ONLINE NITK WEBSITE AND MANAGEMENT SOFTWARE

Project Report

Submitted for the degree of

MASTER OF TECHNOLOGY in

COMPUTER SCIENCE

by

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CERTIFICATE

This is to certify that the Computing Lab Project Work Report entitled **Online NITK Website and Management Software** submitted by ***Pritam Sawale(212CS020),Sumedh Kamble(212IS012),Raj Kumar Raj(212CS023),Chandan Kumar Sah(212IS007)*** has been successfully completed. This project is a bonafide piece of work carried out with the consultation of guide Dr. Sourav Kanti Addya.

Dr. Sourav Kanti Addya
(Associate Professor)

Chairman - DPGC
(Signature with Date and Seal)

ACKNOWLEDGEMENT

I would like to express my kindest appreciation to all those who provided me the possibility to complete this report. Special gratitude to my guide for providing me the opportunity to work on a project in field of web development. Working in the field was a great experience and want to explore this field more. This will definitely add value to my CV. I take this opportunity to express my deep sense of gratitude towards those, who have helped me in various ways.

Last but not the least, I would like to express my gratitude towards my parents and friends for their kind cooperation and encouragement which helped me in the completion of work.

ABSTRACT

This is a Management Information Software for National Institute Technology Website. We have added two channels.It is dynamic website which allows flow of information on both sides i.e. from front end to backend and backend to front end as well. We have created our own version of original NITK website keeping all the standard things intact.

It has various features which will allows special users like teachers to perform important activities. Students can also use this website in order to register for different things.

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CHAPTER 1: INTRODUCTION

1.1 Motivation

Making website of our own college will allow us to learn how our college administration works. We get to know backend part of various activities and how it is actually stored in database. This will definitely help us improving our knowledge in different technologies. We will be facing the real life challenges which will make us industry ready. This will definitely add value to our CV.

CHAPTER 2: LITERATURE SURVEY

We looked at different websites of IITS and NITS to gain overall understanding and created our structure. We visited our old NITK website and compared the updates with the new one. We tried using various structures to see which front-end looks more aesthetic. We calculated various advantages and disadvantages of using a particular technology and chose the best possible one. We tried to make our website more user friendly therefore checked different UIs. We also made sure that our website matches the level of our current NITK website.

CHAPTER 3: Feasibility Study

2.1 Technical Feasibility:
The technical requirement for the system is very basic and it does not use any other additional hardware and software.

2.2 Behavioural Feasibility:
The system working is quite easy to use and learn due to its simple but attractive interface. User requires no special training for operating the application.

Chapter 4 : Requirements

4.1 Technology Used

Python IDLE:

IDLE (short for integrated development environment or integrated development and learning environment is an integrated development environment for Python. It is packaged as an optional part of the Python packaging with many Linux distributions. It is completely written in Python and the Tkinter GUI toolkit (wrapper functions for Tcl/Tk). IDLE is intended to be a simple IDE and suitable for beginners, especially in an educational environment. To that end, it is cross-platform, and avoids feature clutter. According to the included README, its main features are:
1. Multi-window text editor with syntax highlighting, autocompletion, smart indent and other.
2. Python shell with syntax highlighting.
3. Integrated debugger with stepping, persistent breakpoints, and call stack visibility.
IDLE has been criticized for various usability issues, including losing focus, lack of copying to clipboard feature, lack of line numbering options, and general user interface design; it has been called a ”disposable” IDE, because users frequently move on to a more advanced IDE as they gain experience. Author Guido van
35
Rossum says IDLE stands for ”Integrated DeveLopment Environment”,and since van Rossum named the language Python partly to honor British comedy group Monty Python, the name IDLE was probably also chosen partly to honor Eric Idle, one of Monty Python’s founding members.

Django:

Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It’s free and open source.

Advantages of Django

Here are few advantages of using Django which can be listed out here −

- **Object-Relational Mapping (ORM) Support** − Django provides a bridge between the data model and the database engine, and supports a large set of database systems including MySQL, Oracle, Postgres, etc. Django also supports NoSQL database through Django-nonrel fork. For now, the only NoSQL databases supported are MongoDB and google app engine.
- **Multilingual Support** − Django supports multilingual websites through its built-in internationalization system. So you can develop your website, which would support multiple languages.
- **Framework Support** − Django has built-in support for Ajax, RSS, Caching and various other frameworks.
- **Administration GUI** − Django provides a nice ready-to-use user interface for administrative activities.
- **Development Environment** − Django comes with a lightweight web server to facilitate end-to-end application development and testing.

HTML:

HTML stands for Hyper Text Markup Language

HTML is the standard markup language for Web pages

HTML elements are the building blocks of HTML pages

HTML elements are represented by <> tags

Advantages of HTML:

- HTML is widely used.
- Every browser supports HTML Language.
- Easy to learn and use.
- HTML is light weighted and fast to load.
- Do not get to purchase any extra software because it's by default in every window.
- Easy to use
- Loose syntax (although, being too flexible won't suit standards).
- HTML is easy enough to write
- HTML is that it is easy to code even for novice programmers.

CSS

Cascading **S**tyle **S**heets, fondly referred to as CSS, is a simply designed language intended to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML.

CSS is easy to learn and understand, but it provides powerful control over the presentation of an HTML document.

Advantages of CSS:

- CSS plays an important role, by using CSS you simply got to specify a repeated style for element once & use it multiple times as because CSS will automatically apply the required styles.
- The main advantage of CSS is that style is applied consistently across variety of sites. One instruction can control several areas which is advantageous.
- Web designers needs to use few lines of programming for every page improving site speed.
- Cascading sheet not only simplifies website development, but also simplifies the maintenance as a change of one line of code affects the whole web site and maintenance time.
- It is less complex therefore the effort are significantly reduced.
- It helps to form spontaneous and consistent changes.
- CSS changes are device friendly. With people employing a batch of various range of smart devices to access websites over the web, there's a requirement for responsive web design.

Javascript:

JavaScript (js) is a light-weight object-oriented programming language which is used by several websites for scripting the webpages. It is an interpreted, full-fledged programming language that enables dynamic interactivity on websites when applied to an HTML document. It was introduced in the year 1995 for adding programs to the webpages in the Netscape Navigator browser. Since then, it has been adopted by all other graphical web browsers. With JavaScript, users can build modern web applications to interact directly without reloading the page every time. The traditional website uses js to provide several forms of interactivity and simplicity.

Advantages of Javascript:

- Regardless of where you host JavaScript, it always gets executed on client environment to save lots of a bandwidth and make execution process fast.

- In JavaScript, XMLHttpRequest is an important object that was designed by Microsoft. The object call made by XMLHttpRequest as a asynchronous HTTP request to the server to transfer the data to both sides without reloading the page
- The biggest advantage to JavaScript having a ability to support all modern browsers and produce an equivalent result.
- Global companies support community development by creating projects that are important. An example is Google (created Angular framework) or Facebook (created the React.js framework).
- JavaScript is employed everywhere on the web .
- JavaScript plays nicely with other languages and may be utilized in an enormous sort of applications.

Sqlite3:

SQLite is a C library that provides a lightweight disk-based database that doesn't require a separate server process and allows accessing the database using a nonstandard variant of the SQL query language. Some applications can use SQLite for internal data storage. It's also possible to prototype an application using SQLite and then port the code to a larger database such as PostgreSQL or Oracle.

The sqlite3 module was written by Gerhard Häring. It provides a SQL interface compliant with the DB-API 2.0 specification described by PEP 249, and requires SQLite 3.7.15 or newer

Advantages Of Sqlite:

- SQLite is a very light weighted database so, it is easy to use it as an embedded software with devices like televisions, Mobile phones, cameras, home electronic devices, etc.
- Reading and writing operations are very fast for SQLite database. It is almost 35% faster than File system.
- It only loads the data which is needed, rather than reading the entire file and hold it in memory.
- If you edit small parts, it only overwrite the parts of the file which was changed.
- SQLite is very easy to learn. You don't need to install and configure it. Just download SQLite libraries in your computer and it is ready for creating the database.
- SQLite is portable across all 32-bit and 64-bit operating systems and big- and little-endian architectures.

- SQLite database is accessible through a wide variety of third-party tools.

Bootstrap:

- Bootstrap is the most popular HTML, CSS and JavaScript framework for developing a responsive and mobile friendly website.
- It is absolutely free to download and use.
- It is a front-end framework used for easier and faster web development.
- It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many others.
- It can also use JavaScript plug-ins.
- It facilitates you to create responsive designs.

Hardware Requirements:

- System: Windows 10
- RAM: 4 GB
- Hard Disk: 500 GB
- CPU : Intel core i5 or above

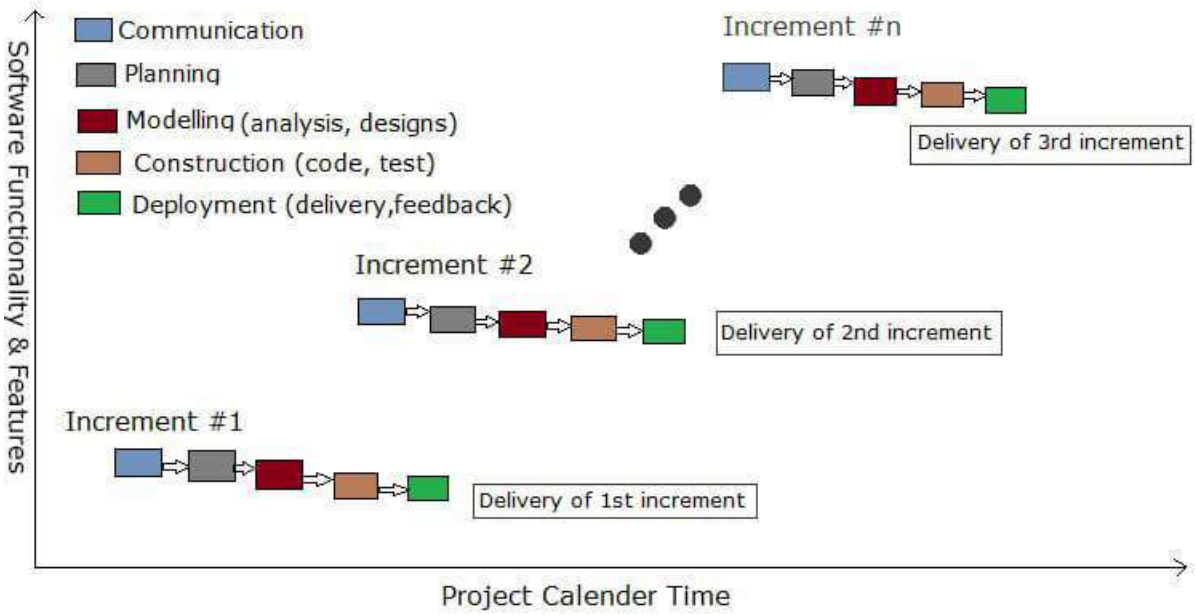
CHAPTER 5: Software Development Life Cycle

Incremental Model:

Incremental model is used as the process model in our system. This strategy is often referred to as a process model or a software engineering paradigm. A process model for soft- ware engineering is chosen based on the nature of the project and application, the methods and tools to be used, and the controls and deliverable that are required. When the system is usually complex and there is need of frequent changes when the goals and process are changed. By developing software incrementally the cost cheaper and easier to make changes to the software as it being developed. Incremental Model contain five phases

1. Planning:- It includes complete estimation and project scheduling and tracking ,Also includes estimation of project cost and time.

2. Modeling:- Task requires building of one or more representation of the application. It is a multiple process that includes four attributes of program data structure, software architecture, interface representation and procedural details.



3. Communication:- Software development process starts with the communication between customer and developer. According to need of project, we gather the requirement related to project.

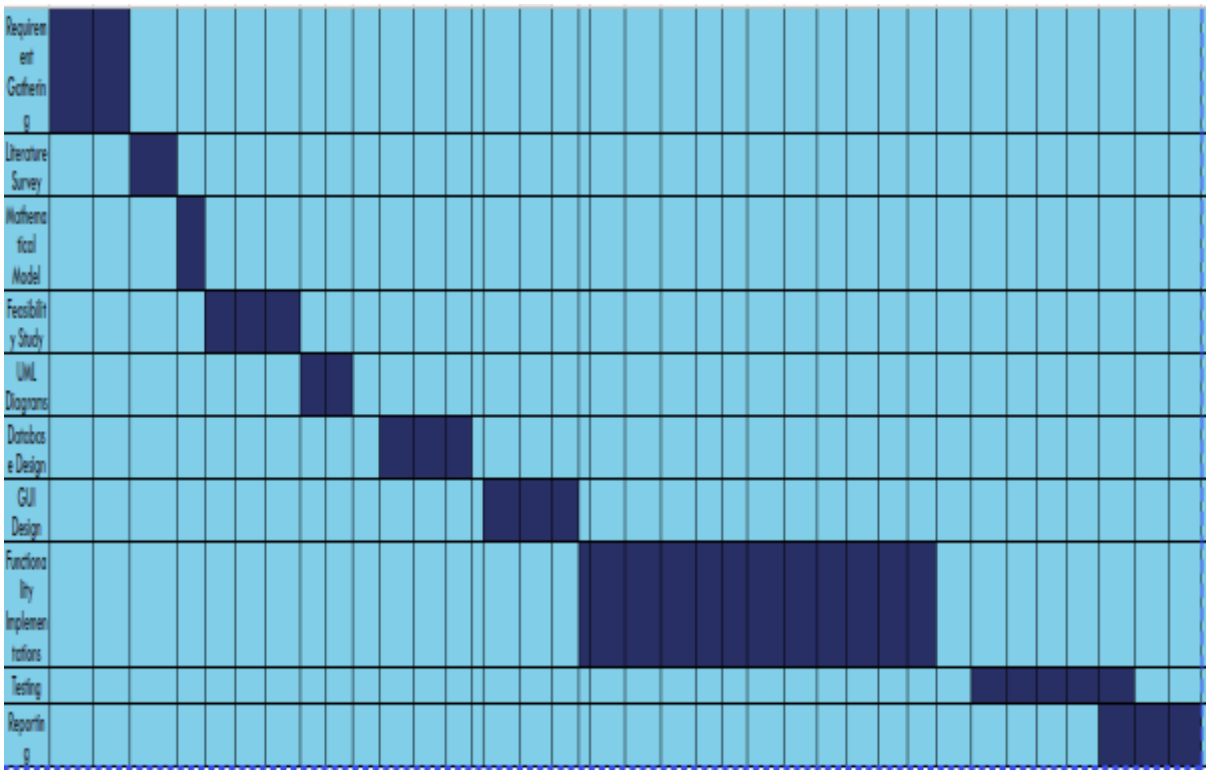
4. Construction:- Construction incrementally falls in the architecture with production ready code produce from analysis, design, and implementation with testing of the function requirements.

5. Deployment:- Include delivery of the partially completed/implemented project and taken feedbacks. The feedback is considered while reconstruction of the project.

6. Testing:- Testing is finding out how well something works. In terms of human beings, testing tells what level of knowledge or skill has been acquired. In computer hardware and software development, testing is used at key checkpoints in the overall process to determine whether objectives are being met.

Unit Testing : Unit testing is testing the individual modules separately. These modules will have tested for their internal functionalities.

Integration Testing: In Integration testing the different modules are combined, tested for their connectivity, checking that different modules will perform their task prescribed.



Timeline Chain Diagram

Chapter 6: System Design

System Architecture:

- **Student Login**

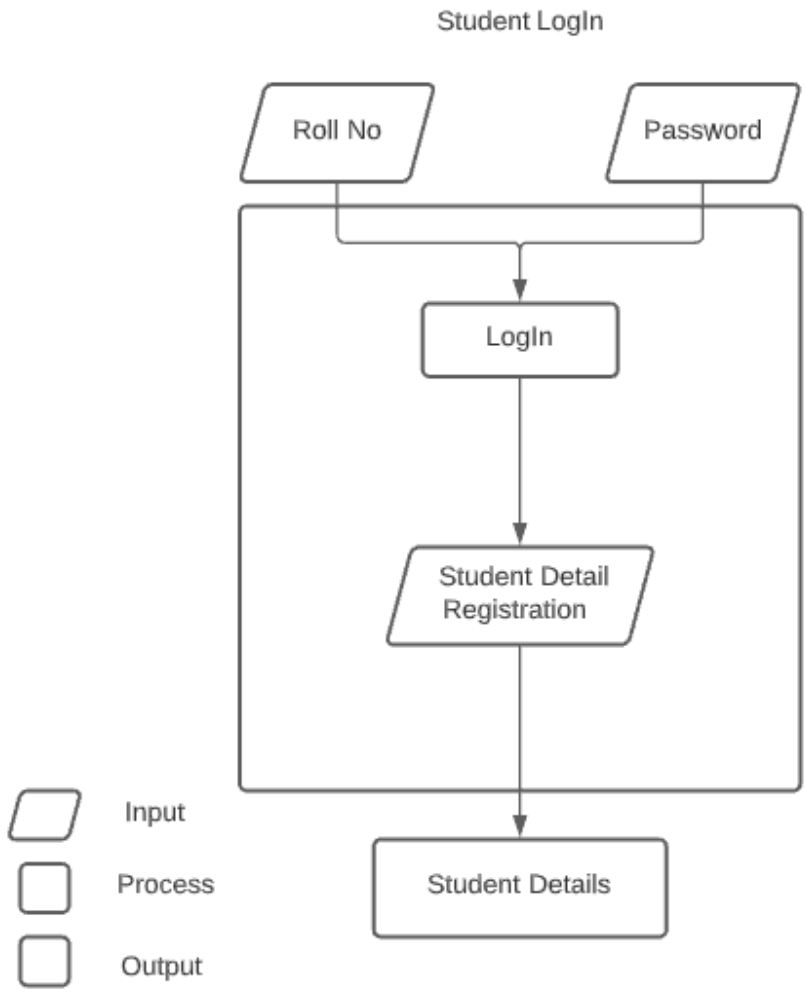


Fig 6.1

- **Faculty Login**

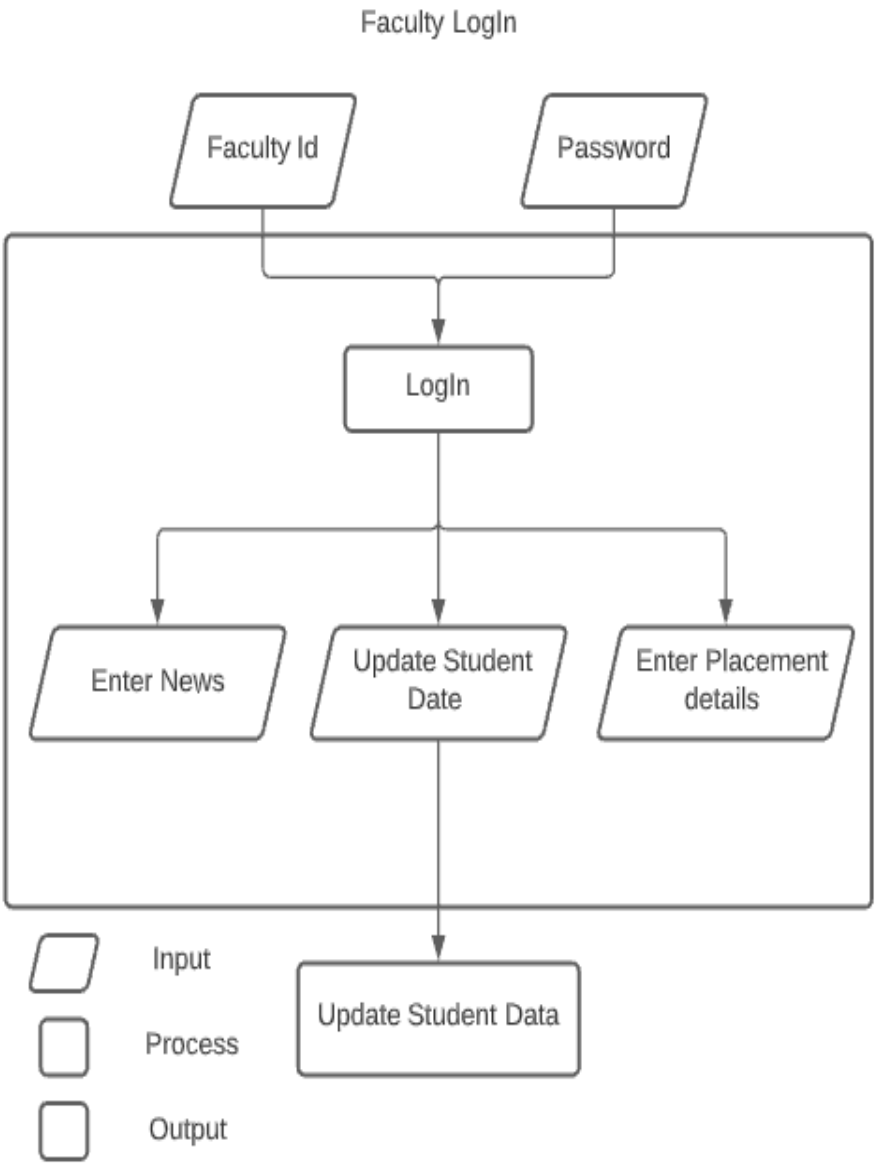
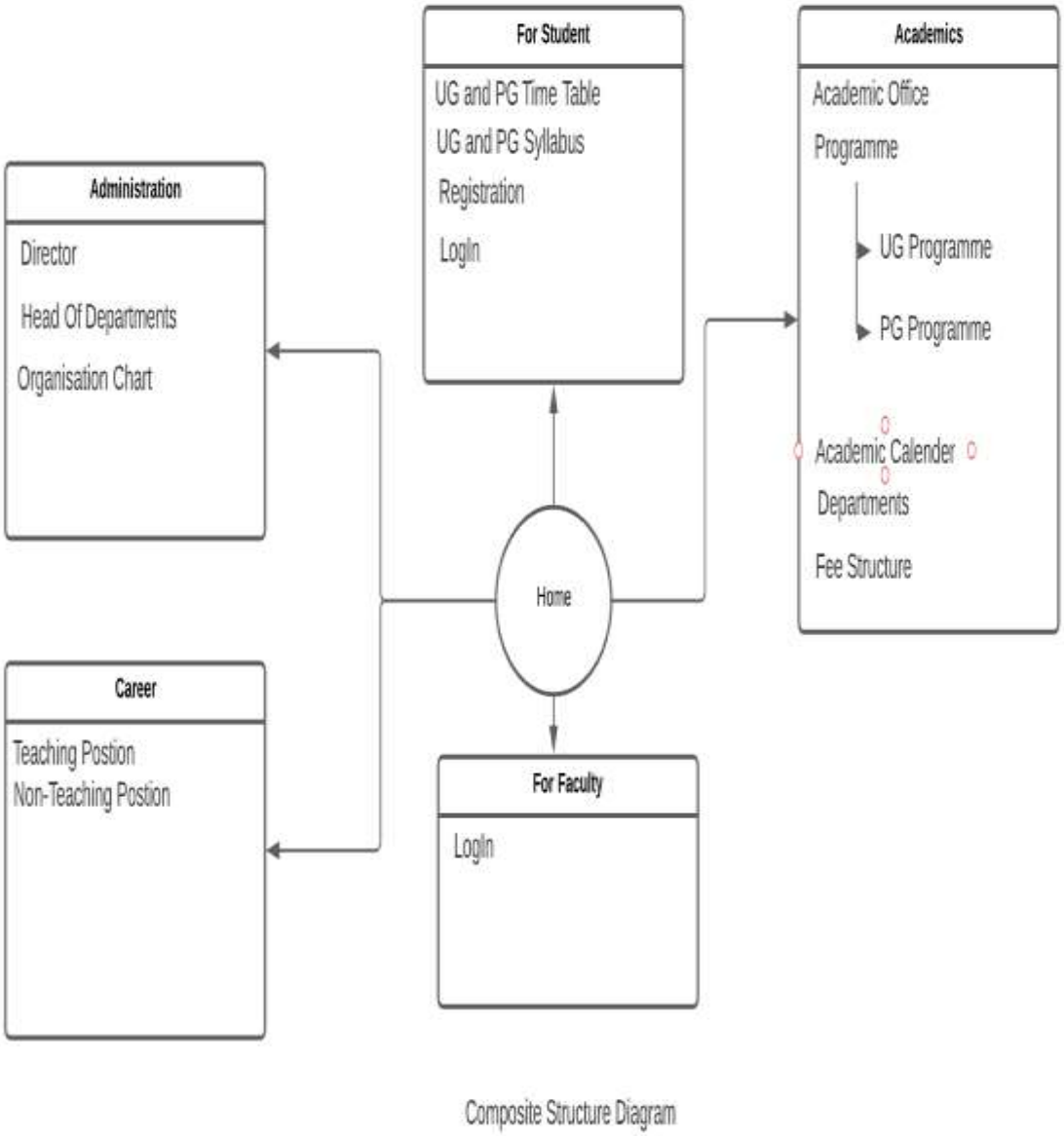


Fig 6.2

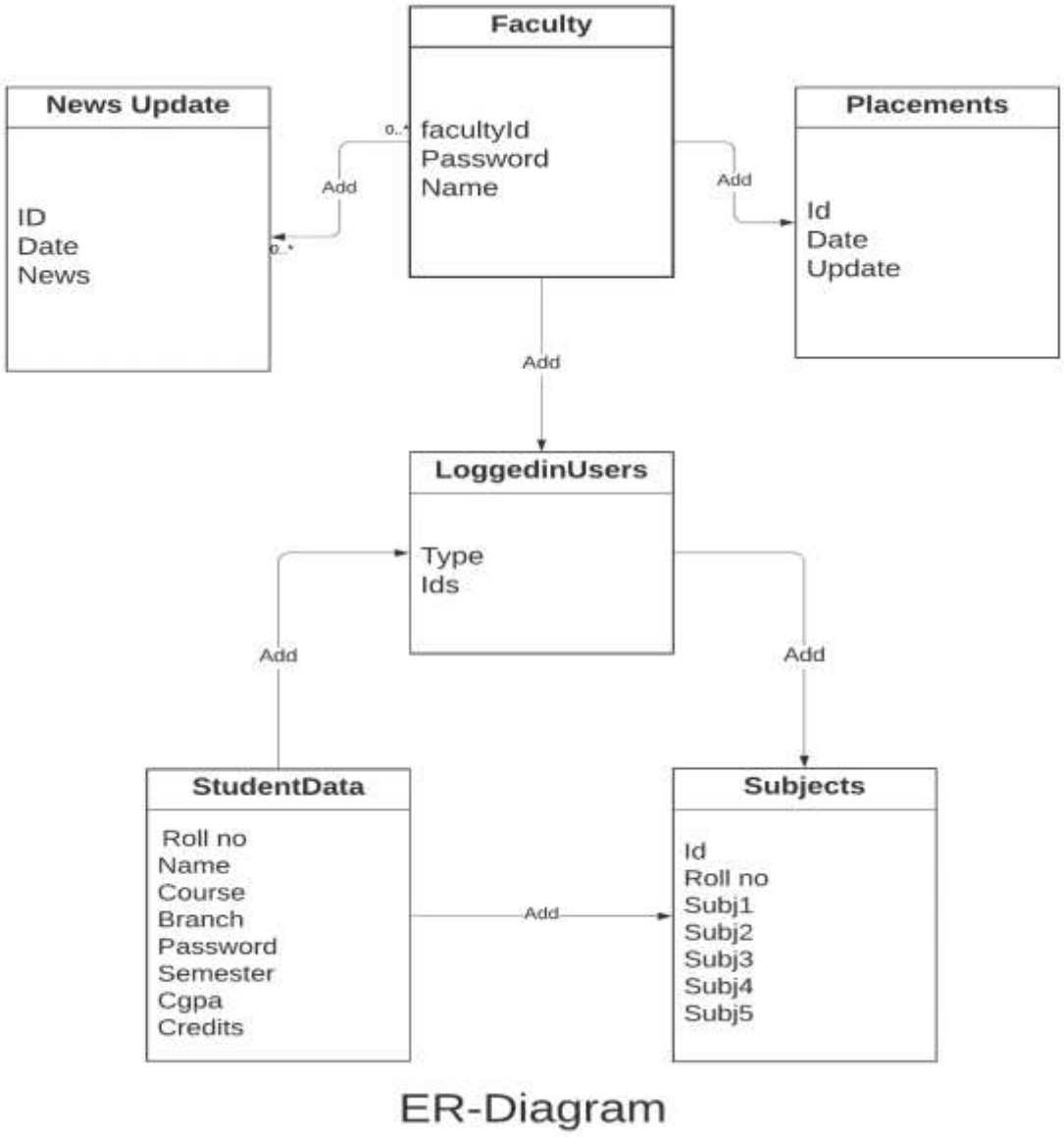
- **Composite Structure Diagram**



Composite Structure Diagram

Fig 6.3

- **E-R Diagram**



ER-Diagram

Fig 6.4

➢ Use Case Diagram

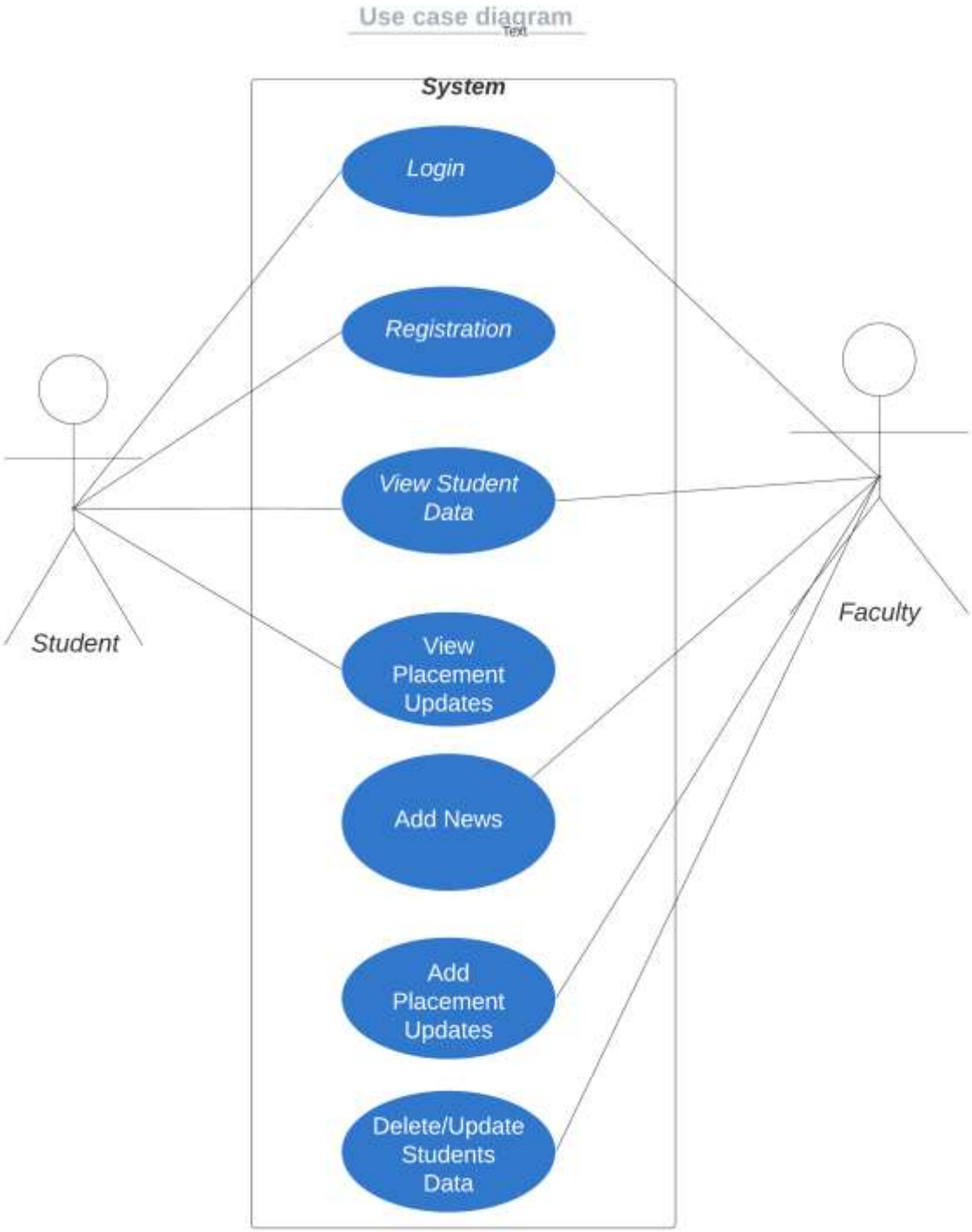


Fig 6.5

CHAPTER 7: Working

1)Student Workflow:

- First Student will register on site.
- After registration will be redirected to its homepage.
- If subject registration is not done, a form will be shown to register subjects.
- On Homepage details like semester,cgpa,credits,registered subjects will be shown.
- News/Placement news will be shown as updated.

2)Faculty Workflow:

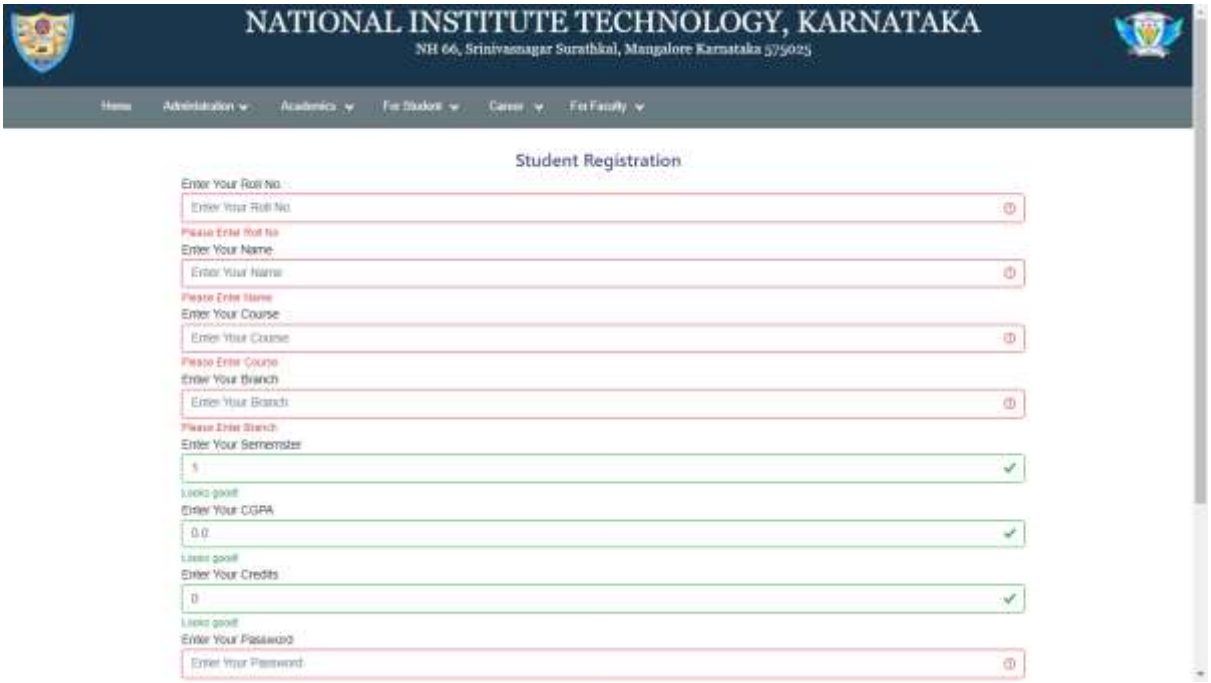
- Faculty will login through credentials.
- On landing page, News/ Placement activites can be updated.
- Student data can be deleted, data can be updated.

3)Career Workflow:

- Application for Teaching positions can be filled.
- Application for Non-Teaching positions can be filled.

Chapter 8: Results

8.1 Snapshots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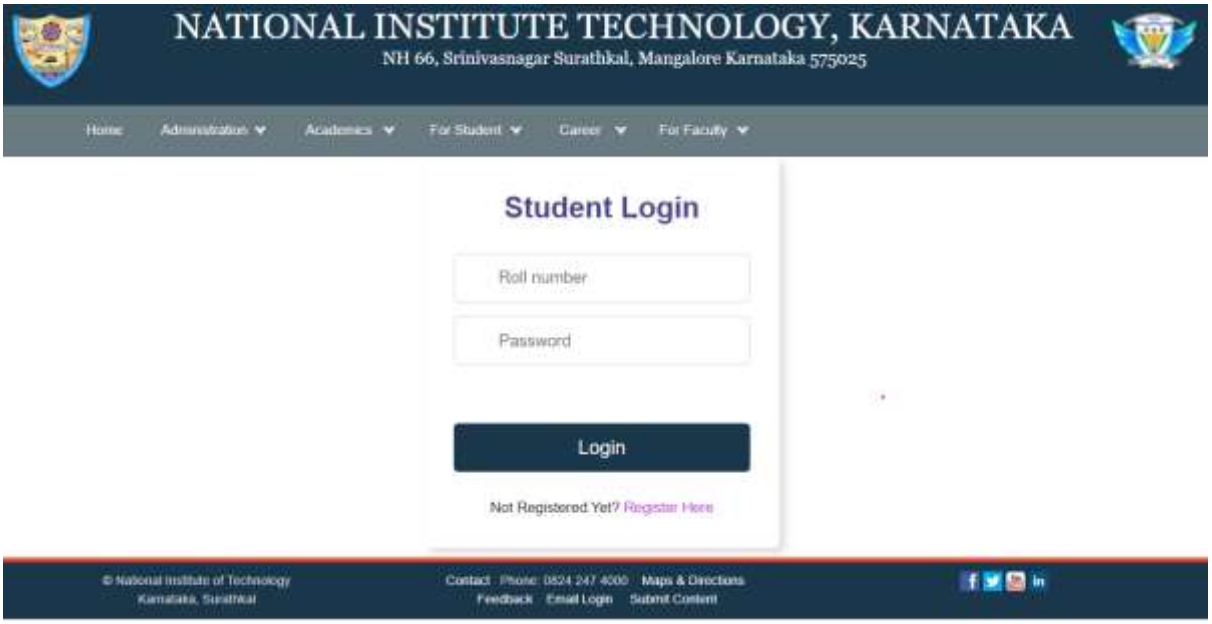
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Agnitha Cognitive Solutions |, Role: Data Scientists, CTC: 6-10 LPA, Location: Hyderabad.
IBM | Eligible: CSE/CSIS CTC: 43,000/- Role: R&D Engineer
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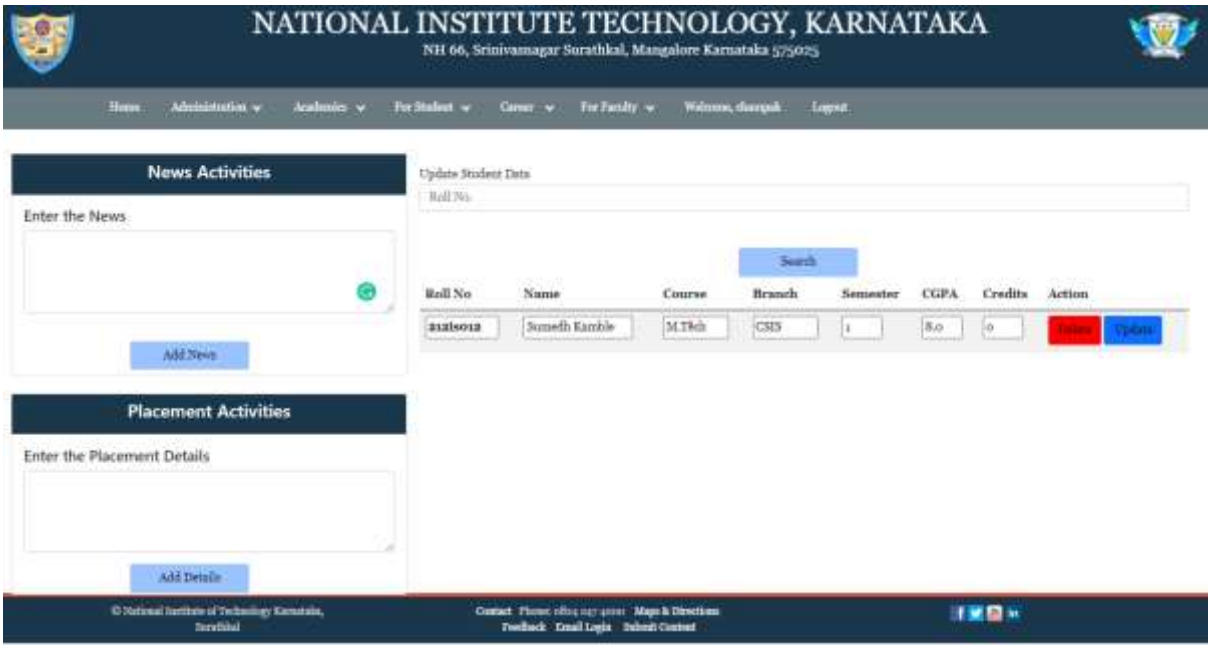
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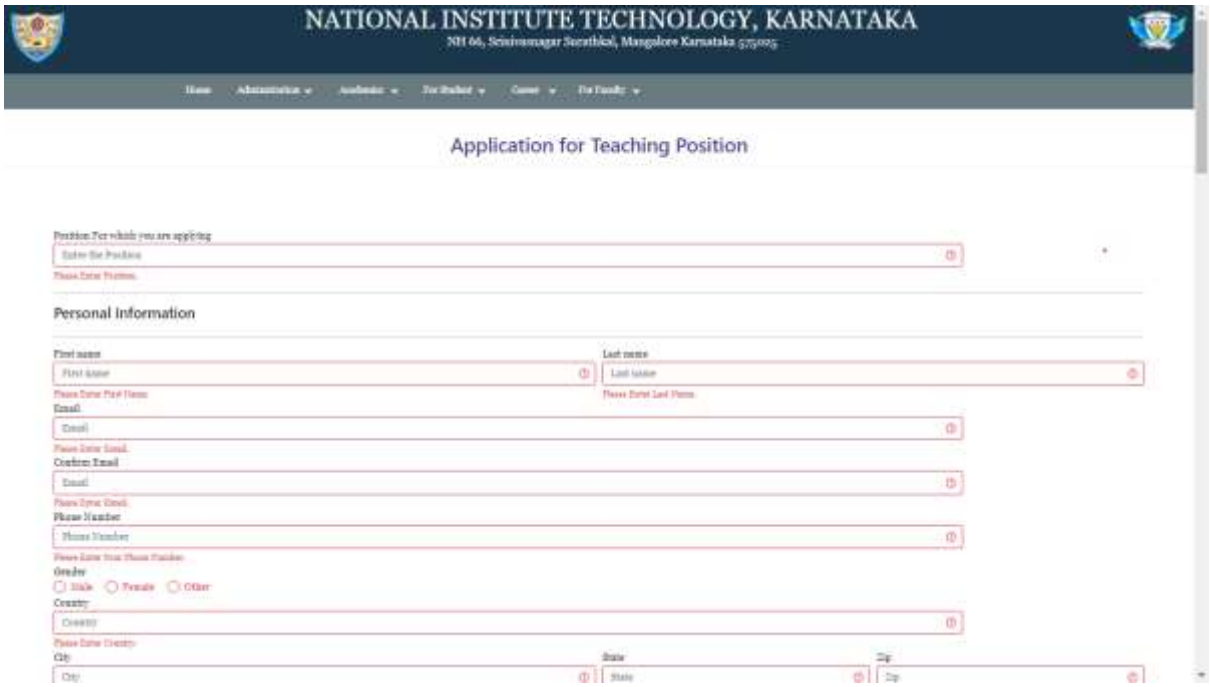
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Application for Teaching Position
Position For which you are applying
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Last name
Email
Confirm Email
Phone Number
Gender
Male
Female
Other
Country
City
State
Zip

CHAPTER 9: FUTURE WORK

- We can add multiple channels in the coming future.
- Student can apply for hostels.
- Students can take exams online.
- Faculty can upload course materials online and also conduct quizzes.