Technical Discussion Support System

Submitted in partial fulfilment of the requirements

of the degree of

BACHELOR OF ENGINEERING
in
INFORMATION TECHNOLOGY
(A.Y. 2019-2020)

by

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Estd. in 2001

Choice Based Credit Grading System with Holistic Student Development (CBCGS-H 2019)

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This is to certify that Mr. Ankit Agrawal, Mr. Atharv Dhoble and Mr. Sudeept Dubey are bonafide students of Information Technology Department, Thakur College of Engineering and Technology, Mumbai. They have satisfactorily completed the requirements of PROJECT as prescribed by the University of Mumbai, while working on "Technical Discussion Support System".

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ABSTRACT

IT Forum is the best way to search for an answer for a particular question or a difficulty facing while doing some kind of work. If a customer didn't have this kind of opportunity to search the answer for a particular question then it will take a lot of time to solve a particular problem. IT forum helps people across the globe to share their knowledge with the people. IT forums generally have the feature to post a question and answer for that particular question.

It is difficult to note down all the problems manually. Instead it is decided to develop an **"DISCUSSION SYSTEM"** to ease the operation. A system is required which is being capable of elimination all the problems and become useful to users and thus the new system is derived. Here we get a different view from different users.

The scope of project is for make this system reach to all the people who are from IT Industry and students who are from IT sector. It would have many junior and senior developers answering to the queries from fellow developers who need help in their technical field.

This System would be for the global audience rather than a personal system. It can be hosted to any hosting server supporting .net framework and can be set up within a couple of minutes.

This website project will help to achieve one more step to leadership as this grows and as this website will be upgrade time to time.

LIST OF TABLES

LIST OF FIGURES

C O N T E N T S

CHAPTER 1

Overview

CHAPTER 1

Overview

1.1 Introduction

Now a days e-learning platform is becoming more and more famous. Our project is also towards e-learning. It's a PHP based project named "Technical Discussion Support System" is the place where person after creating their account can share their ideas and make discussions on various topics. In this project we have also used CSS, JavaScript, BootStrap and etc. This project aims to increase the interest of users regarding any particular topics. This project is on the perspective of students.

Expert thinking about the topic can be modelled and learned and useful information is shared among the users. We are also using database connectivity which records the activity performed by the member in the forum.

Discussion Forum motivates learners since active discussion forum have every minute new content and thus can be more would become more attractive to the users.

1.2 Background

In this technological era, the use of advance technologies are increasing day by day. Each and every day new discoveries are taking place which are satisfying the user's need. Our main aim of this project is to provide an online platform for various users through which they can discuss and communicate their thoughts and ideas and thus transfer of knowledge would also take place between them. We have considered web technology as our domain and would be implementing PHP at the backend. Online discussion forum encourages reflection and deeper thinking and also focuses on peer to peer communication between the members in that forum.

1.3 Importance of Project

In today's fast paced and competitive online world, it's paramount for businesses to devise ways to attract more visitors to their websites, retain those visitors and to improve their websites' page rankings. One tool that can help achieve these objectives is a online discussion forum, and today these have become some of the most popular ways of engaging and interacting with others online. Forum and discussion functionality can be a great addition to any website. This project can be beneficial for small as well as big business. Our main motive is to provide a wide platform for the users to explore the field of transfer of knowledge through which they would build interest in various topics and can discuss and communicate among themselves related to that particular topic.

1.4 Perspective of stakeholders and customers

Stakeholders are those persons who are successfully involved in completion of the project at the specified time period. Different stakeholders included in the completion of the project.
Client Administrator is the one for whom the project is been made. He is successfully engaged for completion of software as soon as possible. Technical Staff are the people who deals with the technical part in the implementation of the project. Creator is the one who has assigned the work of completion of the project in the stipulated period of time.
Discussion Support System provides a wide platform for exchange of knowledge among the users. It is a simple virtual community where the users can express their thoughts and ideas and can share informative knowledge about their field of interest. A discussion forum allows an user to categorise the topics thereby making it easier for the customer to engage with their topics of key interest. Having a forum allows a customer to address most common queries in business in one thread or conversation. The customers can simply search for the issue and find the solution based on their previous responses helping you to save precious time in the process.

1.5 Objectives and Scope of the Project

Technical Discussion Support System helps in overall technical development of an individual thereby providing a wide platform for knowledge sharing purposes. People can ask their respective queries in the discussion system. Discussion system helps to build a huge community of developers from over the world. Newbie to programming can get help for their queries on this site. People can put their comments and suggestions. News feed section is provided through which each and every individual in the forum would get aware of all the daily happenings that are going around in the world.

The scope of project is for make this system reach to all the people who are from IT Industry and students who are from IT sector. It would have many junior and senior developers answering to the queries from fellow developers who need help in their technical field.

1.6 Summary

A discussion support system contributes to the development of an individual's cognitive and critical thinking skills, allows time for thoughtful, in-depth reflection on course topics, facilitates exploratory learning by allowing you to review and respond to the work of others and paves the way for you to approach your own learning in diverse ways. It provides a platform for users to spread knowledge and also provides an effective communication and discussion among the users. Effective forum topics are open-ended and designed to encourage students to take a position on issue.

CHAPTER 2

Literature Survey and Proposed Work

CHAPTER 2

Literature Survey & Proposed Work

2.1 Introduction

This chapter discusses the previous result and research that has been done on Online Discussion Forum. By reading and analysing these, the various phases the project has have been created and core tasks that need to be done to complete these phases have been defined.

2.2 Literature Survey

Ref. No.	Year	Authors	Title of the paper	Methodology	Key findings (Results reported)	Research Gaps
1.	2015	Neil Harris and Maria Sandor	Developing online discussion forums as student centred peer e-learning environments.	Peer based approaches to learning in the e-learning environment.	1. Use of discussion board as an assessment 2.great opportunity to get involved.	This online discussion forum is limited to use by the e-learning environment. This could be used in other fields also.
2.	2014	Alabo.H. Biriyai and Emmah .V. Thomas	Online Discussion Forum: A Tool for effective student teacher interaction	PHP and javascript is used for online discussion forum.	1.Moderators are used for granting access to the posts. 2.Moderators respond to user's questions and are used to control the content of the discussion.	Only limited to the teacher student interaction in the forum.
3.	2012	Ankita Singhal and Brij Mohan Karla	Review of Online Discussion Forum in e-learning scenario	Web technology domain is used for the implementation of discussion forum.	1.Novel method is proposed to determine post usage to evaluate quality of content in forum. 2.Removal of error URLs for efficient searching	Only suggested the methods of improving forum and does not implement the new feature in the discussion forum.
4.	2015	Jenny McDougal l	A study of an online discussion forum and the	Concept of authenticity.	The concept of authentic discussion in classroom study	Only limited to online discussion

			needs of adult learners		can be replaced with online discussion.	forum at university.
5.	2014	Ravi Seethamraju	Effectiveness of Using Online Discussion Forum for Case Study Analysis	Online Discussion Forum for Case Study Analysis	Quantity of Responses. Timing of Responses. Quality of Responses. Improvement in Overall Learning	Reduced but complex structure
6.	2016	Suryakumari Lane	Effective Online Discussion Forums as a legal learning space.	The research methodology is theoretical and empirical.	The majority of students had a good learning experience. The author suggests that the way forward for the traditional universities is to have blended learning.	This online learning forum is only limited to the e-learning forums.

2.3 Problem Definition

PHASE 1: The need of online discussion forum is identified and its usage in this new technological era.
PHASE 2: Based on the various research papers related to Online Discussion Forum the gaps and findings are identified to overcome the drawbacks.
PHASE 3: Our main motive is to provide a wide platform for the users to explore the field of transfer of knowledge through which they would build interest in various topics and can discuss and communicate among themselves related to that particular topic. We would also add some. We are going to use PHP, Javascript at the backend and the database connectivity is also used which records the activity that is performed by the member in the discussion forum.

2.4 Feasibility Study

The project is based on Technical Discussion System i.e a platform for sharing knowledge purposes. The main aim of feasibility study is to determine whether developing the product is financially and technically feasible or not. The setup cost of the project is not too high and is economical. Since the project is based on web technology domain, so the developer doesn't have to invest any money into the services. This acts as a easy solution for discussion purposes and is time effective in nature. Operating System, Internet Explorer, HTML, CSS, Javascript and Database connectivity are the main software requirements used in the project implementation.

Feasibility study is a process to check possibilities of system development. It is a method to check various different requirements and availability of financial & technical resources. Before starting the process various parameters must be checked like:

Estimated finance is there or no? The man power to operate the system is there or not? The man power is trained or not? All the above conditions must be satisfied to start the project. This is why in depth analysis of feasibility is carried out.

Technical Feasibility:

Technical feasibility determines whether the work for the project can be done with the existing equipment, software technology and available personnel. Technical feasibility is concerned with specifying equipment and software that will satisfy the user requirement.
This project is feasible on technical remarks also, as the proposed system is more beneficiary in terms of having a sound proof system with new technical components installed on the system. The proposed system can run on any machines supporting Windows and Internet services and works on the best software and hardware that had been used while designing the system so it would be feasible in all technical terms of feasibility.
Technical Feasibility Addresses Three Major Issues: -
Is the proposed Technology or Solution Practical? : The technologies used are matured enough so that they can be applied to our problems. The practicality of the solution we have developed is proved with the use of the technologies we have chosen. The technologies such as JAVA (JSP, Servlet), JavaScript, CSS, Bootstrap and the compatible H/Ws are so familiar with the today's knowledge based industry that anyone can easily be compatible to the proposed environment. Do we currently possess the necessary technology? : We first make sure that whether the required technologies are available to us or nor. If they are available then we must ask if we have the capacity. For instance, "Will our current Printer be able to handle the new reports and forms required of a new system?" Do we possess the necessary Technical Expertise and is the Schedule reasonable? : This consideration of technical feasibility is often forgotten during feasibility analysis.
We may have the technology, but that doesn't mean we have the skills required to properly apply that technology. As far as our project is concerned we have the necessary expertise so that the proposed solution can be made feasible.

Economic Feasibility:

Economic feasibility determines whether there are sufficient benefits in creating to make the cost acceptable, or is the cost of the system too high. As this signifies cost benefit analysis and savings. On the behalf of the cost-benefit analysis, the proposed system is feasible and is economical regarding its pre-assumed cost for making a system. During the economic feasibility test we maintained the balance between the Operational and Economical feasibilities, as the two were the conflicting. For example the solution that provides the best operational impact for the end-users may also be the most expensive and, therefore, the least economically feasible. We classified the costs of Online Counseling according to the phase in which they occur. As we know that the system development costs are usually one-time costs that will not recur after the project has been completed. For calculating the Development costs we evaluated certain cost categories viz.
• Personnel costs
• Computer usage
• Training
• Supply and equipment's costs
• Cost of any new computer equipment's and software.
In order to test whether the Proposed System is cost-effective or not we evaluated it through three techniques viz.

• Payback analysis
• Return on Investment
• Net Present value

Operational Feasibility:

It is Operational feasible, since the system is providing an attractive user interface to the operator/end user, so he feels very easy to work onto it. Response to operator/end user is very fast and very good. Since, as we mentioned above that it requires much less amount of cost, it uses computer work so it is very fast to operate and it is very easy for user to work on it.

2.5. Methodology Used

2.5.1 Agile Methodology:

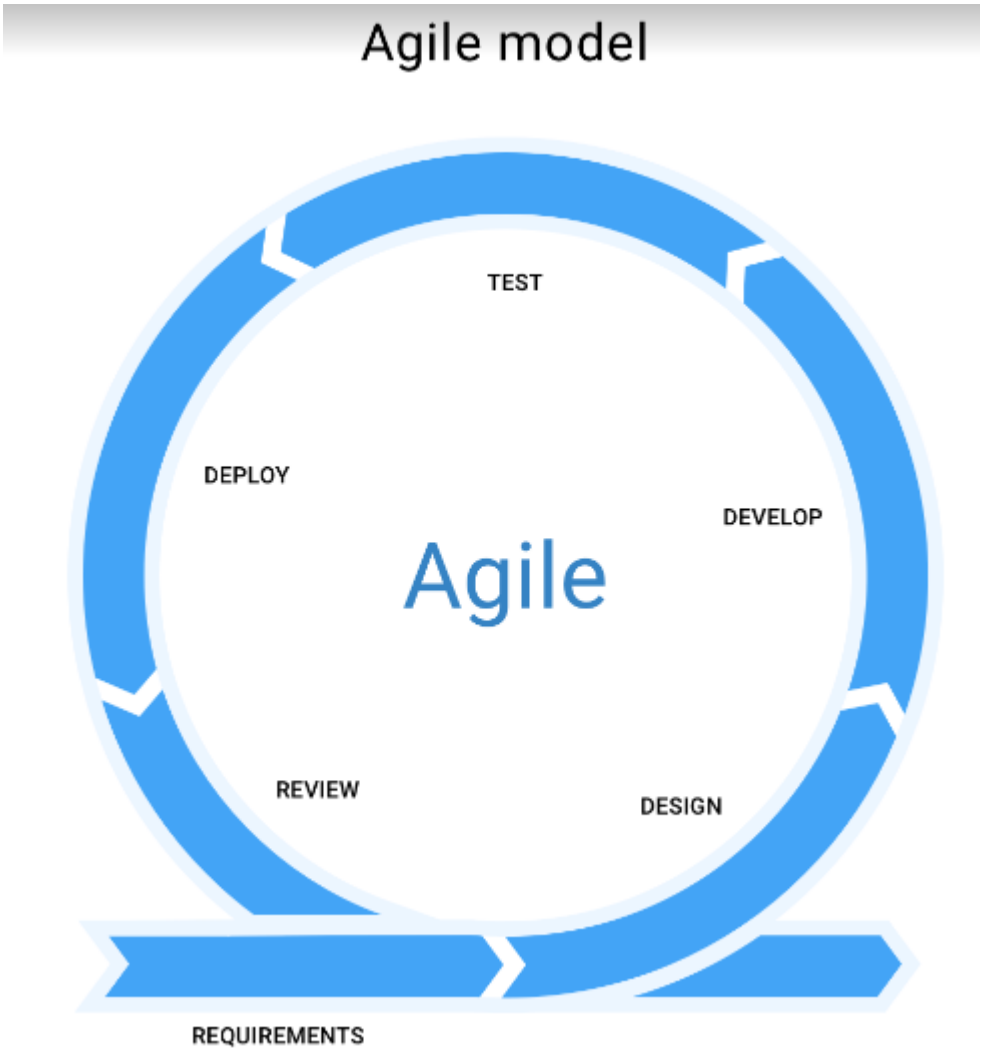

Fig 2.5.1 Agile Methodology

Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Each iteration involves cross functional teams working simultaneously on various areas like planning, requirements analysis, design, coding, unit testing, and acceptance testing. At the end of the iteration a working product is displayed to the customer and important stakeholders.

When to use an Agile model?
When new changes are needed to be implemented, the freedom agile gives to change is very important. New changes can be implemented at very little cost because of the frequency of new increments that are produced.
 To implement a new feature the developers need to lose only the work of a few days, or even only hours, to roll back and implement it.
 Unlike the waterfall model in agile model very limited planning is required to get started with the project. Agile assumes that the end users' needs are ever changing in a dynamic business and IT world. Changes can be discussed and features can be newly affected or removed based on feedback. This effectively gives the customer the finished system they want or need.
 Both system developers and stakeholders alike, find they also get more freedom of time and options than if the software was developed in a more rigid sequential way. Having options gives them the ability to leave important decisions until more or better data or even entire hosting programs are available; meaning the project can continue to move forward without fear of reaching a sudden standstill.

2.6 Summary

The key is to create a Discussion System which acts as a open platform for the users for knowledge transfer purposes. The current literature and existing solutions were analyzed and the key features were determined. The project's proof of concept will implement the key features and thus would be able to make an interactive forum which would match the need of the increasing technology.

CHAPTER 3

Analysis and Planning

CHAPTER 3

Analysis and Planning

3.1 Introduction

In this chapter we discuss the previous result and research that has been done on Technical Discussion System. Here we have broadly described the analysis and planning of the project.

3.2 Product Backlog or Sprint Backlog

External Users

Without Login:

View Discussion Board View topics
View posts
View site information View board rules
Can register View FAQ
Make simple search

With Login:

View board View topics View posts
Can start new topic
Can make a new post
Can delete his/her posts
Can edit his/her profile
Can see others members profile
View site information
View board rules

Special Users (called moderator in forum websites)

A moderator can enjoy all the rights which can be enjoyed by the registered users. Moreover he/she has been given some special rights as given below:
A moderator will have one category to moderate.
A moderator will have rights like delete all thread, delete all posts, and lock a particular thread in his /her category area.

Admin User:

Block user View all board View all Topic View all posts
Can start new category
Can delete category
Can delete all topics

Can delete all posts
Can inactive categories
Can make ban on users
Can promote a user from common user to moderator
Can demote a user from moderator to common user
Can see all moderator lists
Can inactive moderator for a particular time
Can make an announcement
Can edit site profile

3.3 Project planning (Resources, Tools used, etc.)

In this project we are going to use Operating system, Internet Explorer, HTML,CSS, JavaScript and database connectivity. Here we are planning to use waterfall model or agile methodology. Firstly, we are going to develop a website with PHP and javascript working in front end and in backend we are planning to use mySQL.Database connectivity is also been implemented which records user's details, questions asked , answers given and the topic discussion related videos in the forum.

Hardware Requirements:

PROCESSOR: PENTIUM III 866 MHz
RAM: 128 MD SD RAM
MONITOR: 15" COLOR
HARD DISK: 20 GB
FLOPPY DRIVE: 1.44 MB
CD DRIVE: LG 52X
KEYBOARD: STANDARD 102 KEYS
MOUSE: 3 BUTTONS

Software Requirements:

OPERATING SYSTEM: Windows 7 or higher
ENVIRONMENT: Visual Studio .NET 2010
.NET FRAMEWORK: Version 4
LANGUAGE: PHP
WEB TECHNOLOGY: HTML, CSS, BOOTSTRAP, JQUERY
BACKEND: MYSQL

3.4 Scheduling

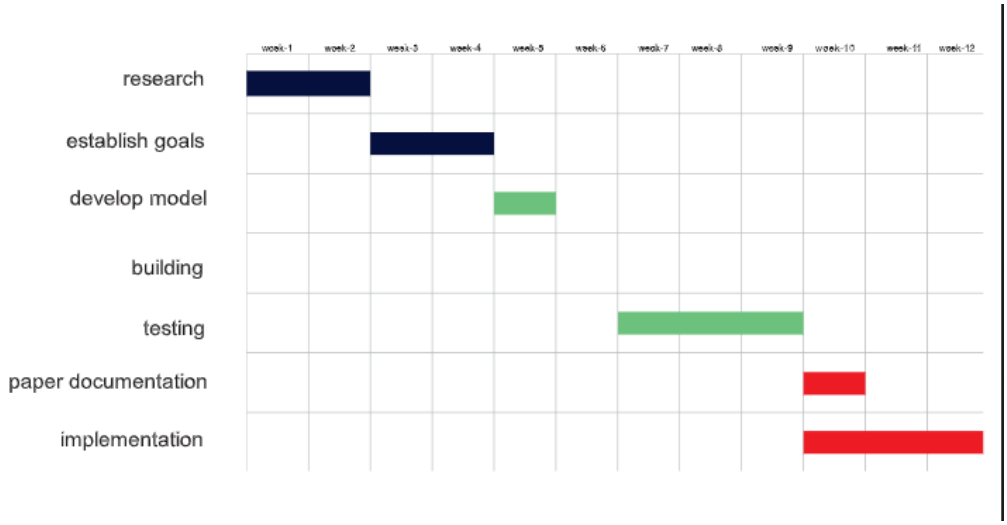

Fig 3.4 Gantt chart

3.5 Summary

In this section we have understood whether the project of 'Technical Discussion System' is feasible or not. Analysis and Planning of the project is studied and the software and hardware requirements needed to implement the project are mentioned.

CHAPTER 4

Design and Implementation

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Design and Implementation

4.1 Block Diagram Architecture:

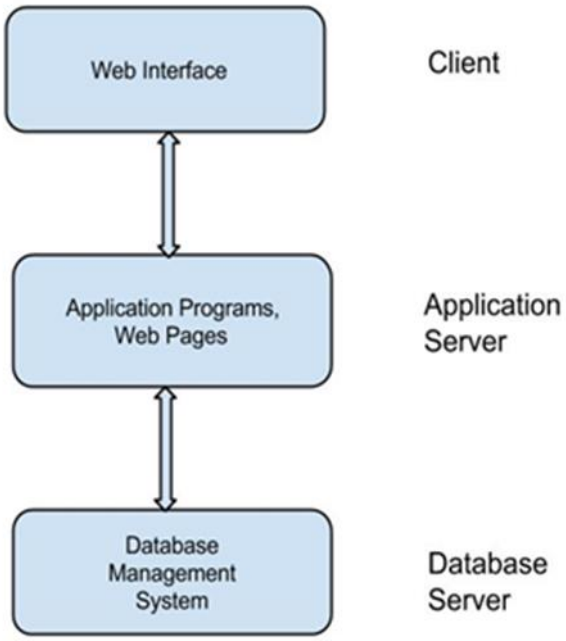

Fig 4.1: Block Diagram Architecture

The block diagram of the Discussion System mainly involves three units.

1. Web Interface
2. Application Program Interface
3. Database Management System

The above block diagram depicts client-server architecture. Clients uses web interface whereas the application server and the database server deals with application programs, web pages and the database management system.

Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Each iteration involves cross functional teams working simultaneously on various areas like planning, requirements analysis, design, coding, unit testing, and acceptance testing.
At the end of the iteration a working product is displayed to the customer and important stakeholders.

4.2 Flow Chart:

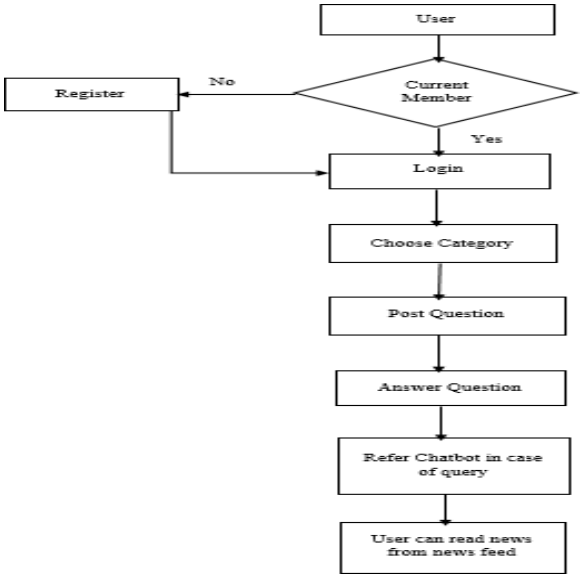

Fig 4.2: Flowchart Diagram Flow

Firstly the user needs to login if he/she is the member of the discussion system. If the user is not a member, then he needs to register himself in the forum. Once registered, a wide range of categories is displayed to the user through which he can discuss on his topic of interest. The user can post question and answers and can refer chatbot in case of query. The chatbot consists of predefined set of questions which would help user in case of any issue. User can also read the latest news from the news feed section. Admin has overall control of the activities that is performed by the user. Database connectivity is done which tracks or keeps the record of the activities that are performed by the user in the forum.

4.3 Use Case Diagram

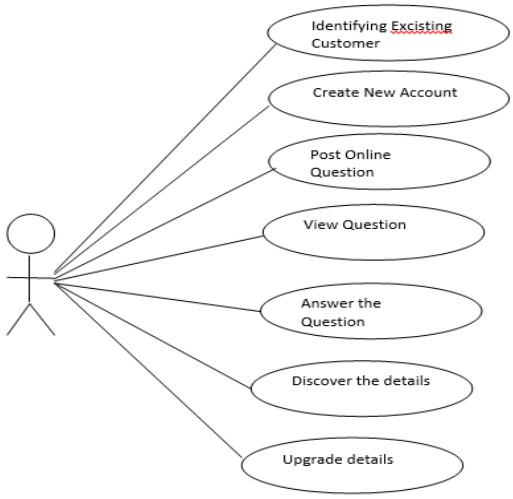

Fig 4.3:Use case Diagram

The use case diagram are usually referred to as behavior diagram used to describe the actions of all user in a system all user describe in use case are actors and the functionality as action of system. To model a system, the most important aspect is to capture the dynamic behavior. Dynamic behavior means the behavior of the system when it is running/operating. The user case diagram deals with the actor admin and his roles and functionalities that are carried out.

4.4 Sequence Diagram

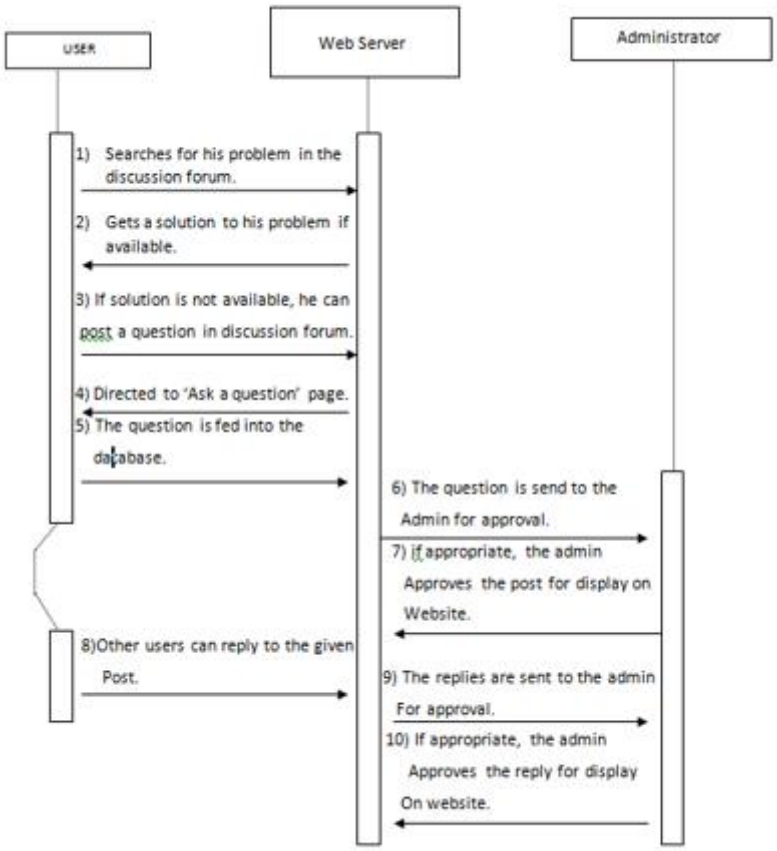

Fig 4.4: Sequence Diagram

The sequence diagram deals with various stages of the actors in the discussion system along with their roles and responsibilities in a sequential flow.

4.5 Deployment Diagram

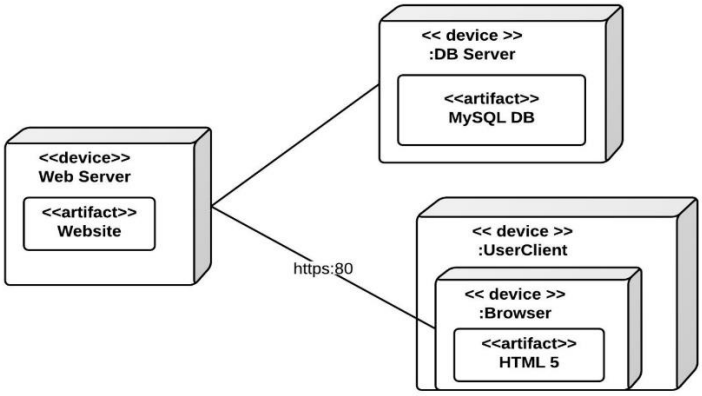

Fig 4.5 Deployment Diagram

Deployment diagrams are used to visualize the topology of the physical components of a system where the software components are deployed. So deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships. The name Deployment itself describes the purpose of the diagram. Deployment diagrams are used for describing the hardware components where software components are deployed. Component diagrams and deployment diagrams are closely related. Component diagrams are used to describe the components and deployment diagrams shows how they are deployed in hardware. UML is mainly designed to focus on software artifacts of a system. But these two diagrams are special diagrams used to focus on software components and hardware components. So most of the UML diagrams are used to handle logical components but deployment diagrams are made to focus on hardware topology of a system. Deployment diagrams are used by the system engineers.

The purpose of deployment diagrams can be described as:

1) Visualize hardware topology of a system.
2) Describe the hardware components used to deploy software components.
3) Describe runtime processing nodes.

4.6 Algorithmic Diagram

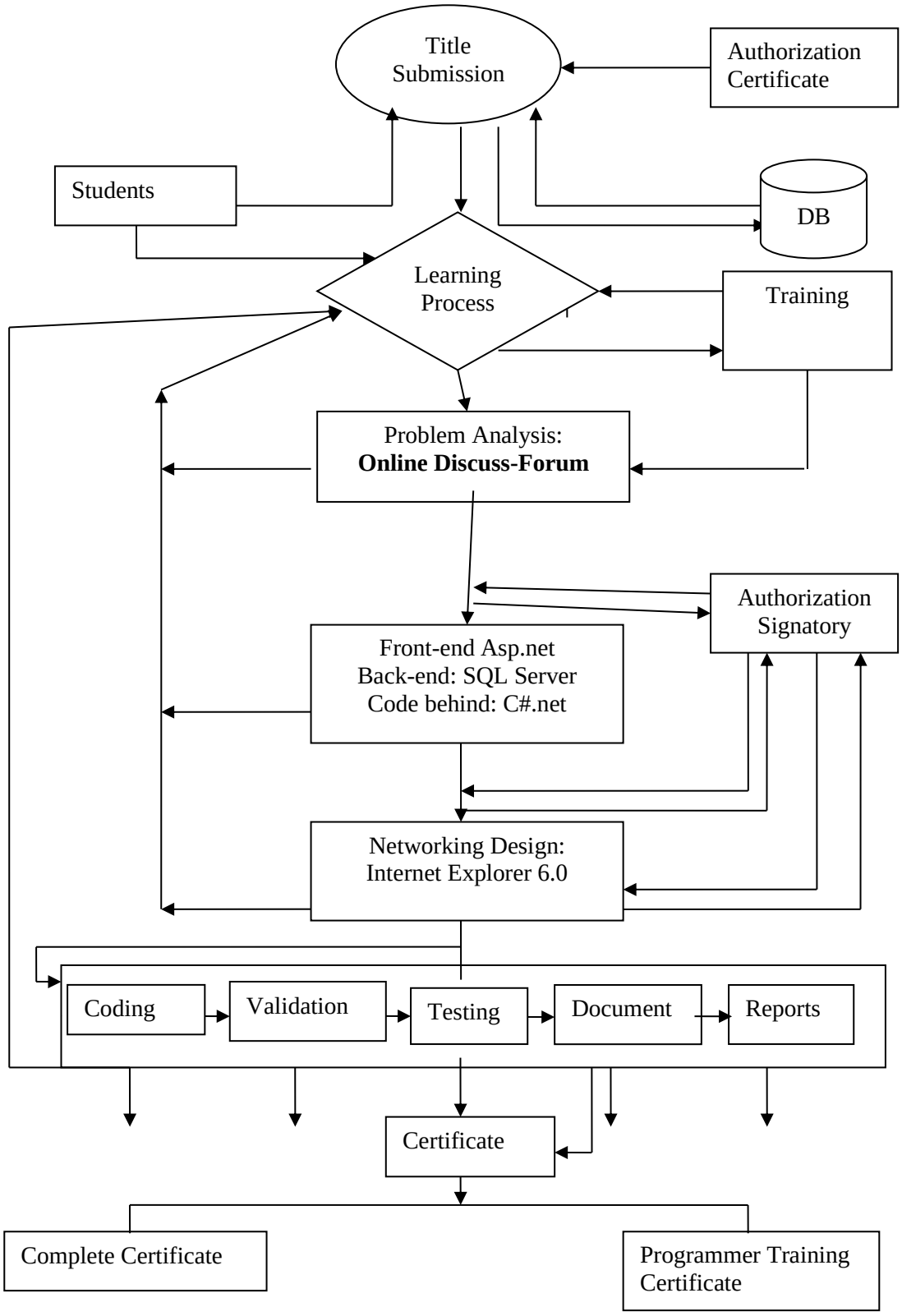

Fig 4.6: Algorithmic Diagram

1. Category Module:

This module is the main module, by selecting the category user can post their questions easily. They can retrieve the answers for their questions from the different users.

2. Post Question Module:

This module is mainly for the registered users. As the Administrator has to know who has posted the questions the user is registered here. These registered users alone can post their question in detailed manner.

3. Registration Module:

This Module helps to give the detailed information about the newly entered user.

4. Answer Module:

Each and every posted question will get the exact answer from the Discussion Forum team and also they can get a lot of answers from the different user.

5. Discover Module:

Users can answer the questions which are posted in this site. Both registered and non registered user is benefited over this module. They can also view the answers posted in this site.

6. Articles Module:

User can post their invention and also they can know about the ideas of the all Users.

7. Search Module:

This module is used to search their queries, the articles and also the inventions. Both registered and non registered users can search over here

4.7 ER Diagram

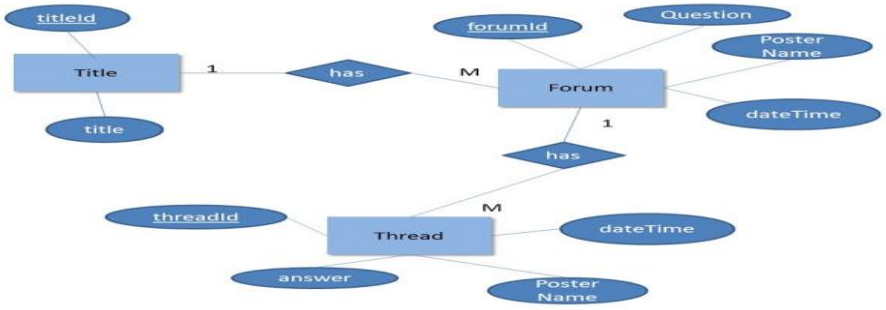

Fig 4.7: ER Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals and connecting lines to depict the interconnectedness of entities, relationships and their attributes. They mirror grammatical structure, with entities as nouns and relationships as verbs. ER diagrams are related to data structure diagrams (DSDs), which focus on the relationships of elements within entities instead of relationships between entities themselves. ER diagrams also are often used in conjunction with data flow diagrams (DFDs), which map out the flow of information for processes or systems. An entity is a real-world item or concept that exists on its own. Entities are equivalent to database tables in a relational database, with each row of the table representing an instance of that entity.
An attribute of an entity is a particular property that describes the entity. A relationship is the association that describes the interaction between entities. Cardinality, in the context of ERD, is the number of instances of one entity that can, or must, be associated with each instance of another entity. In general, there may be one-to-one, one-to-many, or many-to-many relationships.

4.8 GUI Screenshots

Fig 4.8.1: Login Module

The figure represents the login module for the user once he becomes the registered member of the discussion system. The login module consists of email id and password for authentication purpose. Once the user is logged into the forum he can discuss about a particular topic either by posting question or answering the questions.

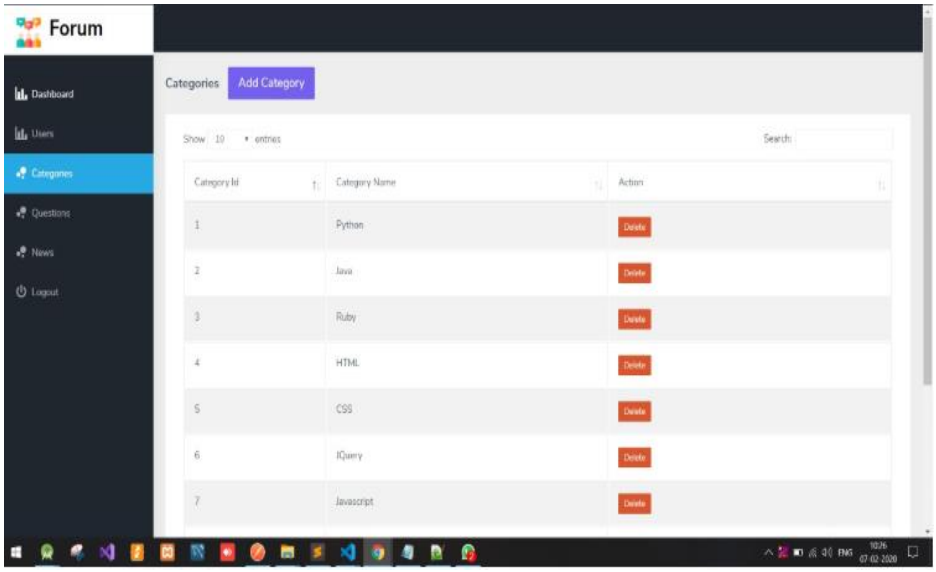

Fig 4.8.2: Category Portal

The category portal consists of various categories in the technical discussion system. It has category id, Category name and the action that needs to be taken. Some of the category names are Python, Java, Ruby, HTML, CSS, JQuery, Javascript.

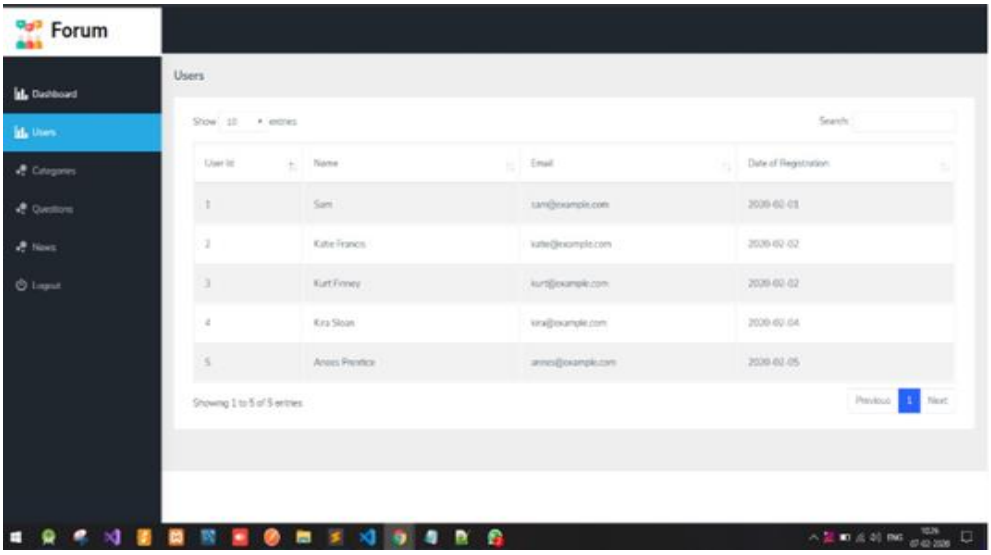

Fig 4.8.3: User Information Portal

The figure represents the information of the registered users that is stored in the technical discussion system. The information portal consists of the user id, name of the user, email address of the registered user and the date of registration of the user.

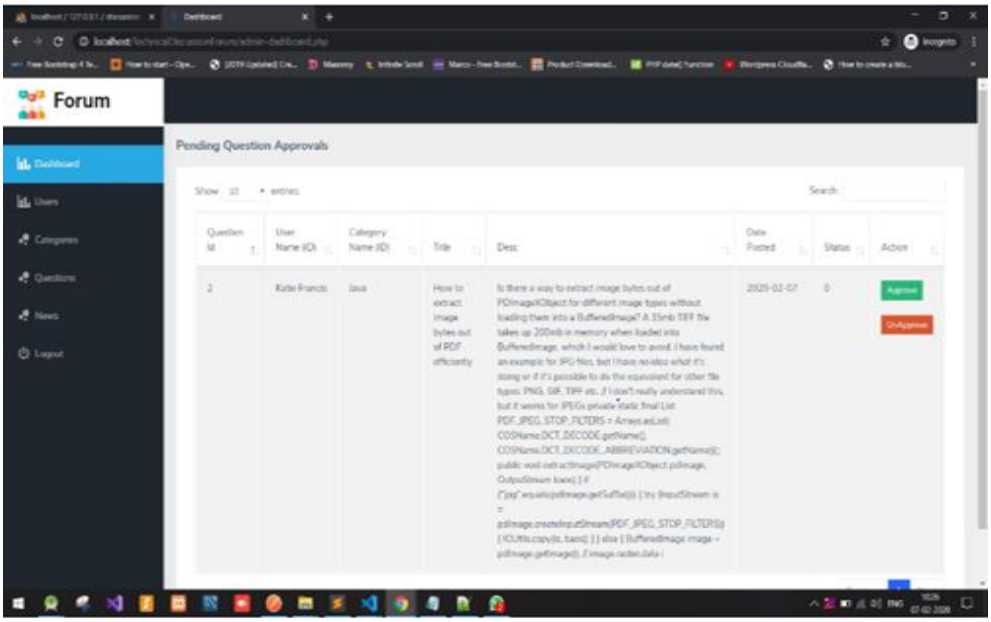

Fig 4.8.4: Dashboard Portal

The figure represents the dashboard portal of the discussion system. It consists of some of the pending questions asked by the users along with the user name, category id, title and the date on which it was posted. The admin can take action whether to approve or unapproved.

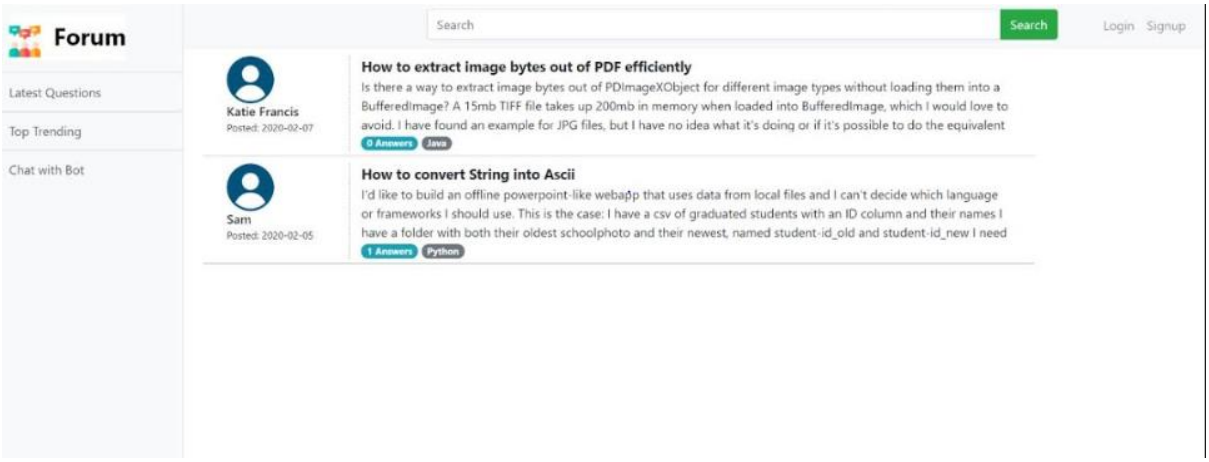

Fig 4.8.5: Questions asked by users

The figure represents the questions that are asked by the users in the discussion system.

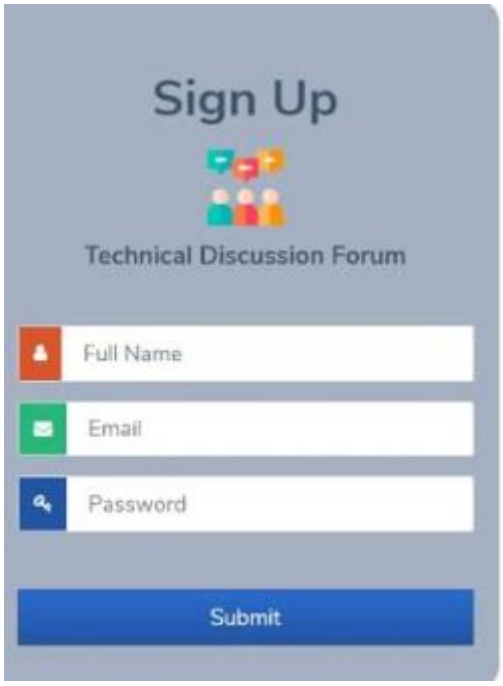

Fig 4.8.6: Signup Portal

The figure represents the signup or registration portal of the discussion system. It includes details such as Full Name, Email, and Password of the user.

CHAPTER 5

Result and Discussion

CHAPTER 5

Result and Discussion

5.1 Actual Outputs

a. Outputs (sprint wise)

Firstly we have divided our project into various sprints (phases).

SPRINT 1 (PHASE 1):

In Sprint 1 our aim is to develop a login page in which consists of Login Id and Password

Output:
The unauthorized user would login and thus would get access of the Discussion Forum and would become the member of the forum.

SPRINT 2 (PHASE 2):

In Sprint 2 our aim is to design a homepage which consists of various categories of topics.

Output:
After Login user would access the homepage which consists of various categories of topics through which the user can discuss on his field of interest.

SPRINT 3 (PHASE 3):

In Sprint 3 our aim is to design a posting and answering page.

Output:
With this page, the customer can post questions and can also answer whenever required**.**

SPRINT 4 (PHASE 4)

In Sprint 4 our aim is to establish database connectivity with the discussion portal.

Output:
The database connectivity maintains a record of the user's activity in the portal. i.e. if the user posts the question in the portal then it is recorded in the database**.**

5.2 Future Scope

Our Project has been developed with a main aim of making work easier and timesaving for the human capital. The whole system is easy & user-friendly. The coding pattern is kept as dynamic as possible with minimum amount of static values to make it easier for future extensions. As the current system is expected to add more functionality and dependency according to requirement changes and technology, proper coding standards and working platform have been kept in mind to produce a quality product. One enhancement is that we can make this application in more than 1 language as well. Adding order management is also one option for enhancement. We are planning to introduce video function and google voice assistance in our project so users can discuss the things online and it would be more convenient and working to make an app for it. Our aim is to make the application on current situations and demand.

5.3 Testing

Security Testing: The process to determine that an IS (Information System) protects data and maintains functionality as intended. The six basic security concepts that need to be covered by security testing are: confidentiality, integrity, authentication, authorisation, availability and non-repudiation.

Confidentiality:
A security measure which protects against the disclosure of information to parties other than the intended recipient that is by no means the only way of ensuring.

Integrity:
A measure intended to allow the receiver to determine that the information which it receives has not been altered in transit or by other than the originator of the information. Integrity schemes often use some of the same underlying technologies as confidentiality schemes, but they usually involve adding additional information to a communication to form the basis of an algorithmic check rather than the encoding all of the communication.

Authentication:
A measure designed to establish the validity of a transmission, message, or originator. Allows a receiver to have confidence that information it receives originated from a specific known source.

Authorization:
The process of determining that a requester is allowed to receive a service or perform an operation. Access control is an example of authorization.

Availability:
Assuring information and communications services will be ready for use when expected.
Information must be kept available to authorized persons when they need it.

Non-repudiation:
A measure intended to prevent the later denial that an action happened, or a communication that took place etc. In communication terms this often involves the interchange of authentication information combined with some form of provable time stamp.

TESTING METHODS

White box testing

White box testing is when the tester has access to the internal data structures and Algorithms including the code that implement these. Types of white box testing
The following types of white box testing exist:
• API testing (application programming interface) - testing of the application using public and private APIs
• Code coverage: - creating tests to satisfy some criteria of code coverage (e.g., the test designer can create tests to cause all statements in the program to be executed at least once)
• Fault injection methods: improving the coverage of a test by introducing faults to test code paths

Black box testing

Black box testing treats the software as a -without any knowledge of internal implementation. Black box testing methods include: equivalence partitioning, value analysis, all-pairs testing, fuzz testing, model-based testing, traceability matrix, exploratory testing and specification-based testing.

Advantages and disadvantages:

The black box tester has no "bonds" with the code, and a tester's perception is very simple: a code must have bugs. Using the principle, "Ask and you shall receive" black box testers find bugs where programmers do not. On the other hand, black box testing has been said to be 'a walk in a dark labyrinth without a flashlight' because the tester doesn't know how the software being tested was actually constructed. As a result, there are situations when a tester writes many test cases to check something that could have been tested by only one test case, and/or some parts of the back-end are not tested at all.

Testing levels

Tests are frequently grouped by where they are added in the software development process, or by the level of specificity of the test.

• Unit testing

Unit testing refers to tests that verify the functionality of a specific section of code, usually at the function level. In an object-oriented environment, this is usually at the class level, and the minimal unit tests include the constructors and destructors. These type of tests are usually written by developers as they work on code (white-box style), to ensure that the specific function is working as expected. One function might have multiple tests, to catch corner cases or other branches in the code. Unit testing alone cannot verify the functionality of a piece of software, but rather is used to assure that the building blocks the software uses work independently of each other. Unit testing is also called component testing.

• Integration testing

Integration testing is any type of software testing that seeks to verify the interfaces between components against a software design. Software components may be integrated in an iterative way or altogether. Normally the former is considered a better practice since it allows interface issues to be localized more quickly and fixed. Integration testing works to expose defects in the interfaces and interaction between integrated components (modules). Progressively larger groups of tested software components corresponding to elements of the architectural design are integrated and tested until the software works as a system.

• **System testing**
System testing tests a completely integrated system to verify that it meets its requirements.

• **System integration testing**
System integration testing verifies that a system is integrated to any external or third-party systems defined in the system requirements.

CHAPTER 6

Conclusion

CHAPTER 6

Conclusion

6.1 Conclusion

Technical Discussion Support System acts as an interactive tool for knowledge sharing purposes. We are going to implement a discussion forum using php and database connectivity and thus provide a wide platform for the users to explore the field of transfer of knowledge through which they would build interest in various topics and can discuss and communicate among themselves related to that particular topic. The entire project has been developed and deployed as per the requirements stated by the user, it is found to be bug free as per the testing standards that are implemented. It was a wonderful and learning experience for us while working on this project. This project took us through the various phases of project development and gave us real insight into the world of software engineering. The joy of working and the thrill involved while tackling the various problems and challenges gave us a feel of developers in IT industry. It was due to this project we came to know how professional software/applications are designed. We enjoyed each and every bit of work we had put into this project. And by specification-untraced errors concentrated in the coming versions, which are planned to be developed in near future. Finally, we like to conclude that we put all our efforts throughout the development of our project and tried to fulfill most of the requirements of the user. The project is further extendable.

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