IT Horizon in Social Media Network (ITHISMN)

Thesis submitted to the Institute of Information Technology, Quaid-i-Azam University, Islamabad, for the partial fulfillment of the degree of

Master of Science
In
Information Technology

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Dedication

All praise is due to Allah, the Lord of Glory, who gave me the knowledge and strength to complete this project. I sincerely thank my informants. Their information helped me to complete my dissertation. I sincerely thank my supervisor Dr. Munawar Iqbal for his encouragement and valuable cooperation.

I would like to share my deepest appreciation to all my classmates who worked together for 2 years and helped me in my education. Finally, a heartfelt thank you to my dear parents and siblings for their everlasting love, prayers and encouragement. For those who indirectly participated in this research, your kindness means a lot to me.

Najeeb Ullah

Abstract

IT Horizon in Social Media Network (ITHISMN) is a social media platform developed for the sharing of useful content, news, events and ideas. The central vision of IT Horizon in the social media network (ITHISMN) is to share class related posts with its classmates and teachers and represents a vast repository of information on a daily basis. The user can share useful content, news and events. These materials can be accessed and available to everyone in the system. The user will be updated with all activities by joining the system.
The system is designed in such a way that everyone can openly share their ideas. The IT Horizon Social Media Network (ITHISMN) is a great place for students and staff to make announcements for the university that will quickly spread the word throughout the classroom.

Project in Details

Project Name	IT Horizon in Social Media Network (ITHISMN)
Objective	1. Provide platform where student and teacher can share their ideas. 2. Unlock the Potentials of students.
Initiated By	NajeebUllah—01161911012
Supervised By	Dr Munawwar Iqbal
Languages Used	1. HTML5 2. CSS 3. JavaScript 4. php 5. Ajax 6. mysql 7. Bootstarp4
Tools Used	1. 2. Visual Studio Code
O. S	Microsoft Windows 10

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Chapter 1

Introduction

1 Introduction

IT Horizon in Social Media Network (ITHISMN) is a web-based social media platform for distance learning where students and staff can share class related posts with its class and represents a vast repository of information. This web-based service will allow staff to share announcements, notifications and assignments or any kind of content with their class. Students registered in the system can easily read posts shared by teachers. This web-based service will allow students to share their thoughts, questions, knowledge, assignment questions or any other type of information with their class.

1.1 Motivation

I started this Project Code-19 to help students to learn for free in crisis because online education is not a place for physical education and questions and other networking issues confuse students and their studies. This platform will help both students and teachers to connect with each other where they can easily communicate and help each other. It was a challenging project and I have chosen the latest technologies that will help me grow my career.

1.2 Existing System

Currently there is no such system in the university.

1.2.1 Examples

i. Facebook

Facebook is a social networking site that makes it easy for you to connect and share online with family and friends. It was originally designed for college students.

Website: https://www.facebook.com

ii. Instagram

Instagram is a free social media platform for sharing photos and videos. Students can use it to present a series of visually appealing pictures or graphics and even write blogs about their learning.
Website:https://www.instagram.com

iii. Twitter

Twitter is a 'microblogging' system that lets you send and receive short posts called tweets. Twitter can be great as a class discussion board or message board. Teachers can use Twitter to post reminders for assigned dates or share impressive quotes and helpful links to follow quizzes.
Website: https://twitter.com

1.2.2 Issues with Existing Systems

These Social media Platforms are used worldwide thus these platforms are not secure and everyone outside the class can join, use and interrupt.

Most applications do not provide all the required features in one app so users have to use more than one application to meet their needs.

1.3 Problem Statement

In the current system, students and staff can share useful content, news, events and ideas on this platform. Students and staff can see it. Also, existing applications do not provide all the features in a single application.

1.4 Solution

This application will provide all the necessary features to its users and help them in the whole process in a better and faster way.

This system provides the following features.

(1) Uploading posts

(2) Lifetime access.

(3) Sending friend requests.

(4) Receiving friend requests.

(5) Searching Friends

(6) View other posts

(7) Profile

1.5 Advantages of Proposed System

Communication and Cooperation

The biggest benefit of this project is better communication. A student can contact anyone in the class at any time. They can share learning materials. If a student is stuck with their homework, they can always talk to their friends or teachers. They do not have to physically wait and see the teachers.

Searching for concrete information online

Content provides information and relevant ideas about the desired topics. Depending on their interest, students can find answers to their questions.

The benefits of a social networking site are that it can help students develop important lessons and learn some concepts with great utility.

Improving literacy, communication and reading skills

The application provides a lot of online information that most students are more inclined to read, especially if the pieces of information contain eye-catching objects. Online news, articles and books provide an endless list of information to read, and students are encouraged to set aside time and make some extra effort for their education. Such online activities help students in their general education, and eventually students develop strong reading habits that lead to tremendous improvements in their writing skills. Social media sites are mostly interactive and definitely involving students.

Apart from these there are some other benefits of this platform are:

Easy to connect with students and teachers

Commonality of Interest

Real time information sharing

Easy to get all information

1.6 Synopsis of Thesis

In the first chapter I discuss my project, the current system, the problem statement, the solution and the benefits of the proposed system. In the second chapter I describe my project requirements and system analysis which includes use case model, use case brief details, use case description and activity diagram. In the third chapter I have discussed the system design and configuration diagram. In Chapter 4, I talked about system implementation, implementation tools and technology details, application stack integration and deployment diagram. In Chapter 5 I have talked about system testing and in Chapter 6 I have discussed future tasks.

Chapter 2

Requirements and System Analysis

2 Requirements and system analysis

Requirements analysis, also called requirements engineering, is a process in which "what needs to be done" is rejected, modeled and discussed. Description of Services and Barriers These are system requirements for finding, analyzing, documenting and testing these services and barriers. The term Engineering Requirements was first used in the TRW Technical Report in 1979, but remained in use until the 1990s after the publication of the IEEE Computer Society's lessons and the establishment of a conference series on engineering requirements. Not in common use. In the waterfall model, engineering requirements are presented as the first stage of the development process. In the following pages I have listed the standby case model for the system and the detailed use case for the system.

2.1 Use case model

The use case model provides us with visual information about the system and its environment. At a glance it can give us an idea of how the user is interacting with the system. This usually includes the names of the actors and their use case and the UML usage case diagram.

Use Case Diagram

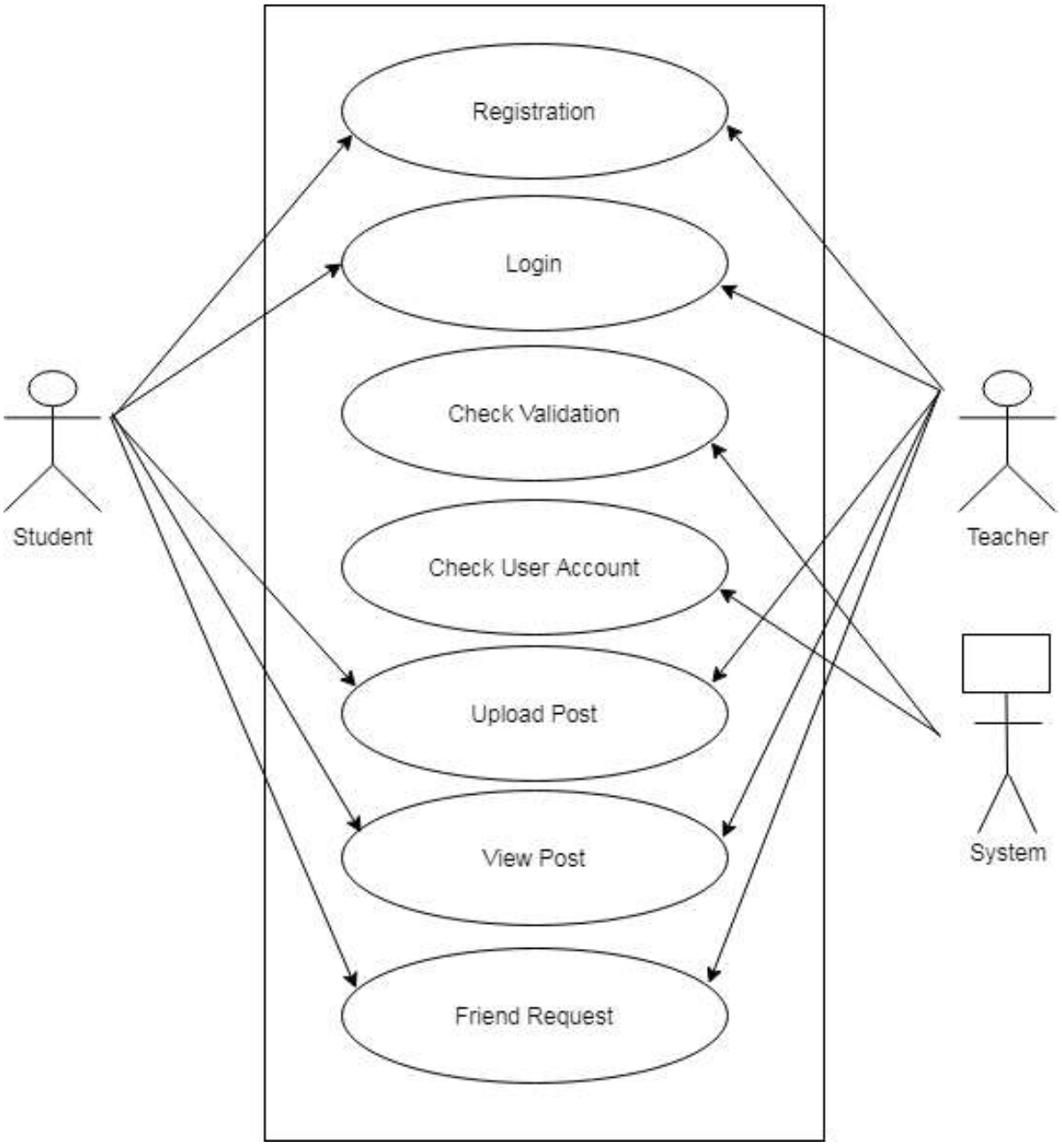


Fig.2.1– Use Case Diagram

Use Case Brief Detail

Registration

Use Case ID:	UC-001
Use Case Name:	Registration
Description:	This use case describes the process by which users can sign up for the first time
Actors:	Student, Teacher

Login

Use Case ID:	UC-002
Use Case Name:	Login
Description:	This use case describes the process by which user can login to the system
Actors:	Student, Teacher

Check Validation

Use Case ID:	UC-003
Use Case Name:	Check Validation
Description:	This use case describes the process by which system can check the validation of users.
Actors:	System

View

Use Case ID:	UC-005
Use Case Name:	View
Description:	This use case describes the process by which users can view each other posts.
Actors:	Student, Teacher

Friend Requests

Use Case ID:	UC-007
Use Case Name:	Friend Requests
Description:	This use case describes the process by which the user can send and receive each other friend requests.
Actors:	Student, Teacher

Check Users Account

Use Case ID:	UC-008
Use Case Name:	Check Users Account
Description:	This use case describes the process by which System can check its user's accounts.
Actors:	System

Use Case Description Detail

Registration

Use Case ID:	UC-001
Use Case Name:	Registration
Description:	This use case describes the process by which users can sign up for the first time
Actors:	Student, Teacher
Pre-condition:	• Working internet connection • Valid Email account • Web App is fully loaded
Post-condition:	Student will be redirected to login Page.
Includes:	WebApp, MySql
Basic Flow:	• Student will click on signup. • Student will enter credentials. • After verification user is redirected to login page. • User can now login with their credentials.
Exception:	• Provided email is valid. • Email should be unique.
Frequency of use:	Once per registration.

Login

Use Case ID:	UC-002
Use Case Name:	Login
Description:	This use case describes the process by which user can login to the system.
Actors:	Student,Teacher
Pre-condition:	• Working internet connection • Valid Email address • Web App is fully loaded
Post-condition:	User will be redirected to their panel
Includes:	WebApp, MySql
Basic Flow:	• User will click on Log In. • User will enter credentials. • Web app will verify user from database. • After verification user is logged in.
Exception:	N/A
Frequency of use:	Once per session

Check Validation

Use Case ID:	UC-003
Use Case Name:	Check Validation
Description:	This use case describes the process by which system can check the validation of users.
Actors:	System
Pre-condition:	• Working internet connection. • User must register himself. • Web App is fully loaded.
Post-condition:	User will be Log in.
Includes:	WebApp, MySql
Basic Flow:	• User will register. • System will validate user authenticity.
Exception:	N/A
Frequency of use:	Once per Registration, Numerous

View Post

Use Case ID:	UC-005
Use Case Name:	View Post
Description:	This use case describes the process by which users can view each other posts.
Actors:	Student. Teacher
Pre-condition:	• Working internet connection • Logged in.
Post-condition:	Some User makes a post.
Includes:	WebApp, MySql
Basic Flow:	• User will click on View Post. • User will select the Comment option. • User will comment his query.
Exception:	N/A
Frequency of use:	Numerous

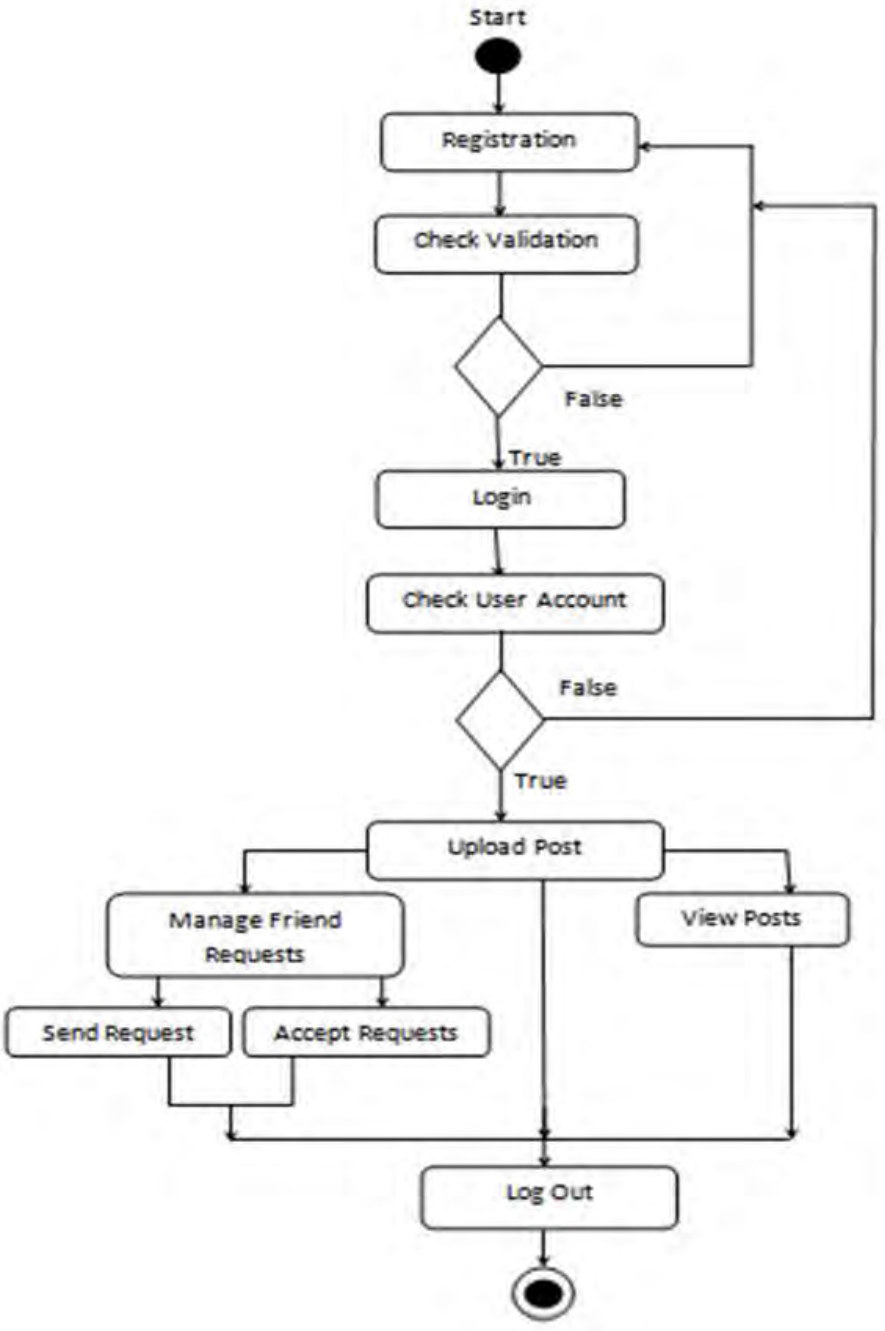
Friend Request

Use Case ID:	UC-007
Use Case Name:	Friend Request
Description:	This use case describes the process by which the user can View their friends.
Actors:	Student,Teacher
Pre-condition:	1. Working internet connection 2. User is logged in.
Post-condition:	User can send or receive each other's friend requests.
Includes:	WebApp, MySql
Basic Flow:	• User will login his account. • User click on the accept option to accept request and send option to send someone a friend request. • System will make them friends.
Exception:	N/A
Frequency of use:	Numerous

Check User Account

Use Case ID:	UC-008
Use Case Name:	Check User Account
Description:	This use case describes the process by which System can check its user's accounts
Actors:	System
Pre-condition:	• Working internet connection • User is logged in. • Created content.
Post-condition:	User can continue his activity.
Includes:	WebApp, MySql
Basic Flow:	System will check the details about user and its activities.
Exception:	N/A
Frequency of use:	Once

Activity Diagram



Chapter 3

System Design

2 System Design

I have designed my system in such a way that it consists of two different parts. One part is the client side, and the other is the server side. The following diagram shows the different components of the system:

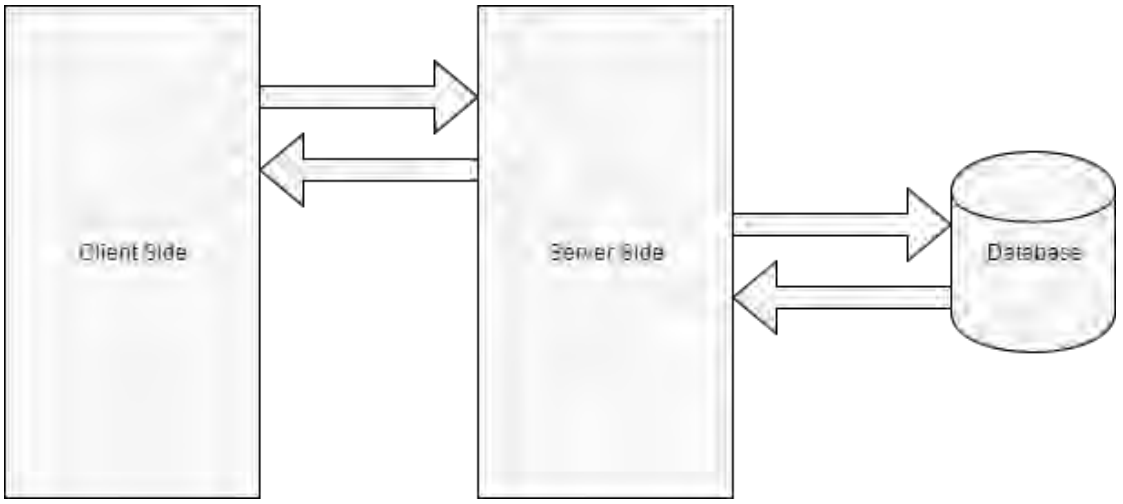


Figure3.1-System Design

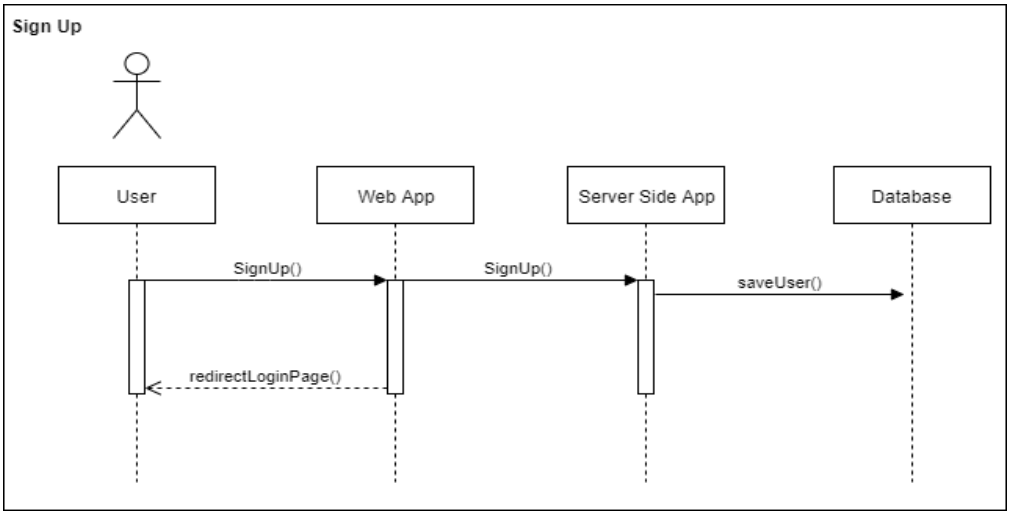
3.1 Sequence Diagram

A sequence diagram is a kind of interaction diagram that shows how processes go together and in what order. This is the creation of a message sequence chart. A sequence diagram arranges the interaction of objects over a period of time.

3.1.1 Sign Up

This sequence diagram describes the process by which user can sign up to the system.

Fig 3.1.1 - Sign Up



3.1.2 Sign In

This sequence diagram describes how the user can Sign in to the system.

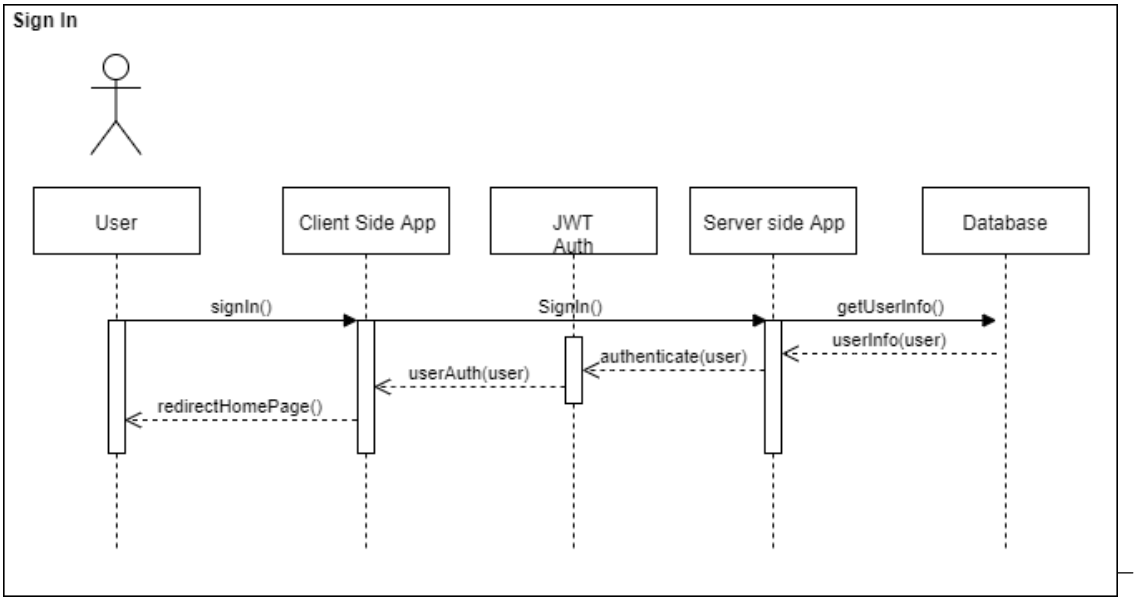


Fig. 3.1.2 - Sign In

3.2 Application Screenshots

3.2.1 Check Validation

This figure describes how the system can validate the User.

Fig.3.2.1–Check Validation

3.2.2 Upload Post

This figure describes the process by which users can make post.

Fig. 3.2.2 – Upload Post

3.2.3 View

This figure describes the process by which user can view the posts.

Fig. 3.2.3 – View Post

3.2.4 Friend Request

This figure describes the process by which user can send and accept friend requests.

Fig.3.2.4-Friend Request

Chapter 4

System Implementation

3 System Implementation

Implementing a system is the process of explaining how an information system should be built, ensuring that the information system is up and running and meets quality standards. The process is the process of understanding program design.

I have implemented the IT horizon in social media networks (ITHISMN) using various modern technologies and techniques. The choice of technologies used was based on the principle of modularity and efficiency. I choose JavaScript with Ajax for client side (PHP for server side rendering). I chose web server backend as the database and PHP for MYSQL

4.1 Details of Implementation Tools and Technologies

The details of the languages, tools and technologies I used are following:

JavaScript

JavaScript (abbreviated "JS") is a fully animated programming language that can add interactivity to a website. It was invented by Brendan H (co-founder of the Mozilla Project, the Mozilla Foundation, and the Mozilla Corporation).

JavaScript is versatile and beginner friendly. With more experience, you'll be able to create games, animated 2D and 3D graphics, comprehensive database-driven apps, and more.

JavaScript itself is relatively compact, yet very flexible. Developers have written a variety of tools at the top of the basic JavaScript language, and with minimal effort have opened up a wide range of functionality. These include:

- Browser application programming interfaces (APIs) developed in web browsers, which provide functionality such as dynamically creating HTML and setting CSS styles; Collect and manipulate video streams from the user's webcam, or create 3D graphics and audio samples.

- Third-party APIs that allow developers to add functionality to other content providers, such as Twitter or Facebook sites.
- Third party frameworks and libraries that you can apply to the HTML site to speed up the work of construction sites and applications.

AJAX

AJAX stands for Asynchronous JavaScript and XML. AJAX is a new technique for creating better, faster and more interactive web applications with the help of XML, HTML, CSS, and JavaScript.

Ajax uses XHTML for content, CSS as well as JavaScript for displaying document object models and dynamic content.

Traditional web applications use synchronous applications to transfer more painful information from the saver. This means you fill out a form, submit it, and redirect to a new page with new information from the server.

With AJAX, when you hit submit, JavaScript will make a request to the server, interpret the results, and update the current screen. In the purest sense, the user would never know that anything was even transmitted to the server.

XML is commonly used as the format for receiving server data, although any format, including plain text, can be used.

AJAX is a web browser technology independent of web server software.

A user can continue to use the application while the client program requests information from the server in the background.

Intuitive and natural user interaction. Clicking is not required, mouse movement is a sufficient event trigger.

PHP

PHP (previously referred to as Personal Home Page) is currently known as the Hypertext Preprocessor. It is a server-side, scripting language that is used for developing static and dynamic websites. PHP can also develop web applications.

PHP uses tags that make it similar to that of HTML and client-side scripts like JavaScript.

PHP requires no prior knowledge of HTML.

PHP is an open-source language and is free of cost.

PHP has a large community document.

PHP is regularly updated according to the recent technology trends.

Since PHP is a server-side scripting language, it is executed on the server; hence,client machines do not need to have PHP installed.

HTML

HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript). "Hypertext" refers to links that connect web pages to one another, either within a single website or between websites. Links are a fundamental aspect of the Web. By uploading content to the Internet and linking it to pages created by other people, you become an active participant in the World Wide Web.

CSS

Cascading Style Sheets (CSS) is a style sheet language used to describe the presentation of a document written in HTML or XML (including XML bids such as SMG, Math L or X HTML). CSS describes how elements should be rendered on screen, on paper, in speech, or on other media.

CSS is among the core languages of the open web and is standardized across Web browsers according to W3C specifications. Previously, development of various parts of CSS specification was done synchronously, which allowed versioning of the latest recommendations. You might have heard about CSS1, CSS2.1, CSS3. However, CSS4 has never become an official version.

From CSS3, the scope of the specification increased significantly and the progress on different CSS modules started to differ so much, that it became more effective to develop and release recommendations separately per module. Instead of versioning the CSS specification, W3C now periodically takes a snapshot of the latest stable state of the CSS specification.

How the application stack is integrated

I used Context API provided by Ajax for building my web application. It is very similar to Facebook's Flux architecture and Redux. It complements Ajax composable view components by utilizing a unidirectional data flow. I use duseContext() and use Reducer() hooks that provide the context, global state, the reducer, the dispatcher, and the views (React components). When a user interacts witha React view, the view propagates an action through a dispatcher using context, to the various reducers that hold the application's data and business logic, which updates all of the views that are affected.

This works especially well with Ajax declarative programming style, which allows the reducer to send updates without specifying how to transition views between states. The server side (php) receives a request from the client-side and sends a request to the database (MySql). The database processes the request and sends the appropriate response and populates the state using reducer. The Context further populates and updates the views on the client-side.

4.2 Deployment Diagram

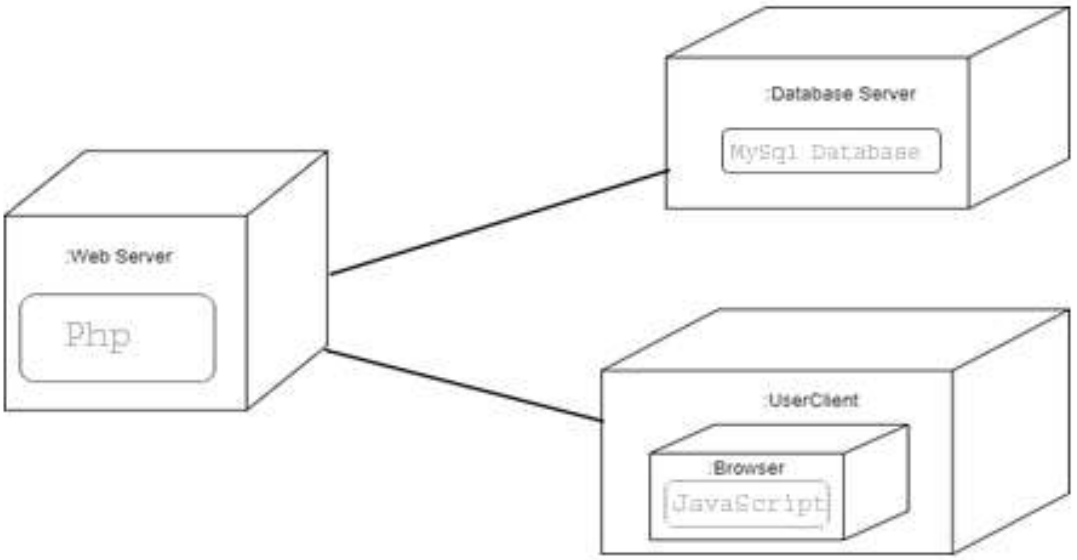


Fig.4.2–Deployment Diagram

Chapter 5

System Testing

5 System Testing

5.1 Software Quality Assurance

A set of activities designed to evaluate the process by which products are developed or manufactured.

5.2 Software Quality Control

Software Quality Control is the function that checks whether the software project follows its standards processes, and procedures, and that the project produces the desired internal and external (deliverable) products i.e. output.

5.1.2 Black Box Testing

Black box testing is also known as specification-based testing. Black box testing refers to test activities using specification-based testing methods and criteria to discover program errors based on program requirements and product specifications.

The major testing focuses:

- Specification-based function errors
- Specification-based component/system behavior errors
- Specification-based performance errors
- User-oriented usage errors
- Black box interface errors

4.1 Test Case

Following are the Test Cases for my project (ITHISMN):

3.1.1 Sign Up

TC1:Sign Up	
Test Case ID:	UC-001
Wrote By:	Najeeb Ullah
Test Type:	Black box testing
Product Name:	ITHISMN
Test Item:	WebApp
Documented Date:	22/04/2021
Test Suite:	1a
Version Number:	1.0
Test case description:	This test case is designed to successfully signup
Operation procedure:	• Go to home page of ITHISMN • Click on the signup • Clicking on signup will open signup page which allows students to signup. • After verification Web App redirects to login page.
Pre-conditions:	Internet is required and Web App must be running
Post-conditions:	The credentials are verified and stored MySql DB
Required test scripts:	No

3.1.2 Login

TC2: Login	
Test Case ID:	UC-002
Wrote By:	Najeeb Ullah
Test Type:	Black box testing
Product Name:	ITHISMN
Test Item:	WebApp, MySql
Documented Date:	22/04/2021
Test Suite:	1a
Version Number:	1.0
Test case description:	This test case is designed to successfully sign in
Operation procedure:	• Go to home page of ITHISMN • Click on the login • Clicking on login will open login page which allows option to login with Email address. • The user is verified, and his credentials is sent to the Web App. • Web App redirects to home page.
Pre-conditions:	Internet is required; User must have an account on this Platform.
Post-conditions:	Web App redirects to home page.
Required test scripts:	No

3.1.3 Check Validation

TC3:Check Validation	
Test Case ID:	UC-003
Wrote By:	NajeebUllah
Test Type:	Black box testing
Product Name:	ITHISMN
Test Item:	Web App, MySql DB
Documented Date:	22/04/2021
Test Suite:	1a
Version Number:	1.0
Test case description:	This test case is designed to successfully test User validation.
Operation procedure:	• User will go to ITHISMN. • User will register himself and login.
Pre-conditions:	Internet is required, Web App must be running, and user must be logged in.
Post-conditions:	User is Validated.
Required test scripts:	No

4.1.4 View

TC5:View	
Test Case ID:	UC-005
Wrote By:	NajeebUllah
Test Type:	Black box testing
Product Name:	ITHISMN
Test Item:	Web App, MySql
Documented Date:	22/4/2021
Test Suite:	1a
Version Number:	1.0
Test case description:	This test case is designed to allow user can view the post.
Operation procedure:	User can View post.
Pre-conditions:	Internet is required, Web App must be running and User's account is activated.
Post-conditions:	User can view posts
Requiredtestscripts:	No

4.1.5 Send Friend Request

TC7: Send Friend Request	
Test Case ID:	UC-007
Wrote By:	NajeebUllah
Test Type:	Black box testing
Product Name:	ITHISMN
Test Item:	Web App, MySql DB
Documented Date:	22/04/2021
Test Suite:	1a
Version Number:	1.0
Test case description:	This test case describes the process by which the user can send friend request.
Operation procedure:	• User will login his account. • User view others profile and choose send friend request option. • System will sent the friend request.
Pre-conditions:	Internet is required, Web App must be fully loaded, user must be logged in.
Post-conditions:	Friend request will be sent.
Required test scripts:	No

4.1.6 Accept Friend Request

TC8:Accept friend request	
Test Case ID:	UC-008
Wrote By:	NajeebUllah
Test Type:	Black box testing
Product Name:	ITHISMN
Test Item:	WebApp, MySql DB
Documented Date:	22/04/2021
Test Suite:	1a
Version Number:	1.0
Test case description:	This test case describes the process by which the user can accept friend requests.
Operation procedure:	• User will login his account. • User see pending friend request of his collogues and click on accept friend request. • System will make them friends.
Pre-conditions:	Friend request should be received by that time.
Post-conditions:	Friend request is accepted.
Required test scripts:	No

Chapter 6
Future Works

6 Future Works

The work I did in this project presents many opportunities for future work. The following is a list of ideas that can improve upon this project and provide a guideline in this heading. The future implications of the project are very great considering the amount of time and resources it saves .The project we have undertaken can be used as a reference or as a base for realizing a scheme to be implemented in other projects of greater level such:

6.1 Live Streaming.

It uses the camera on a computer or mobile device to broadcast real-time video to Live broadcasters that can decide who can see their video and use this content to teach students live.

6.2 Messaging.

With the help of text messages students can directly contact to their teachers privately. It saves time and also overloading of posts and comments.

6.3 Video audio sharing.

Teachers can record their lectures in videos or in audios format and forward them to their students. As many students belong to remote areas and don’t have internet network 24/7. From this feature they can save the lectures when network is available to them and listen to it in their free time.

6.4 Progressive Web/Android App SMS notifications

User can get alerts via SMS. User will first have to verify their telephone number to have access to this functionality.

Chapter 7

Conclusion and References

7 Conclusion

The motivation of this project is to build a Platform for providing ease for students And teachers for a user friendly online learning platform. The proposed system would attract students and also adds to the efficiency of maintaining the learning services. By using Ajax as the development environment, the application is built keeping in mind about the design and maintainability of the code. This application is very simple and easy to use and helpful for users to view categories to post their issues.

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