by incoming/outgoing arrows.

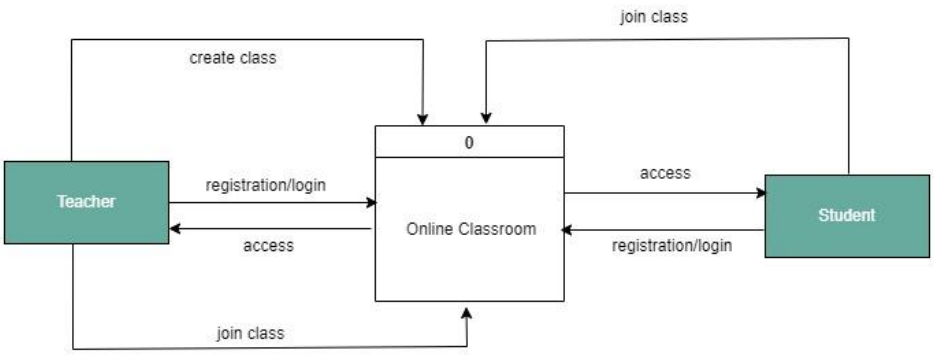


Fig: Context Level Data Flow Datagram

6.3.2 Level 1 Data Flow Diagram

It's designed to be an abstraction view, showing the system as a single process with its relationship to external entities. It represents the entire system as a single bubble with input and output data indicated by incoming/outgoing arrows.

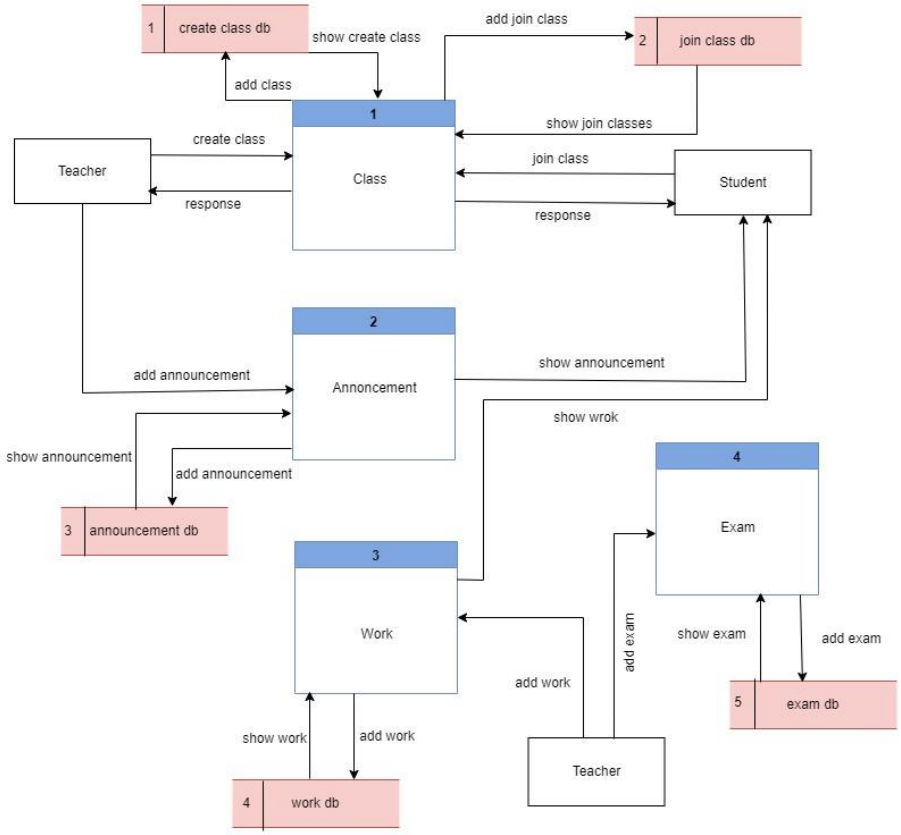


Fig: Level 1 Data Flow Diagram

Chapter 7

Testing and Result

7.1 Testing Objectives

- Testing is the process of evaluating a system or its components with the intent to find whether it satisfies the specified requirements or not.
- Testing is executing a system in order to identify any gaps, errors, or missing requirements in contrary to the actual requirements.
- Testing is mainly done for rectifying the error from the program that is designed for particular problem.
- Testing is a process of executing a program with the intent of finding an error.
- A good test case is one that has a high probability of finding an as-yet undiscovered error.
- A successful test is one that uncovers an as-yet undiscovered error. If testing is conducted successfully it will uncover error in the project.

7.2 Different Types of Testing

- Verification testing: Ensures that correct requirements are gathered and they are up to date.
- Unit Testing: Each and every module in isolation is tested. Ensures that each function is working properly, data structures are used correctly.
- System accuracy test: After the development of whole system, it is tested with data to check the speed of processing, accuracy and correctness of results.
- Information Integrity Testing: Verifying correct and up to date collection of information. It should be ensured about simultaneous record read accesses.
- User Interface Testing: User interface is one of the most important things in any project. Because user can't see backend or can't understand if everything is working properly or not, but they can see interface and their impression depends on that. So a good, flawless interface is must for a good rating project.
- Recovery Testing: If the system needs any recovery we should update/add the change.
- Configuration Testing: Configuration testing verifies operation of the software on different software and hardware configurations. In most production environments, the particular hardware specifications for the client workstations, network connections and database servers vary. We have to verify this.
- Installation Testing: Finally the installation process. We have to verify the most important part

installation. The installation process is correct of not, the installation requirements are added or not, we should notify this.

7.3 Web Application Testing

An application testing technique exclusively adopted to test the applications that are hosted on web in which the application interfaces and other functionalities are tested.

1. Functionality Testing - The below are some of the checks that are performed but not limited to the below list:

- Verify there is no dead page or invalid redirects.
- First check all the validations on each field.
- Inaccurate inputs to perform negative testing.
- Verify the workflow of the system.
- Verify the data integrity.

2. Usability testing - To verify how the application is easy to use with.

- Test the navigation and controls.
- Content checking.
- Check for user intuition.

3. Interface testing - Performed to verify the interface and the dataflow from one system to other.

4. Compatibility testing- Compatibility testing is performed based on the context of the application.

- Browser compatibility
- Operating system compatibility

5. Performance testing - Performed to verify the server response time and throughput under various load conditions.

6. Security testing - Performed to verify if the application is secured on web as data theft and unauthorized access are more common issues and below are some of the techniques to verify the security level of the system.

Chapter 8

Future Work

Future Work

This project is our first full-fledged web based application. We started with a vision at first stage and did everything we can do within this limited time and knowledge. Unfortunately we identify that the work done both by analyzing and implementing the system is by no means complete. In this section we list the things that were either left open by this project or were opened by the analysis performed and the lessons learned during our interaction with the subject. System has flexible modules. Any new feature can be added when it requires. Reusability is easily possible in the system in various situations.

- **Extensibility**: This application is extendable in many ways that its original developers may not expect. The following principles enhance extensibility like add calendar, take exams with video call feature, take classes in video calling feature, take access of another user, improve security measures, implement AI feature to detect users movement.
- **Reusability**: Reusable application reduces design, coding and testing cost by repeated effort over several designs. Reducing the amount of code also simplifies understanding. We follow up both types of reusability: sharing of newly written code within a project and reuse of previously written code on new projects.
- **Understandability**: A project file or documentation is understandable if someone other than the writer of the file can understand, as well as the writer can understand after a time period. Our system is documented and commented systematically so that anyone having basic knowledge of the project will understand the project file.

8.1 Build a Mobile Application

We will give special focus to develop a mobile application for both Android and iOS. Mobile application is interestingly popular to most of the users because of easy portability, easy internet connection and so on. Beside most of the user don't own a personal computer.

Most of the time for default setting on browser, users don't get important notifications. Some user has limited ram and for that reason browser often reload current page, which is irritating.

A mobile application can solve many issues of user experience, improve ram management of users' device to store current page data, provide real time notifications and many more things.

8.2 Update Database

We intend to update our database and connect it to university's main database. Our application will fetch data of both teachers and students. So, both teachers and students won't require to registrar an account. One Database will perform for every platform of our university.

8.3 Project Security

We provide login facilities for all registered user, so that we can ensure that they can log in safe without the threat to corrupt there password. We have also provided password recovery system.

8.4 Implement AI Feature

We intend to implement some advanced feature into our project to make it multidimensional. Some key feature we intend to implement is adding video calling feature, so students won't need to install extra video calling application, adding exam feature where question will shuffle for each students and adding AI feature to monitor students activities.

8.5 Add Examination Feature

For online classes, online examination is crucial thing. So we have a plan to implement a fully functional online exam system to our project.

Chapter 9

Conclusion

Conclusion and Evaluation

Tech giant companies like Google, Zoom creating newer things to dominant current growing market. Their product are free to use and popular among users. Application like Google classroom, Google meet and zoom became popular like hot cake since Covid-19 pandemic restrictions imposed. Almost all educational institutions started taking and maintaining classes and exam using these applications. The main reason was they are free to use, flawless, offers many useful features and gives real time update.

When we started thinking about our final year project we had many options. But we were looking for something unique. Then this online class management idea came in. During the discussion among ourselves we found out that already Google Classroom are in market with some advanced feature. We shared our idea to our honorable supervisor and he inspired us that we can go for it and make an indigenous project for ourselves, for our university. As Google is making every single of their products paid, so we can assume that in future Google is going to charge their users for using app like Google Classroom, Google Meet. That was the biggest motivation for us to make a platform like Google classroom but keeping it free for lifetime. Then we made a plan how to start and with what. After all the obstruction and hardship we made a shape to launch for commercial uses.

9.1 Evaluation of Objectives and Aims

The aim of this project was to develop a web-based application which will be run by our university authority. This created a set of goals that were used to guide the development of the tool.

- The goals of this project were to create a tool that is:
- To make a platform which will be an another home of our university during pandemics like Covid-19
- To migrate to an indigenous platform
- To gather everyone in single platform as currently we are dependent on several applications
- To make a free platform for our university.

- Intuitive: The platform had to be easy to use to every single user. Teacher to general students, everyone will use this platform, so if the platform is confusing general students will face difficulties in many ways.
- Aesthetically Pleasing: Design gives the first impression. So our aim was to make it eye pleasing to every user.
- Available: By the end of the project the platform had to be available to the students of our university.

9.2 Evaluation of Performance

This project has been similar learning experience to that of first learning programming Languages. Our Website Evaluation Report provides analysis of how well our website is performing and it's positioning on the internet. The website will identify how it can be improved so that you can gain more response. Different approaches can be taken to the evaluation of visualization methods, mainly depending on the objective of the study.

By identifying what areas of our website don't work correctly and improving them it can lead to a significant improvement in our websites' performance.

We carry out a thorough analysis of our website covering the following things:

- Engaging Content
- Compliant coding
- Correct Structure
- Usability
- Search Engine Optimization

9.3 Final Thoughts

We were dreaming of this project since 3rd year. We had a big ambition. We tried our best to deliver one hundred percent to make a flawless and marvelous platform, where we can do certain things which will manage literally every aspects of online class of our beloved institution. So at this point, if we evaluate we are not thrilled about this project but we are definitely happy as it is now. We believe we managed to give it a workable shape and ready to go. It's now a matter of time to make it aesthetic and add more feature to directly compete with apps like Google Classroom. Now we believe our project fulfilled almost everything we mentioned in our proposal. We are very much hopeful about our web application and confident about its future.

Chapter 10

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