A WEB BASED PLATFORM TO CONNECT STUDENTS AND INCREASE INTERNAL COLLABORATION

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APPROVAL

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ABSTRACT

We have a lot of students at our university, and also have many faculties and departments. But if we consider the communication and collaboration among the students, it is very poor. Even We have no idea about one or more semester seniors or junior than us. As well as we are not so familiar with the students of the same batch. We have very little communication among the students. Every year a huge amount of students left the university but many of them don't have enough professional or practical life skill. They are almost unconcerned about this and they also don't have proper knowledge about market & environmental wants. So we want to develop a virtual platform where the students will be able to connect and contact each other easily by creating a post, throw email or by messaging. The students also get a virtual guide for building up his career. The university will be able to get a statistic about their student's performances, skills and job positions in the market. Besides, in every semester new students can prepare themselves for their Title defense. But collecting an idea is not so much easy. We also want to help the students in this purpose. We can also use our system as a job portal, a live forum, and a tutorial portal.

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INTRODUCTION

1.1 Introduction

The Web Based Platform to Connect Students and Increase Internal Collaboration has become an important factor in student life therefore the need to have a student connectivity system. This project online student connectivity system keeping all these things in mind provides a total solution to the field of the education and career and provide the easy online web application for senior and junior student's connectivity. This is a web-based Application. In this application, students can get information about their study and know proper career guideline from their seniors and also get help from their teachers for any kinds of problems. It's secured, easier to use and helpful for any kinds of learners.

1.2 Motivation

In Private University we have less communication between senior and junior students and have very poor opportunity to get helped from each other. Every year a huge amount of students left the university but many of them don't have enough professional or practical life skill. They are almost unconcerned about this and they also don't have proper knowledge about market & environmental wants for final year project, students face problem for their project/research idea in every semester.

1.3 Objectives

- To increase the internal communication and collaboration among the students.
- To build up a system that can guide a student to fill up his life goal and prepare himself for job market.
- Support the students to develop innovative projects / research idea.
- Creating a live platform to discuss various problems.
- Strong database
- To get information about a specific person in case emergency.

- To ensure the security of the user's data.
- To maintains a good relationship between alumni and the running students.
- To easily find out any students of their interested areas.

1.4 Expected Outcome

- All of the students will be able to communicate & collaborate easily with each other.
- The good relationship between teachers, students & alumni.
- Getting a smart CV by his profile.
- Getting a virtual guide for easily prepared himself for current environment.
- Generating new or innovative idea.
- Getting a data that show us how many students complete their graduation in every year/semester, what's the condition of their skill and what's the position of them in job market and general cause of their unemployment.
- Also get a job portal, forum and tutorial portal.

Mainly we are ensured the professional high-quality and strong security online base web communication system and also current information of every students and alumni.

1.5 Report Layout

Chapter 1: Introduction

In this chapter, we discuss the motivation, objectives and expected outcome of our project. Later reports followed the report layout.

Chapter 2: Background

In this chapter, we have talked about the project background situation and compare it with other adversary systems about related work, problem areas and project challenges as well.

Chapter 3: Requirement Specification

In this chapter, we were given ideas about business process modeling, requirements collection and analysis, models for use in project systems and their descriptions, logical

relational database models and design requirements.

Chapter 4: Design Specification

In this chapter, we will be given an idea of the front end and back end design of the project, the design of the user interaction and also the implementation requirements.

Chapter 5: Implementation and Testing

In this chapter, we will discuss the implementation of the database, implementation frontend designs, interactions implementation, and project test results as well as test implementation.

Chapter 6: Conclusion and Future Scope

In this chapter, we will discuss the conclusions and opportunities for further development that is very much concluded from the project.

BACKGROUND

2.1 Introduction

Students Wiki system is a system which is useful and efficient for connection with students, teachers and alumni. It is suitable for social connection and collaboration among students, teachers and alumni in educational institutions. All user can share their opinions, experience, career guideline, chat with each other and get a smart CV(curriculum vitae). With this system you can also like, share, comment in any post of users. Students can add their skills, complete project, educational background and interested area in their profiles. Admin can control the whole system. If any user share any vulgar content and comment with disrespect with other users, the hampered users can report those contents and comments to the admin. Then admin can remove those reported contents and comments.

2.2 Related Works

A student will be able to create an account in the system by providing his information. He/she has to provide his/her academic information (e.g. Level, term). In any time, users are capable to Update his/her profile by providing his/her information. If we build up a job portal, then Job provider is also a user of our system. We can do a statistic by using the data like how many students complete their graduation in every year/semester, what's the condition of their skill and what's the position of them in job market and general cause of their unemployment. Any One can find students by semester, year, department, club or area etc.

2.3 Comparative Studies

Our implemented 'Students Connectivity Web Application' is different from the existing in general social media website. A blog portal is available here. The System has a friend request system and also have chatting system. Students can communicate by chatting or by provided email or phone number. The system will also has tutorial portal and forum portal for question and answer. Students can find a smart CV depending on their

provided information in their profiles. They can also download and print it. Our implemented website is only educational base where other existing social media websites are different bases.

2.4 Scope of the Problem

- This is an open platform where all users of the platform will be able to follow other users, viewing their public profile and also comment on the public posts.
- Admin can control all user profile and public comments.
- Dependence on Online Friends.
- The Update Syndrome.
- Users can easily create an account and log in, then they can get access.

2.5 Challenges

There is no work exists without challenges. Besides, in our project, we have also faced some challenges to deal with the project. First of all, we are trying to create this system in such a way that at a time user and admin can access the system, we have to develop the Student-wiki system by meeting our user requirements and this is extremely challenging for us. Since our website application is accessible user based. This challenge seeks to identify user-centered technologies that can enhance user activity by monitoring and analyzing activities at home. In this case my user informs to me when he faces any problem or he want to get new Services. Our main challenge is make sure the all information of User and designing database. Ensure the all report maintained and big challenge is smart resume generation. In this web application system (Student-Wiki system) our big challenge is make sure all of the information user (student) and also other users. Another challenge is difficult to maintain of all system. This system has another challenges is many user access to at a time. We will pursue how to solve or we will provide solution of the problem. We will refer to our services throughout the rest our services. Here is the given below some challenges. Make sure the strong database

- Proper management is difficult.
- Maintaining enough security.

- Publicity.
- Many user access at a time.
- Users can easily create an account and log in, then they can get access.

REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

In the business process model(BPM) we represent all of the processes of our system. By business process model we easily define and understood the whole enterprize even who have not enough knowledge about technology. we are trying to design the business process model of our system as much easy as possible. [3].

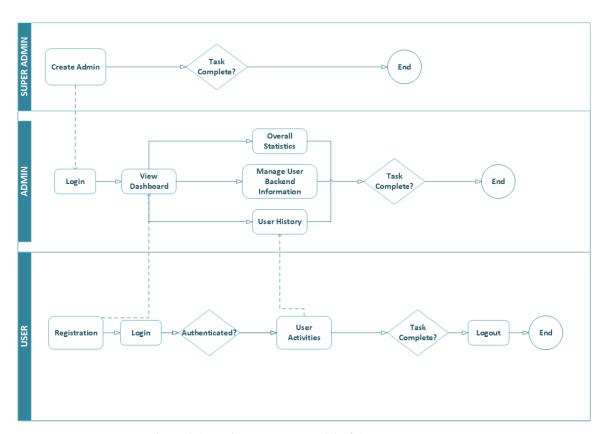


Figure 3.1: Business process model of the system.

3.2 Requirement Collection and Analysis

For building a standard application, requirement collection is very important. The specific requirement is mandatory to develop a user-friendly system [4]. There are some basic and very important requirements collected during the implementation of the application and also in the data collection. Some basic requirement are given below.

- Super admin will be able to create the new admin and managing the whole system.
- Admin must login in the system and then view dashboard, statistics, user history
 and report. Admin also can add new features in the system and manage some
 activities of a user.
- Needed a valid email to reset the password and further actions of the system.
- User must to do registration in the system then can login in the system.
- User can create new post, like & comment and also share post.
- Add their details. Such as, skill, address, job experience, website, email etc.
- User can update and delete their profile.
- They can follow each other.
- View their own and other timeline.
- Generate their resume and download or print it.

3.3 Use Case Modeling and Description

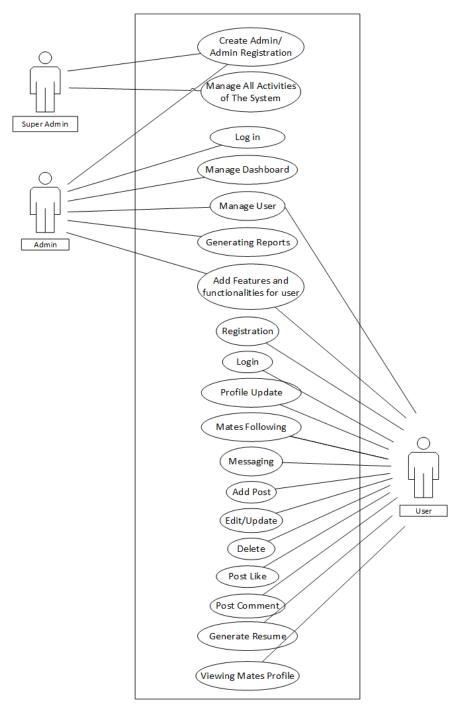


Figure 3.2: The use case model of the full system.

3.4 Logical Data Model

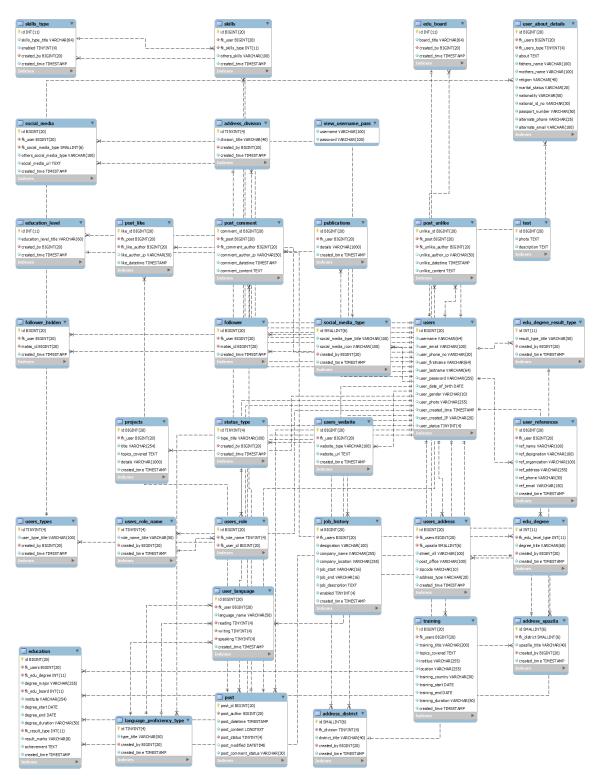


Figure 3.3: Logical data model

3.5 Design Requirements

- This system will contain three types of users like Super-Admin, Admin, and User (Student & Teacher) [7].
- Super-Admin will be able to create a new admin.
- Admin can log in by the given credentials from Super-Admin.
- Normal user has the option to create a new account for himself/herself.
- User can send the message.
- User can give status. Also like, comment, share to each other status [7].
- Admin get all access except add admin.
- Super-Admin maintain all access.
- Everyone can view all everyone's timeline, which is public [7].

DESIGN SPECIFICATION

In this chapter, we will demonstrate the design of our system. We also describe all the tools and technologies we use to develop our system.

4.1 Front-end Design

The front end worked on the presentation layer. It presents our system to the user and it is the only way to interact with the user with our system. The front end is the most sensitive part of the web-based application development. The front end also is referred to as the client-side. The objective of designing the system so much care to make sure that when the users use the system they can view the information in such a format that is easy to understand. The back end developers create components and features that are indirectly reached by a user through the front-end of the system. And this way of interaction occurs between the users and the servers. In most aspects of software development, a very significant part is to design the front-end especially for social media like our system. Here we designed a simplistic and attractive front-end for the users to co-operate with the software easily using HTML, CSS, JavaScript, and JQuery. Some front-end design is given below [8].

4.1.1 Login Page

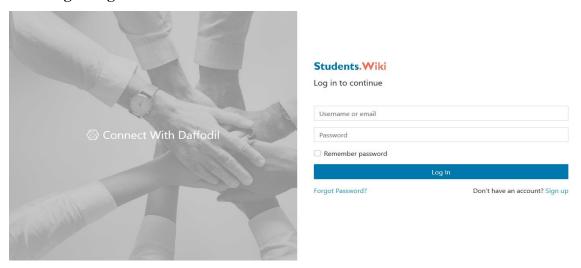


Figure 4.1: Login page of user.

4.1.2 Home Page:

When the user completed system authentication successfully by logged in then he/she automatically redirected to the home page. Here he will be able to create a new post and can view all user posts.

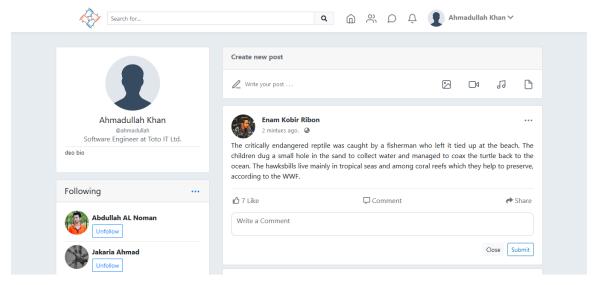


Figure 4.2: Home page in desktop.

4.1.3 User Profile Page

Here he can view all the posts that he/she created. Also can view his/her profile. Users can add or update to his profile on this page.

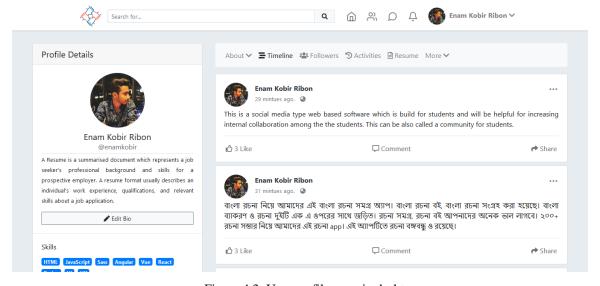


Figure 4.3: User profile page in desktop.

4.2 Front end design tools and technology

For front-end development [9], we need:

- HTML & CSS, JAVASCRIPT, JQUERY, and BOOTSTRAP.
- Build things. Playing around with UI elements is one thing.
- Read and Contract
- There is more to front-end development than building a website application.
- Version control will save your life and make sure they all save information.
- Be the middleman.

4.2.1 HTML

HTML stands for Hypertext Markup Language. This is the standard markup language for constructing web pages. It defines the model of a Web page, and it consists of a series of elements, the elements of HTML instruct the browser how to display the content in the browser. The elements of HTML are represented by different types of HTML tags, such as div, heading, etc. Browsers use the HTML tag to render the content of the page but do not display the tag in the browser.

4.2.2 CSS

CSS is the style sheet language (Cascading Style Sheets). It is used to describe the presentation of documentation written by HTML. Such as XHTML, SVG, etc. CSS describes how the element should be rendered on screen and also CSS is one of the major measurement languages of the open web and web browsers.

4.2.3 Bootstrap

Bootstrap is a free and open source front-end web framework. It includes HTML and CSS based design templates for forms, buttons, navigation and other interface elements. It is also known as a JavaScript extension. Unlike many previous web frameworks, this only concerns the front-end development.

4.2.4 JavaScript

JavaScript is a high-level explanatory programming language that conforms to ECMAScript specifications. It is a programming language that is dynamic, poorly typed, prototype-based, and as distinct as multi-instance. JavaScript is a set of syntax rules and defines properly structured JavaScript programs.

4.2.5 JQuery

JQuery is a JavaScript library designed to facilitate HTML DOM tree traversal and manipulation such as handling, CSS animation, and Ajax, etc. It is open-source software using free, valid MIT licenses. Web analytics indicates that this is the most comprehensive JavaScript library in the long run.

- JQuery is a little, quick JavaScript library.
- JQuery is period autonomic.
- JQuery mark "compose less accomplish more".

The main functionality of JQuery are- HTML control, DOM control, CSS control, AJAX, HTML and JSON parsing.

4.3 Back-end Design

The logical part of software occurs in the back-end. It is the most important part of the software. The whole system is influenced by it. Back-End means the server-side. In the back-end, many multipliers consist of the scripting languages or the server-side language, Automated framework, database management, safety, validation, approval, data Parsing, data validating, data backups as well. We developed "Students-Wiki" using Java, Spring boot (a web framework) and JQuery. Here we use MySQL as a database for storing data in the server. Here we will shortly discuss those tools and technology.

4.3.1 Java

Java is a modern and high level as well as a popular programming language. It is widely used in different sectors, such as-desktop application, web application, mobile application (e.g. Android app), networking and artificial intelligence. There are some popular web frameworks for java, e.g. Spring, Apache Struts 1, etc.

4.3.2 Spring

Spring is a web framework for java web application development. it is the most popular web framework for java. Using this framework, it is very easy to develop and maintain web applications in java. Security and robustness is the key success of the framework.

4.3.3 MySQL

MySQL is an open-source and widely used database. Much popular software was created with MySQL. This is a related database. We can easily maintain our data using this database.

4.4 Interaction Design and UX

Interaction design is the cooperation between the users of the system and system or product. We using bootstrap a CSS framework to design our web temple. Bootstrap is very easy to use and is also a responsive framework. Designers focus on creating engaging web interfaces with logical and thoughtful behaviors and actions [10]. The successful interactive design uses technology and good communication principles to create the desired user experience. The Figure we see below is the login page for admin.

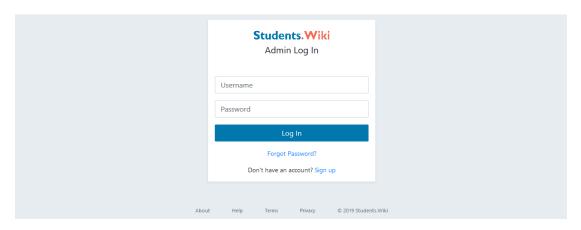


Figure 4.4: Login page for admin

4.5 Implementation Requirements

For implementing the system, we need to do several functionalities [11], such as-

• The design needed to implement Java and Spring boot (Latest version of spring).

- Here we choose MySQL as Database.
- Hosting platform should be Linux based server.
- Regular backup of source code and Database from the server.
- User logs needed to store in the database.
- SQL injection needed to protect with string fleeing.
- Form validation using Javascript and jquery is required before server-side validation.
- Cross-site scripting is required to verify.
- Unauthorized attachments are required to prevent with the maximum attachment limit.
- An invalid message should display on invalid data input.
- JQuery needs to be perfect for distinct designs.
- The front end and the design require a bootstrap framework for responsive design.
- For visual aspect, a variety of fonts and icons are collected from Google font and font awesome.
- Needed a version control like Git, GitHub or Bit Bucket for easily maintenance of code.

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

For building a strong backend here we use MySQL Database. The version of MySQL is MySQL-Community-5.7.21.0. For maintenance, the database uses HeidiSQL(a free and open-source administration tool for MySQL, version: 9.5.0.5196) and sometimes uses the MySQL Shell, which is a command-line tool for maintenance. We design the database in the best way. There are almost 30 tables in the database called students-wiki. As the example, we show some figures bellow.

5.1.1 All Database table view in HeidiSQL

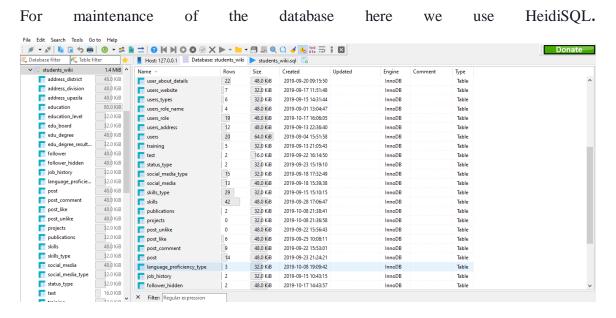


Figure 5.1: All database table view in heidisql

5.1.2 User Table

This tables stores the basic information about users, such as: name, username, password, photo gender etc.

Field	 Туре	Null	+ Key	Default	Extra
id	bigint(20)	NO	PRI	NULL	auto increment
username	varchar(64)	NO	UNI	NULL	i [–] i
user email	varchar(100)	NO	UNI	NULL	i i
user_phone_no	varchar(20)	YES	UNI	İ	i i
user_firstname	varchar(64)	NO	j i	İ	i i
user_lastname	varchar(64)	NO		l	i i
user_password	varchar(255)	NO		NULL	i i
user_date_of_birth	date	NO		0000-00-00	i i
user_gender	varchar(10)	NO		l	i i
user_photo	varchar(255)	YES		l	i i
user_created_time	timestamp	NO		CURRENT_TIMESTAMP	on update CURRENT_TIMESTAMP
user_created_IP	varchar(20)	NO			
user_status	tinyint(4)	NO		1	
+	+	+	+	+	++

Figure 5.2: User table description in command line

5.1.2 Post Table

When user create a new post it will stored in the table. There are also some filed in this this tables like- post_author, post_datetime, post_content etc.



Figure 5.3: New post table

5.2 Implementation of Front-end Design

It's very challenging to make a simplistic and user-friendly UI design for the users, we try to make it as user-friendly as possible. At present, there are many devices like smart mobile, tablets, desktop, laptop, etc. We make our website responsive so that users can visit from different devices with a proper view of content [12]. We build the user interface with the help of HTML, CSS, Bootstrap, JavaScript and JQuery technologies. Here is the given some Implementation of front end design:

- There have two home pages in the system, one is for user another is for admin.
- Every type of the user must be registered by filling up the required information fields. But admin cannot be registered by own, an admin will be registered by super admin.
- Users can log in using their registered email and password.
- Admin can log in using their registered email and password. but a user and admin login page is different.
- In the user home page, he will be able to see details about himself/herself.
- User will be able to search another mate (user) by using the search option in the website header.
- User can view the mate's timeline and about mates which is public.
- The user will be able to update his profile and password, and he can generate a resume by using his profile info. And finally, if the user wants, use has the right to delete his own account.

5.3 Implementation of Interactions

To build our system (student-wiki) we implemented a responsive UI for better user experience. We use icons, text links and buttons to make things easier in the field. Our web software system design is user-friendly. Both administrators, owners and tenants need to create a profile for access [13].

5.4 Testing Implementation

Software testing is a process of detecting errors to inquire about the functionality of a software application that meets the advanced software-defined requirements and to ensure that the product is free of quality product manufacturing errors [14].

After completing the development part, we ensure that our system (Students-wiki) does its functionalities properly. For this, we tested our system in category wise. We perform the test operation on every module of the system. Here we will show the summary of testing our system in bellow.

TABLE 1: SUMMARY OF TESTING THE SYSTEM(USER SIDE)

Test Case	Input	Expected	Obtained	Pass/Fail	Test On
		Outcome	Outcome		
User	Required user	Successfully	Successfully	Pass	01-09-2019
Registration	information	registered.	registered.		
User login	Username	Successfully	Successfully	Pass	26-10-2019
	and password	Logged in	Logged in		
Password	Wrong	Show an	Showing an	Pass	26-10-2019
	password	error for	error for		
		wrong	wrong		
		password	password		
News Feed	Nothing	All user	All user post	Pass	27-10-2019
		post and	and activities		
		activities			
Create New	Text and	Successfully	Successfully	Pass	27-10-2019
Post	Image	Posted	Posted		
Post like	Post id and	Successfully	Successfully	Pass	27-10-2019
	user id	liked	Liked		
Post	Post id user	Successfully	Successfully	Pass	27-10-2019
comment	id and	commented	commented		
	text(comment				
	content)				
Find mates	User first	Successfully	Successfully	Pass	27-10-2019
	name, last	view user	view user		
	name and				
	username				
		<u> </u>	L	<u> </u>	

Message	Text as	Successfully	Successfully	Pass	27-10-2019
	message	send	send		
	content				
View User	User Id	Successfully	Successfully	Pass	28-10-2019
Profile		viewed	viewed		
Generate	All	Successfully	Successfully	Pass	28-10-2019
resume	information	generated	generated		
	of user				
View	User id	Viewed user	Successfully	Pass	28-10-2019
Follower		follower	viewed		
View user	User id	Successfully	Successfully	Pass	29-10-2019
timeline		Viewing	Viewing users		
		users own	own post		
		post			
Change	Old password	Successfully	Successfully	Pass	29-10-2019
password	and new	changed	changed		
	password				
Delete User	User pass	Successfully	Successfully	Pass	29-10-2019
Account		deleted	deleted		

Table 2: Summary of testing the system(ADMIN SIDE)

Test Case	Input	Expected	Obtained	Pass/Fail	Test On
		Outcome	Outcome		
Admin	Username	Successfully	Successfully	Pass	29-10-2019
Login	and password	logged in	logged in		
View	Admin login	Successfully	Successfully	Pass	29-10-2019
Admin	using	viewed	viewed		
dashboard	username and				
	password				

5.5 Test Results and Reports

This test report is necessary to illuminate the test results in a formal way, which allows estimating the test results faster and faster [15]. This document describes the acquired, environmental or operating conditions from the correction test in the Bureau data collocated method, and shows the comparison of the test results with the test results. The test report is very important and you need to know if the system is ready. This document records the data obtained through evaluation tests [16]. We have to go through many types of tests.

There are some type of testing

- Functionality Test
- Regression Testing
- Security Testing
- Performance Test
- Scalability Test
- Usability
- System interoperability Localization
- Disaster recovery Installation

After testing (that show in section 5.4), we see that all the functionality of the system (Student-wiki) are perform as expected.

CONCLUSION AND FUTURE SCOPE

This is the last chapter. In this part, we situation about our like and end. Here we experiment the posterior breadth and how it could have been something more.

6.1 Discussion and Conclusion

Finally, we have completed our task the Social Connectivity System among students, alumni and teachers. It was the demand of time to make an educational connectivity system in our country. The system will accumulate communication among Students, Teacher and alumni through Admin. It will assist the learner to acquire knowledge about their studies and professional career. It will make good relationship among students, teachers and alumni. It will save time and reduce communication gap. The system will have upgraded with the innovative feature in future. The new upgraded system will be with its web interface layout. This task can be operated various educational foundations for dealing with all under-studies and this framework can be further accommodating. It keeps up to the majority of the users of this framework.

6.2 Scope for Further Developments

This system has lots of future work to make it more usability. Some future Scopes are discussed in the below.

- Create mobile application for both android and IOS.
- Add a question and answering portal.
- Project submission blog. Where they can upload their project or idea by video, source code, PowerPoint slide or by report of the project.
- An annual statistic of student's data.
- Separate job portal for searching job and employee.
- virtual guide system using data mining which will help the students for easily prepared himself for current environment.

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APPENDICES

Appendix A: Project Reflection

From the Fall-2018 semester, we started our journey to build a platform to connect students and increase internal collaboration. We followed the project for improvement to implement and monitor our invention and were able to reach our aim. The students can communicate easily from anywhere and it will save valuable times as well. We followed the model to implement and monitor our system, with the all hard work and spending a lot of time finally I was able to reach my goal at last.

The project will be very helpful for students and teachers to communicate and easy to use. The user will be more facilities to communicate to each other, share their experience, finding job, message with each other. The user will get a proper information about another user. They will be able to perform the task in contact each other and solved the communication gap problem with good relationship and good understanding for future.

Therefore, we believe that our system will be a positive, effective, and helpful Thing in University communication system between student and teacher. And I will be continuously upgrading our system as.

Appendix B: Combination and Acronyms

HTML: Hypertext Markup Language.

PC: Personal Computer.

CSS: Cascading Style Sheets.

Framework: Spring Boot

JSTL: Java Server Pages Standard Tag Library

JPA: Java Persistence API

J2EE: Java Platform, Enterprise Edition

VI: Visual Instrument.

DOM: Document Object Model.

AJAX: Asynchronous JavaScript and XML.

JSON: JavaScript Object Notation.

UX: User Experience.

SDLC: The systems development life cycle.

RTP: Real-time Transport Protocol.

FTP: File Transfer Protocol

DBMS: Database Management System.