iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** XII **Month of publication:** December 2021

DOI: https://doi.org/10.22214/ijraset.2021.39722

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 9 Issue XII Dec 2021- Available at www.ijraset.com

A Methodological Study on Online Discussion Forum

Jenilkumar Patel
Bhagwan Mahavir College of Computer Applications, BMEF Campus, Surat, Gujarat-395017

Abstract: ***The Online Discussion Forum system can be used for any sort of discussion. It is a web-based application. The goal of this system is to allow users to connect with each other online and to provide new users with discussion services. It enables users to sign up for our website. A registered user can create new posts and respond to existing ones. The current study uses two primary concepts to support the system at two distinct ends termed the front end and the back end to completely automate the Online Discussion Forum, removing all of the constraints of the manually managed Online Discussion Forum. The front end will be Visual Studio 2010 / ASP.NET, and the back end will be SQL SERVER 8. Other tools utilized in this research are Ajax Toolkit and Jquery. A more accurate system is created in the present study to reduce the manual efforts to achieve easy access to the required information.***

I. INTRODUCTION

The advantages of using "online discussion forums" and peer-to-peer learning to improve student learning are well substantiated. Aside from full-fledged online courses, their use in traditional learning environments to supplement mouth instruction is growing and is now becoming a prevalent learning approach in higher education. In actuality, there is a growing interest in using online discussion forums to assess student outcomes. Online discussion forums are intended to boost adaptable and self-directed learning and knowledge fabrication, as well as the development of cognitive skills. Nevertheless, there are some issues, like learners' lack of concentration and unsatisfactory reflection, students' inability to respond to the concepts of others, and surface-level discussions. Despite the fact that it has many advantages, students' use of online discussion forums in the frame of reference of their studies, as well as the characteristics of an efficient online discussion environment that facilitates effective learning, have to be investigated [1-5]. Moreover, the difficulty of creating an online evaluation and combining the advantages of case study methodology into this online forum has presented additional obstacles to educators in the design and management of these activities. Business schools are progressively exploring innovative pedagogical approaches to learning, driven by increasingly competitive higher educational contexts, higher student expectations, cultural variety of the student body, and limited resource availability [6, 7].

The Online Discussion Forum system can be used for any type of discussion. In this system, the user must initially register to gain access to all of the system's services. The user submits his or her question to the system. It is visible to other users. If a user wishes to respond, he or she must first login before being able to respond. The user can also see when this post was published, how many people have viewed it, and how many people have responded to it. He or she can also see when the post has been answered. When a user's post is answered, he or she receives an email notification. The user has two options for searching any post: first, he or she may search by post subject, and second, he or she can search by category. There is also a Moderator in this system. Moderators are similar to users, but they can edit posts. It can alter any User's post. There is also an administrator in this system. All services are accessible to the administrator. Admins can control users, posts, responses, categories, subcategories, topics, countries, states, and cities, among other things. Any user who has misbehaved has been banned from the system by the administrator known as Admin. Admin can also make any user a moderator based on their actions.

This article will begin by reviewing the literature on the benefits and drawbacks of online discussion forums in higher education, as well as their pedagogical applications. It is proposed that the existing system be computerized. The new technology eliminates all manual tasks and provides an effective data entry mechanism. The analysis will be followed by a discussion of the findings and conclusions.

II. REVIEW

Growing classroom sizes, shrinking resources, and broadening the variety of students have all put pressure on higher education, encouraging it to experiment with novel pedagogies. Discovering the most effective uses of technological tools available in higher education and effectively deploying them in the classrooms to increase student learning is currently a major study topic in accounting education. In this environment, adopting an asynchronous medium for learning has become a critical component of higher education course delivery. Higher education institutions have begun to implement hybrid or blended learning models, which integrate classroom instruction with asynchronous and distributed learning settings.

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Those same hybrid systems have tended to result in the convergence of traditional classroom and online learning modes, combining the strengths of face-to-face and online learning modes of learning, and have become one of the key responses to changing higher educational climate, fueled by an extremely competitive elevated educational environment [8-14].

Online discussion forums are an example of traditional learning that group engages, observation, knowledge development, and self-evaluation. They have been increasingly accepted as methods for online learning due to their potential merits. Students' critical reasoning and problem-solving skills, judgment capacity, and writing communication abilities may all benefit from online chats, as well as their ability to organize and analyze information. Integrating an online discussion forum with a case study method, a common pedagogical methodology used in many business schools, is seen to be an effective way to get students to connect theory to practice. As a result, several academics have begun to use online discussion forums to teach utilizing the case approach [15-20].

Students' perceptions of online case method teaching in business education have been investigated in two studies. According to research by Jonassen and Kwon, members of the online group reported higher satisfaction and perceived quality of the discussion process and outcomes than members of face-to-face groups.

They discovered that groups online went through more cycles of the ideal problem-solving process, which included defining the problem, framing the conversation, and formulating a solution. Their research discovered that online groups had fewer verbal interactions than face-to-face equivalents.

Webb et al. compared groups using different "doses" of the online component in case method instruction from purely online to purely face-to-face in another study. According to them, participants who were exposed to high levels of online pressure had more positive perceptions of peer interaction during the conversation than others, and they surpassed face-to-face pupils in terms of conceptual and factual understanding about the case addressed. Because of the disparities in the examples and themes taught to these distinct groups, these findings must be viewed with caution. Furthermore, it's likely that these favorable results were influenced by newly gained online skills rather than an increased dose of online debate [21, 22].

Researchers have uncovered numerous limits to threaded forums, which are one of the most extensively utilized venues for online debate. Though strongly supported by learning theories, researchers have identified some shortcomings. Some of the issues limiting opportunities for meaningful thought, social engagement, and knowledge production include an excessive concentration on new posts, overlapping exchanges and hierarchical structure of discussion threads, and a lack of timely feedback. Modifications to student guidelines and instructions, as well as designing online activities to interest learners, teaching or moderating tactics, and improving the design of environments to facilitate excellent debate, have all been suggested by researchers [23-25].

The fundamental difficulty in asynchronous discussion forums is a lack of engagement by the majority of students and the dominance of a small group of students. Because assessment is a form of currency among students, grading can be a viable approach for encouraging engagement. Given that the present generation of students has extensive online and social media expertise, previous online experience may no longer be a consideration. As a result, rating pupils for their contributions can be used to encourage their participation and, as a result, learning. The threat of losing marks, as a result, may limit their engagement to some level; nevertheless, grading may actually inspire students to participate in the conversation with thought and preparation. Students may be fearful of displaying their lack of awareness, which could be used against them if they open up too much. An effective learning atmosphere and evaluation must be carefully planned to avoid unintentionally diminishing learners' motivation [26, 27].

III. METHODOLOGY

The iterative model was adopted to perform the present study. The Iterative process begins with a rudimentary implementation of a limited set of software requirements and iteratively improves the emerging versions till the whole system is completed and suitable to be deployed in the Iterative model. An iterative life cycle model does not try to start with a complete set of requirements. Rather, development begins with the specification and implementation of a small portion of the software, which is then examined to discover additional requirements.

This process was repeated, with each iteration of the model yielding a new version of the system.

Design changes are made, and novel functional abilities are added with each iteration. The primary idea behind such a strategy is to build technology in little chunks over time (iterative) (incremental). Iterative and incremental development is a development method that combines iterative design or iterative process with an incremental build strategy. "More than one iteration of the system development cycle may be in progress at the same time throughout system development." and "This procedure may be characterized as "evolutionary acquisition" or "incremental build" approach." The general idea about the model is represented in figure 1.

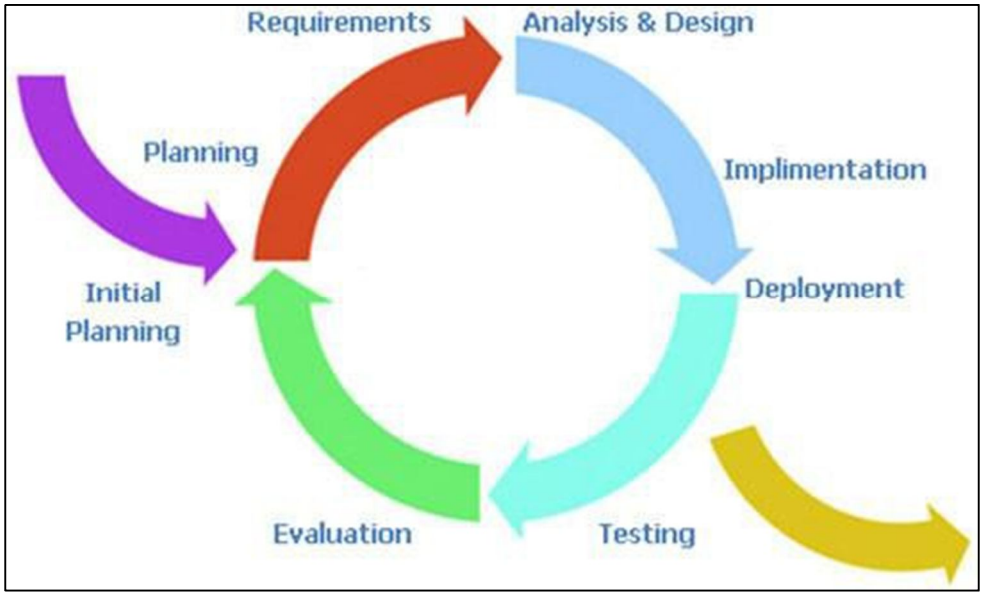


Figure 1: Model

In the present study, two major technologies were utilized to support the system at two different ends called as front end and the back end. Visual Studio 2010 / ASP.NET will serve as the front end, and SQL SERVER 8 will serve as the back end. Ajax Toolkit and Jquery are the other tools that were used during this study.

A. Database Design

Figure 2 represents the UserMaster design. Similarly, CategoryMaster, SubCategoryMaster, TopicMaster, PostMaster, AnswerMaster, CountryMaster, StateMaster, CityMaster, CodeMaster, and FeedMaster were created.

1. UserMaster

SR.	Field Name	Datatype	Size	Constraint	Description
1	UserID	int	-	Primary Key	Unique ID for all users
2	UserFName	nvarchar	50	-	User's First Name
3	UserLName	nvarchar	50	-	User's Last Name
4	UserEmail	nvarchar	50	-	Unique Email-ID for all Users and also for login
5	UserPass	nvarchar	50	-	User's Account Password
6	UserMobile	nvarchar	10	-	Mobile Number of User
7	UserGender	char	1	-	Gender of User M - Male F - Female
8	UserBirthdate	datetime	-	-	Birthdate of User
9	UserPic	nvarchar	50	-	Profile Pic of User
10	UserRegDate	datetime	-	-	When User is register on system
11	UserLastDate	datetime	-	-	When User is Last Login on system
12	UserStatus	int	-	-	Status of User 0-Banned User 1-Simple/Reguler User 2-Moderator 3-Admin 4-Not Verified User
13	CountryID	int	-	Foreign Key	(Primary Key in Country Master) in which country this user is blong
14	StateID	int	-	Foreign Key	(Primary Key in State Master) in which state this user is belong.
15	CityID	int	-	Foreign Key	(Primary Key in CityMaster) in which City this User is belong.

Figure 2: UserMaster

B. Normalization

The term "database normalization" refers to a method of structuring data in a database. Normalization is a method of systematically dissecting tables in order to remove data redundancy and undesired qualities such as Insertion, Update, and Deletion Anomalies. It's a multi-step method that removes duplicate data from relation tables and converts it to tabular form. Basically, it serves two purposes, i.e., 1. Eliminating unnecessary (ineffective) data and 2. Ensuring that data relationships are appropriately stored. There are 4 basic normalization rules i.e., 1. First Normal Form (1NF), 2. Second Normal Form (2NF), 3. Third Normal Form (3NF), and 4. Boyce and Codd Normal Form (BCNF).

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C. Architectural Design

While making a system design, it is more important to establish a system's architectural design that is useful for both the basic flow and the details. Architectural Design establishes the connections between the Design Pattern and the system's constraints. It was created using the system definition, an analytical model such as DFD, and the interactions between subsystems defined in the model (Figure 3).

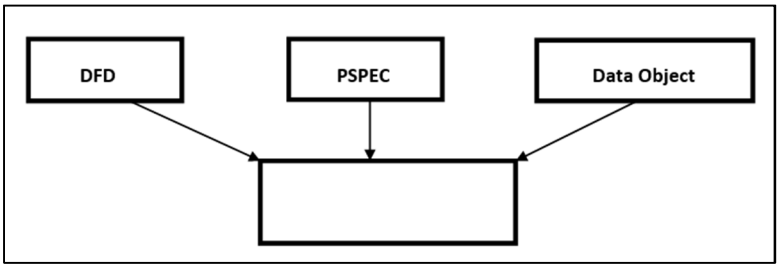


Figure 3: Basic Architectural Design

The current study considered the data design and design flow while developing the architectural design.

1) *Architecture with Data Design:* In this design, the detailed aspects of the software's relationship to external data and entities are made. The data-connected resources in the current system, as well as the database connection, are considered.
2) *Architecture with Data Flow:* Considering the system's data flows in this architectural design. The use of various aspects of the analysis to understand the flow of the system, such as the data flow diagram and process specification, which describe the transaction and transform flow. The present study adopted the two-tier architecture system which is explained in the next section.
3) *Two-Tier Architecture:* The client-server architecture is similar to a client-server application. Between the client and the server, there is direct communication. Between the client and the server, there is no intermediary. A client and a server make up a two-tier system. The database is stored on the server in a two-tier architecture, while the interface for accessing the database is installed on the client. Figure 4 shows the two-tier architecture.

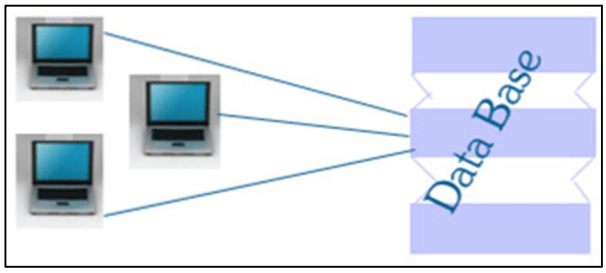


Figure 4: Two-tier Architecture

The conversation is one-on-one here. For example, the current system has a requirement to save employee information in a database. The user system interface is typically found on the user's desktop, while database management services are typically found on a server, which is a more powerful machine that serves a large number of clients. The user system interface environment and the database management database server are separated in terms of processing management. Stored procedures and triggers are provided by the database management server. The architecture of two-tier considers 1. Database (Data tier) and 2. Client Application (Client tier). As a result, in a client application, the client creates a program to save the record in SQL Server, and therefore the data in the database.

D. Algorithm Development/Pseudo-code

Pseudocode is a vague method of describing programming that does not rely on rigorous programming language syntax or underlying technology considerations. It is used to create a program outline or a rough draught. Pseudocode summarises the flow of a program but leaves out the underlying information. Pseudocode is written by system designers to ensure that programmers understand the requirements of a software project and align code properly. Pseudocode is not a programming language in the traditional sense. As a result, it can't be turned into an executable program. Before being turned into a specific programming language, it uses short phrases or simple English language syntaxes to write code for programs.

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This is done to identify top-level flow faults and to comprehend the programming data flow that will be used in the final program. This saves time during real programming because conceptual problems have already been fixed. The program's description and functionality are obtained first, and then pseudocode is utilized to produce statements that deliver the program's desired results. The designer's team or programmers analyze and verify detailed pseudocode to ensure it meets design standards. It is less expensive to catch errors or incorrect program flow in the pseudocode stage than it is to catch them afterward. After the team approves the pseudocode, it is rewritten in a programming language's vocabulary. The objective of employing pseudocode is to make an algorithm's key concept more efficient. It is used to plan an algorithm by mapping out the program's structure before beginning the actual coding.

E. User Interface Design

Describing the user interface design is How the system communicates with the user and how trustworthy it is. This design was created in order for the user to have a better grasp of the system and to be satisfied. "Know the User, Know the Task" is the most fundamental premise in User Interface Design. To please the user and create a nice interface design, the present study follow all of the aforementioned steps in my system. Initially, considering the GUI in the form of Interaction, and including a lot of images and a simple interface on the forms, which is helpful in creating a decent interface. The examination of the data flow diagram at the analysis face when designing the interface is done. Figure 5 depicts the system's form interaction so that the user may readily comprehend the form information and flow.

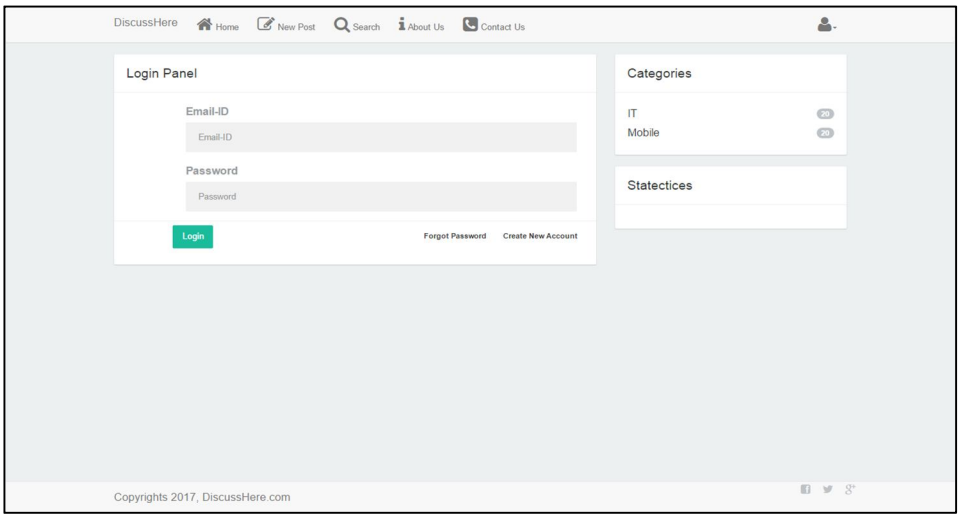


Figure 5: Form Interaction of the System

F. Quality Measures

The purpose of developing a high-quality system is to satisfy all aspects of the user, cost, and assurance, as well as the developers. If the requirements are not correctly considered or gathered, the lack of adaptation or conformance to the requirements is also a lack of quality. So, in order to create a quality system, the consideration of the requirements that are meaningful and beneficial is to be made. To construct a quality system, comparison of it to some existing data is done. As a result, the current system is divided into 3 aspects that are discussed here.

1) *Software Operation:* The description of the quality in these terms as accuracy, dependability, usability, efficiency, and integrity is done. There are many distinct modules and sub-modules in the system, and monitoring of their quality by paying attention to all of the above variables are crucial.

a) *Correction:* If there are any modifications in my modules, I can easily correct them. As a result, the quality of those modules returns to normal and does not deteriorate.

b) *Integrity:* Once all modules have been completed successfully, I integrate them and oversee their quality.

2) *Software Revision:* In these, the focus is concerned with characteristics of program modification such as maintainability and testability.

3) *Software Transition:* It addresses issues like portability, interoperability, and reusability.

a) *Interoperability:* The effort necessary to link one system to another and the relationship between two modules.

b) *Reusability:* Refers to the extent to which software components can be reused in other applications.

G. Site Maps

Figure 6, 7, and 8 represents the site map of admin, user, and moderator.

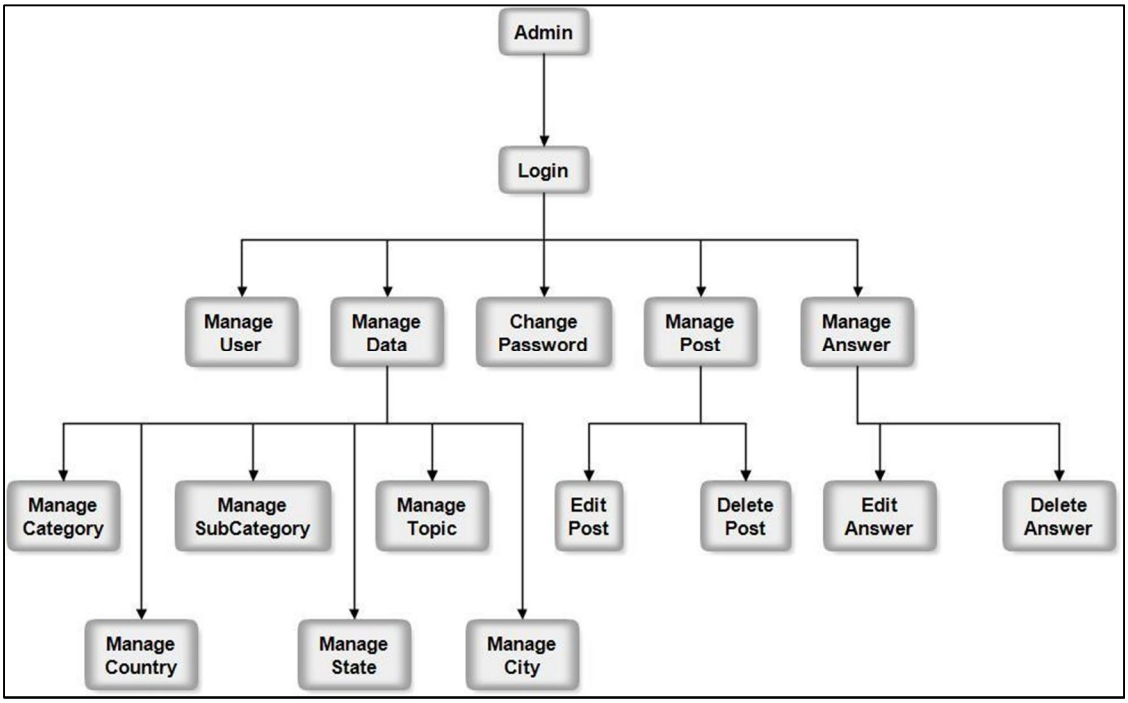


Figure 6: Side Map of Admin

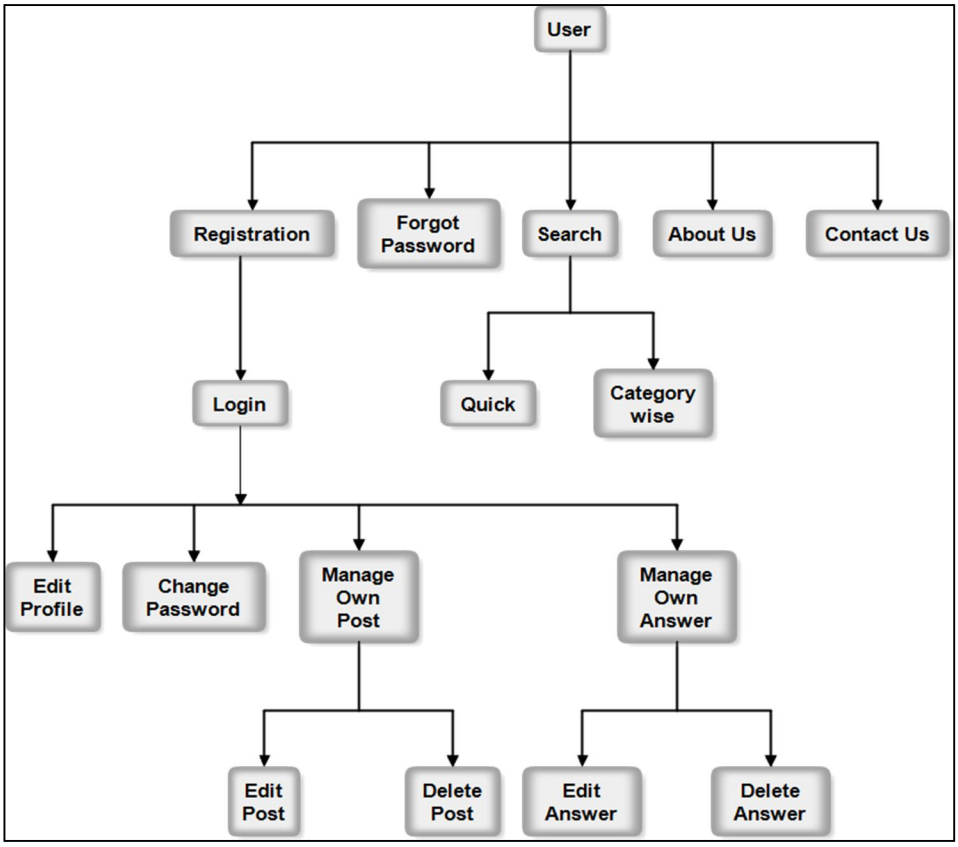


Figure 7: Side Map of User

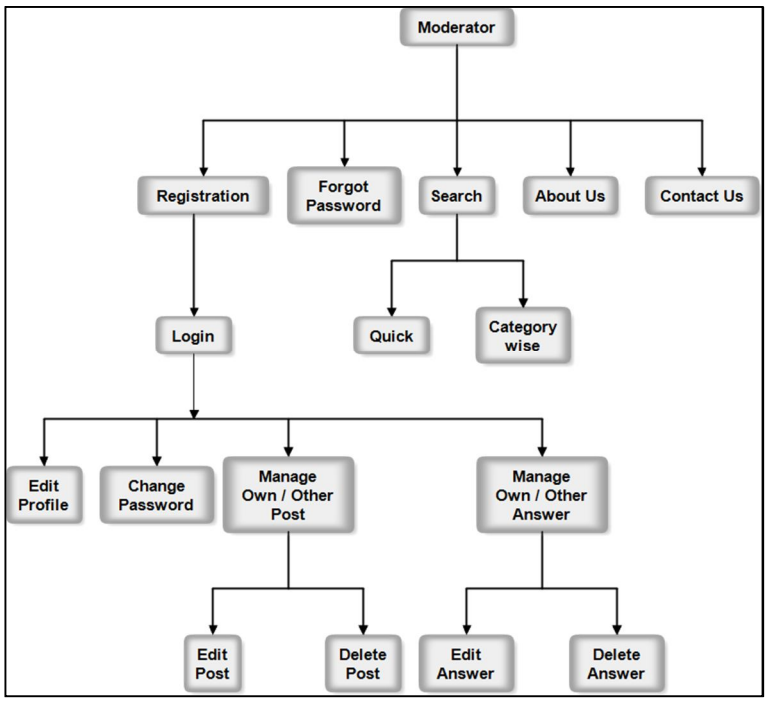
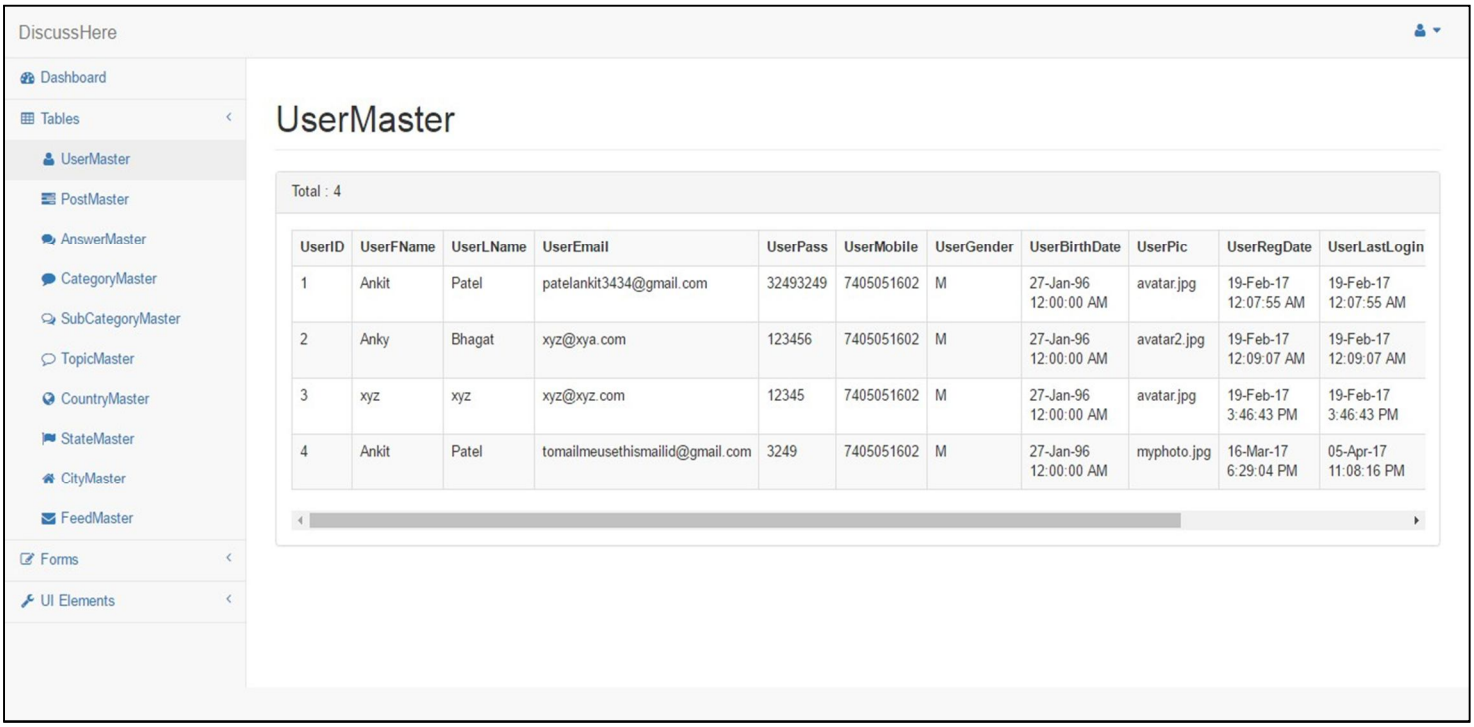


Figure 8: Site Map of Moderator

IV. RESULT

The current system is successfully able to generate various kind of reports as per the requirements of the system. The current model generates the following reports. 1. User wise report, 2. Category wise report, 3. Sub-category wise report, 4. Topic wise report, 5. Country wise report, 6. State wise report, 7. Banned User wise report, 8. Moderator wise report, 9. Post wise report, and 10. Answer wise report. Figure 9 demonstrates the report for UserMaster in the form of a report example.



UserID	UserFName	UserLName	UserEmail	UserPass	UserMobile	UserGender	UserBirthDate	UserPic	UserRegDate	UserLastLogin
1	Ankit	Patel	patelankit3434@gmail.com	32493249	7405051602	M	27-Jan-96 12:00:00 AM	avatar.jpg	19-Feb-17 12:07:55 AM	19-Feb-17 12:07:55 AM
2	Anky	Bhagat	xyz@xya.com	123456	7405051602	M	27-Jan-96 12:00:00 AM	avatar2.jpg	19-Feb-17 12:09:07 AM	19-Feb-17 12:09:07 AM
3	xyz	xyz	xyz@xyz.com	12345	7405051602	M	27-Jan-96 12:00:00 AM	avatar.jpg	19-Feb-17 3:46:43 PM	19-Feb-17 3:46:43 PM
4	Ankit	Patel	tomailmeusethismailid@gmail.com	3249	7405051602	M	27-Jan-96 12:00:00 AM	myphoto.jpg	16-Mar-17 6:29:04 PM	05-Apr-17 11:08:16 PM

Figure 9: UserMaster Report

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V. CONCLUSION

A. In the present study, the author successfully developed the automated Online Discussion Forum which can be concluded in the following points:

B. The computerized system is adopted that more economical and accurate than a manual system, this system is very precise, reducing manual labor.

C. The user may simply access all information, such as all details about the position, make an inquiry, respond to the ad, and provide feedback.

D. It provides a simple interface for system administrators to do various administrative tasks, such as viewing and deleting user and post information.

E. It ensures that data entered the system is accurate and consistent. It'll be simple to use, and it'll save you time.

F. The system is capable of storing all of the data for every user. The technology allows the administrator to manipulate the entire website using the view, modify, and delete options.

G. The user can make his or her own account. The registered user can edit their profiles and change their passwords as needed.

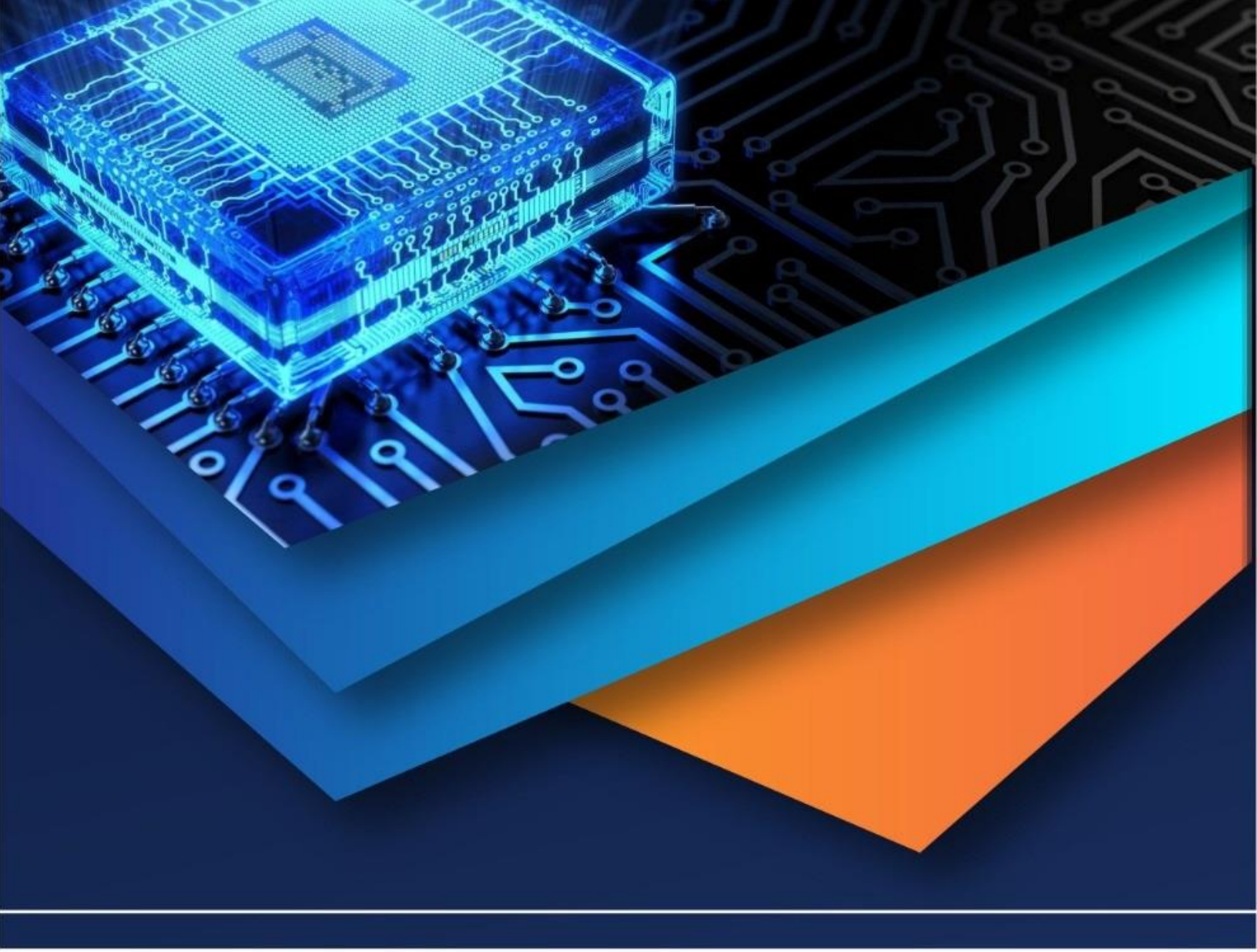
H. The system allows the user to perform a search. If the search results are found, data will be displayed, and all requests and input from users will be accepted.

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