DEPARTMENT OF COMPUTER SCIENCE ENGINEERING,
SCHOOL OF ENGINEERING AND TECHNOLOGY,
SHARDA UNIVERSITY, GREATER NOIDA

Developing online discussion forums as student centered peer e-learning environment

A project submitted
in partial fulfillment of the requirements for the degree of
Bachelor of Technology in Computer Science and Engineering

by

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Supervised by:

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May, 2022

CERTIFICATE

This is to certify that the report entitled ……**Developing online discussion forums as student centered peer e-learning environment**……" submitted by **ABHAY BANSAL(2018008169), NAVNEET SRIVASTAVA(2018007307), KUMAR SHIVAM(2018006994), DEEPALI KUMARI(2018014938)** to Sharda University, towards the fulfillment of requirements of the degree of Bachelor of Technology is record of Bonafede final year Project work carried out by him/her in the Department of Computer Science and Engineering, School of Engineering and Technology, Sharda University. The results/findings contained in this Project have not been submitted in part or full to any other University/Institute for award of any other Degree/Diploma.

Signature of Supervisor

Name:

Designation:

Signature of Head of Department

Name:

(Office seal)

Place:

Date:

Signature of External Examiner
Date:

ACKNOWLEDGEMENT

A major project is a golden opportunity for learning and self-development. We consider our self very lucky and honored to have so many wonderful people lead us through in completion of this project.

First and foremost we would like to thank Dr. Nitin Rakesh, HOD, CSE who gave us an opportunity to undertake this project.

My grateful thanks to **Mr. Sudhir Mohan** for his guidance in my project work. **Mr. Sudhir Mohan**, who in spite of being extraordinarily busy with academics, took time out to hear, guide and keep us on the correct path. We do not know where we would have been without his help.

CSE department monitored our progress and arranged all facilities to make life easier. We choose this moment to acknowledge their contribution gratefully.

Name and signature of Students

Abhay Bansal (2018008169)

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Abstract

Question Answering Platform empowers users (employees, students, etc.) to obtain proper answers to the question that is in natural language and they are unaware of who is the right person to ask. Almost everyone faces problems in their organization and also faces difficulty finding out who to ask for the solution, the main trouble most of the time is we all didn't know who is the right person to ask, and we all experience that sometimes we get answered from the person we didn't even expect. To understand this problem in deep, we conduct a survey and after cleaning and processing the survey data we analyzed and we find almost 70% have chosen that their organization didn't have any solution for this problem, they are still facing the problem and asking their colleagues and friends to know who is the right person to solve their problems. to solve this problem, we worked on it and find out a data-driven layered architecture on which we develop a platform that is isolated to an organization where the employee or member of the organization can raise their query and the query is further get recommended to the most relevant member on the platform who have high chances to able to give the right solution for the query. Further, we worked on the implementation part and complete the basic implementation of the project.

Contents

Chapter1: PROJECT INTRODUCTION

The purpose of the CollegeQues Project is to provide a platform for students, where student can rise question and anyone from college (Faculty, Other students etc.) can give answer to the question, In CollegeQues the question is get classified into to their related topic, subject and the teacher related to that subject, topic get notify to give answer to that question, Student get notify by their expertise topic chosen by himself.

Through CollegeQues students won't face such problems as the platform would only comprise students and professors creating an educational environment. CollegeQues is a social question-and-answer platform that will assist users in finding solutions to their questions through the community we will create. It differs from other platforms such as Quora or Twitter in that we will target specialty audiences such as students and assist them in obtaining answers to their questions not just from their peers but also from college professors. The software will be able to create a community for college students and staff to interact. This would also allow students from other colleges to communicate with one another and learn about the domains of their interest. The platform provides an option to ask questions anonymously, which makes it more convenient compared to other platforms for students hesitant to ask questions in front of others. This site will also be useful to students who have progressed in their life and require guidance from alumni. Students will again

receive assistance from their college seniors as well as from individuals from other universities, resulting in the formation of a community.

The benefit of using this “CollegeQues” is enhancing the knowledge as well as student learning by providing them a 24*7 platform where the can discuss their problem any time and from any where . This will help them to enable a independent and flexible learning platform and constructing their knowledge. This will help them to share and discuss their problem without hesitation will provide them a completely different environment from the traditional face to face interaction process helping them to develop a critical way of thinking towards the problem. This will be working on peer to peer network model that is information will be shared between the systems without need of any central server or source.

1.1 PROBLEM DEFINITION

In recent time the quest for this knowledge has risen drastically, surfing or browsing the web without direction for information is becoming stressful especially using search engines.

New students in colleges totally disconnected from there seniors who have lots of information which can’t be further transfer to new one due to they got shifted to different collocations.

Due to busy schedules of lecturers, they find it difficult passing information to students, students in turn also find it difficult to interact with them, especially to ask question and get ideas.

1.2 Project Overview / Requirement Specification

1.2.1 Functional Requirement

1.2.1.1 Introduction

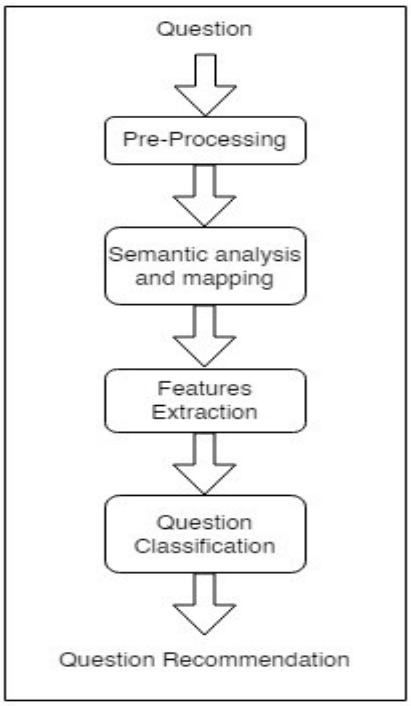
The motive of the CollegeQues Project is to provide a platform for students, where student can rise their question and anyone from college (Faculty, Other students etc.) can give answer to the question, In CollegeQues the question is get classified into to their related topic, subject and the teacher related to that subject, topic get notify to give answer to that question, Student get notify by their expertise topic chosen by himself.

1.2.1.2 Input

Text, Number, picture

Prior to use the system must be thoroughly prepared and a customer understands the basic framework. When the structure is packed, you need to spare the structure before leaving, so the framework is stacked for further use. The standard has also been improved.

1.2.1.3 Processing



1.2.1.4 Error Handling

Expectation and Try Catch is used to monitor the handling of errors. If the user enters any email that is already used in another account, then application show “An account already exists on this email”, we have handled all the required error.

1.2.2 Non-functional Requirements

These are the specifications, as the name implies, that are not specifically correlated with particular functions offered by the device.

1.2.2.1 Performance Requirements

Execution based on the relation, high execution of the PC may involve one or more of the accompanying: fast reaction time for a certain bit of work. In comparison to the time and assets used, execution is defined by the measure of useful work done by a PC framework or PC system.

1.2.2.2 Reliability

Unwavering quality is a property of any component related to a PC (for example, programming, or equipment, or system) that performs consistently as its determinations indicate. For some time, it has been seen as one of three related characteristics that should be considered when making, buying, or using an object or part of a PC.

1.2.2.3 Availability

Accessibility is a general concept used in PC systems and system management to describe the measure of time over a one-year span that the framework assets are available in the wake of partial system disappointments. A structure with all its properties that is continually available is seen as fruitful.

1.2.2.4 Security

Security (or PC security) in registration is the technique to ensure that information placed on a PC cannot be accessed or negotiated without approval by any person. Data encryption and passwords are the majority of PC efforts to develop security. Encryption of information is the interpretation of data into a structure that is indiscernible without a method of disentanglement. A watchword is a mystery word or phrase that gives a client access to a particular project or structure.

1.2.2.5 Maintainability

It is defined as the probability within a given time of conducting a successful repair operation. As such, practicality tests the straightforwardness and speed at which, after a disappointment occurs, a system can be returned to operating status. Convenience is a trademark that is credited to a PC application in the event that it may be used rather than the one in which it was developed as part of operating systems without the need for major reconstruction. Porting is the job of performing whatever work that is necessary to maintain the PC program going in the new environment.

1.2.2.6 Ability of Learning

It is simple to operate and reduces the learning function.

1.3 Hardware Specification

Minimum Requirements	WINDOWS, MAC OS OR LINUX
Operating System	Any (Windows, Android etc.)
Processor	Dual core, Intel i3
RAM	2 GB RAM
DISK Space	The amount of disc space available depends on the partition size and whether or not online help files are allowed. The Math Works installer would tell you how much disc volume your partition needs.
Graphics Adapter	8-bit graphics adapter and display (for 256 simultaneous colors)

Recommended Requirements		**Windows**		
	Processor	**RAM**	**DISK Space**	**Graphics Adapter**
Python IDE	Intel i3	2 GB	1 GB for Pycharm only. 5 GB for a typical installation	A 32-bit or 64-bit OpenGL capable graphics adapter is strongly recommended

1.4 Software Specification

DJANGO
SQL Lite
NUMPY & PANDAS
HTML/CSS
JAVASCRIPT

Language

- Python 3

Chapter2: Literature Survey

2.1 Existing System:

➢ **"Yahoo! Answer, a Community Question-Answering Platform"**:

- Web-based services gives voice to individuals by permitting them to contribute and clarify content. In particular, on Community Question Answering (CQA) locales, clients give replies to questions posted by others.

- Yahoo Answer was a community driven responsive site or information market as claimed by Yahoo!, where clients would seek clarification on pressing issues and answer to those issues which was posted by other users, and upvote them to build their visibility and ranking.

- The Answering Complex Queries lab at Yahoo Labs fostered a programmed quality scoring framework.

- It portrays a framework that registers an algorithmics quality score (or AQS) for each response, utilizing syntactic, semantic, and an administered AI approach. It was sent on Yahoo Answers to channel and to re-rank responses: when you visit an inquiry page on Yahoo Answers, the greatest are displayed on top.

- Yahoo Answer has a vote system based on like/dislike.

- It likewise analysis different sorts of user commitment, including answer Click Through Rate (CTR), normal time spent on the inquiry page, and most extreme look on an inquiry page i.e., how profoundly the client investigated the substance.

➢ **"Expert-Exchange, a portal for people in IT related jobs":**

- Community based Q-A part of the stack exchange Platform. It is mostly and fundamentally for expert and enthusiasts' programmers and developers.

- This platform is a site for individuals in data innovation related tasks to ask each other for tech help, get moment help through visit, employ specialists, and look-through tech occupations.

- Expert-Exchange is a cooperative stage that associates IT experts with educated authorities to share information.

- The Experts Exchange badging program perceives individuals from the social community for their confirmed accomplishments, demonstrated innovation abilities, extraordinary commitments, and local area commitment.

- For now, Expert-Exchange platform has encircled their strategy of giving responses just by means of paid membership.

➢ **"Survey Table":**

TITLE	AUTHOR	OBJECTIVES	Software / Hardware Requirements / Programming	ALGORITHM / METHODOLOGY / Techniques / Methods	DATASET / Source of Input	RESULT (ACCURACY or ANY OTHER PARAMETER)	FINDING / Achievement	DRAWBACK
Online Discussion Forum: A Tool for Effective StudentTeacher Interaction	Alabo H. Biriyai 1 , and Emmah V. Thomas	A Tool for Effective StudentTeacher Interaction	---	Methods:Private messaging, Polls, emoticon,attachment.			It provides the platform for students who do not participate during class discussions to become "vocal" during online discussion	User Groups: Only right to read or submit messages, who is a member of the group.
Online discussion and critical thinking skills: A case study in a Singapore secondary school	Chong Min Cheong and Wing Sum Cheung	To know the quality of thinking of secondary students in an asynchronous online discussion environment		Online Survey	Source of Input: six groups of students of Hwa Chong Institution.	57% student have depth level information processing 43% were surface level.	The idea of monitoring class progress with abilities to demonstrate critical thinking skills is pedagogically more important than the absolute figures obtained in this study.	If we change the critical thinking framework with other framework then the study could be different, all subjects were male students
Achieving better peer interaction in online discussion forums: A reflective practitioner case study	Jianhong (Cecilia) Xia, John Fielder and Lou Siragusa	To improve peer interaction in online discussion forums & encouraging participation and collaborative learning	SPSS software	Pearson Correlation Coefficient	From the online learning management system	Students result :(mean = 78%) for those participated in the discussion board, (mean = 64%) for those who did not participated in the discussion board	Increased student participation levels were achieved in this process,	Few of student get good marks even then didn't participated in the discussion board

Introduction of an online discussion forum and electronic communication practice in a tertiary-level Anaesthesia Department	Brenton Sanderson , Jeremy Field	Access to online discussion forum	Survey responses were analysed using SPSS		Department of Anaesthesia and Perioperative Medicine, Westmead Hospital, Australia	76% ran iOS 24% Android Reason given for not accessing the forum as much as desired was a perceived lack of time in 40% of overall respondents	Online Discussion forum is the convenient way for interaction between students and faculty. Forum was most commonly accessed using a mobile phone.An online forum creates a motivational environment for students to freely express their views and ideas with more confidence than they do in a traditional classroom	1.Respondents accessed the forum predominantly on a weekly basis 2.Most frequent reason given for not accessing the forum as much as desired was a perceived lack of time
Online Discussion Forum as a Tool for Interactive Learning and Communication	Edeh Michael Onyema, Edeh Chinecherem Deborah, Alhuseen Omar Alsayed, Quadri Noorulhasan Naveed, Sumaya Sanober	THE NEED FOR ONLINE DISCUSSION FORUM	LMS - LEARNING MANAGEMENT SYSTEM	CSC Forum	Department of Computer Science, Tai Solarin University of Education		Online Discussion Forum for teachers encourage and facilitate the sharing and exchange of teaching experiences and expertise.It increases the level and quality of interactions between teachers and students	Limited access to computers and internet, and cost of access to computers and the Internet. Also, online learners face challenges such as lack of contact with peers, limited sense of belonging to the learning community, and frustration about receiving delayed feedback.
Developing online discussion forums as student centred peer e-learning environments	Neil Harris, Maria Sandor	To establish a e-learning environment for regular contact between student and instructor without face to face encounter		P2P(peer to peer model) Algorithm			It was great as a tool to keep students interacting and learning throughout semester	Categorisation of posting or problem asked not possible

Effectiveness of Using Online Discussion Forum for Case Study Analysis	Ravi Seetharmraju	The objective is to combine the benefits of case study method of teaching with online discussion forum to enhance the quality of learning	LMS	P2P model	Students survey analysis	about 50% of the respondents posted their response on the due date, while about 25% of students posted in the first two days,	Improved the quantity of participants in the online discussion and making them realizing the value of collaborative learning	Still more than 45% Of participants hesitated to submit their response/Comments
Content Analysis of Rubrio-based Online Discussion Forums for MIDT Students in Open University Malaysia	Dr.Purushotham an Ravichandran, Prof.Dr.Abtar Kaur	understanding the discourse that occurs in online discussion forums in the teaching-learning context	LMS(Learning Management System)	Content Analysis Server (as a technique)	Discussion forms (cretaed using Ning Portal) http://hmid6303.ning.com	the results in-dicates that the error associated with 50% of the respondents is greater than 20%.	the F-test (statistical test used here to measure the overall significance of the regression model) results indicate that the regression model is significant in explaining the va-riance in the final score using the forum score as the predictor variable	

2.2 Proposed System:

- This software can be used for answering questions that a person may post in an online discussion forum where users can resolve their doubts regarding their issues or fields.

- CollegeQues is software that can be used to generate user report, answer report, like-dislike and ranking report, question report.

2.2.1 Modules added:

- **Agile Model:** In this project, the Agile model is used because of the following advantages:-

    - Less resource requirements
    - Changing the requirements can be done easily
    - Provides the realistic approach for development of our software
    - Documentation can easily be employed
    - Management of the project is easy
    - Adaptive Planning is possible
    - Gives enough iterative development

- **Collaborative Recommender System:**

    - It is a way to provide recommendations to the user based on the experience of those who have similar tastes to that of the user. In other words, this system is the combination of the experience of people sharing the same preferences and contributing to the recommendation system through their interaction with it.

    - It is consisting of two types:
        1. User-based Collaborative Filtering
        2. Item based Collaborative Filtering

- **Content-Based Recommender System:**

  Content Based Filtering is a recommendation system that suggests items to the user based on the user's past activity. The data provided by the user in the form of rating or clicking a link

updates the system and accordingly, it recommends items to the user. The history of the user's experience is stored creating a user profile that is accessed by the recommendation system to suggest items. The more user interacts with the system, the more data is provided, hence improving the accuracy of the system.

- **Data Encryption:**

  Data encryption is a way of transforming data from an unencrypted (decoded) to encrypted (encoded). Users can get access of encrypted data with the help
  of an encryption key and decrypt the data with that secure key.

- **NumPy & Pandas:**

  NumPy is a library for the Python programming language, adding support for enormous, multi-faceted clusters and frameworks, alongside a large collection of significant level numerical capacities to work on these exhibits.

  pandas is a product library composed for the Python programming language for information manipulation and analysis. pandas is a quick, strong, adaptable and simple to utilize open source data analysis tool.

- **Scikit-learn:**

  Scikit-learn is likely the most valuable library for AI in Python. The sklearn library contains a ton of effective tools for AI and factual demonstrating including classification, regression, clustering and dimensionality reduction.

2.3 Feasibility Study

An attainability study is an examination that thinks about each of a task's pertinent elements including monetary, specialized, legitimate, and planning contemplations to determine the probability of finishing the undertaking effectively.

Whether or not a task is doable can rely upon a few variables, including the venture's expense and profit from speculation, meaning whether the undertaking produced sufficient income or deals from purchasers.

2.3.1 Tools for conducting feasibility study

● Although each undertaking can have interesting objectives and requirements, beneath are a few prescribed procedures for leading a possibility study.

● Lead a starter examination, which includes getting criticism about the new idea from the fitting partners; think about other business situations and thoughts.

● Examine and pose inquiries about the information got in the beginning stage of the review to ensure that it's strong.

● Lead a market review or statistical surveying to recognize the market interest and a chance for seeking after the task or business.

● Compose an authoritative, functional, or strategy, including recognizing how much work required, at what cost, and for how lengthy.

● Set up a projected pay articulation, which incorporates income, working expenses, and benefit.

● Set up a first day of the season asset report.

● Distinguish hindrances and any likely weaknesses, as well as how to manage them.

● Make an underlying "go" or "off limits" choice about pushing forward with the arrangement.

2.3.2 Suggested Components

• **Technology**

Is the project technically possible?

Is it a component of the state of the art?

Will failure be limited to the need for an implementation meeting the level?

• **Finance**

Is it financially practicable?

Is it realistic for the software company and its customer or company to achieve production at a reasonable pace

• **Time**

Can the time for the idea to be sold, beat the competition?

• **Resources**

Will the corporation have the capital necessary for success?

Two major variables used in the study of viability are:

a) Technological Feasibility

b) Cost Feasibility

a) Technical Feasibility

The motivation behind this examination is to check the innovative reasonability, in other words, the framework's specialized prerequisites. Any constructed framework doesn't have a solid requirement for the innovative assets required. This will add to extreme strains on the scholarly assets accessible. It would bring to the client's now firm expectations. Since this framework must be applied with minor to no adjustments, an absolute minimum should be met.

In the following ways, practical evaluation of feasibility can be carried out.

i.NP-Complete
ii. NP-Hard
iii. Satisfiability

b) Cost Feasibility

This study assesses the monetary effect of the plan on the business. It confines how much cash that can spend on the innovative work of its technique. It is important to legitimize the costs. Hence, affordable,

the created framework was likewise evolved and this was done in light of the fact that a large part of the innovation utilized is promptly open. It was simply suitable to purchase the customized things.

2.4 Risk Management

2.4.1 Risk Identification

2.4.1.1 Product Size Related

Memory may be squandered as a result of additional lines of code or redundant algorithms.

2.4.1.2 Customer Related

Since its consumer isn’t a professional individual and it poses a challenge in interpreting the customer's additional specifications.
If the consumer offers unnecessary details; it can result in an undisclosed danger.

2.4.1.3 Process Risk

Sometimes question is posted on the inquiry page without relevant or proper information.

2.4.1.4 Technical Risk

The difficulty of recommender system would increase if character features are not extracted.

2.4.1.5 Development Environment Related

When a client requests a change or makes an unnecessary alteration later in the implementation process, it is impossible to change the whole system configuration to accommodate the request.
Inexperience and a lack of tool training can make it challenging to complete project modules.

2.4.2 Strategies used to manage Risks

By diminishing repetitive coding, we can forestall chance meeting with the client routinely diminishing the gamble somewhat appropriately fosters the framework to consolidate changes at a later stage and holds generally essential administrative work to limit the gamble, as recently expressed. Utilize a suitable sound decrease calculation preceding division handling. Separate the person's element to diminish the CNN's intricacy.
We have decided to finish a staged effort model and to move the quantity of representatives to our client in a similar way. The recommendation system part of the venture is requesting and expanding.

Chapter 3: System Analysis and Design

3.1 Software Requirement Specification

3.1.1 Product Perspective

The motive of the CollegeQues Project is to provide a platform for students, Where student can rise their question and anyone from college (Faculty, Other students etc.) can give answer to the question, In CollegeQues the question is get classified into to their related topic, subject and the teacher related to that subject, topic get notify to give answer to that question, Student get notify by the their expertise topic chosen by himself.

3.1.2 Product Functions

CollegeQues main objective is to provide authentic platform where student get answer of their question by their college student and faculty.

3.1.3 User Characteristics

3.1.3.1 Large Organizations

CollegeQues can be used in any organization as a platform which solves the gap of communication within the organization; CollegeQues can be part of educational institution, public/private sector industries.

3.1.3.2 Academic Organizations

The key motive of this project is to build a platform for Academic/Educational Organization. By using this platform student can raise any type of query to the platform and the query is suggested to the relevant members on the platform who can able to solve the query.

3.1.4 Design and Implementation Constraints

Determine the imperatives that can be enforced by various models, confines of equipment, etc.

3.1.4.1 Standards Compliance

The security of web application in our project is developed as per secure coding guidelines as mentioned in Open Web Application Security project guideline. We developed the our project in keeping in mind that the project can secured from web vulnerabilities such as injection, Cross Site Request Forgery, Sensitive Data Exposure, etc.

3.1.5 Assumptions and Dependencies

- There should be an Internet link that is secure.
- The device's operating system should be up to date.

3.1.6 Requirement Specification

3.1.6.1 User Interfaces

The user interface architecture consists of five basic sub interfaces, namely the Login/Registration, User Homepage, User Profile, Ask Question and Submit Question pages. The components of each of the user interfaces are listed below.

The Login/Registration

The Login/Registration user Interface is the first step for any new/returning user, in this part as named user can able to register and login to the CollegeQues platform.

The User Homepage

Whenever the user opens the platform the Homepage work as landing page of our platform. The Homepage consists two sub part: one is recent question part and second is the recommendation part, In recent Question part user is able to view all the recent question asked on the platform and in recommendation part user can able to view all the question that is recommended to the user based on their activity and interest.

The User Profile

User Profile Interface is same as we all view in most of the platform, in user profile part user can able to view, update, and remove information about them using easy to use UI.

3.1.6.2 Hardware Interfaces

Any device that have a average Internet connection can able to handle our application, as now days all the devices are coming with very well configuration so there is no need of any such specific hardware to user CollegeQues.

3.1.6.3 Software Interfaces

CollegeQues provide interfaces with applications for:

- The program that Admin uses.
- The program used by various users.

3.1.6.4 Communications Interfaces

As already mentioned, an Internet connection is obviously important for a complete service, but for your network adapter, you do not need any specific configuration.

3.1.7 System Features or Functional Requirements

3.1.7.1 Introduction

The purpose of the CollegeQues Project is to provide a platform for students, where student can rise question and anyone from college (Faculty, Other students etc.) can give answer to the question, In CollegeQues the question is get classified into to their related topic, subject and the teacher related to that subject, topic get notify to give answer to that question, Student get notify by their expertise topic chosen by them.

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Text, Number, picture

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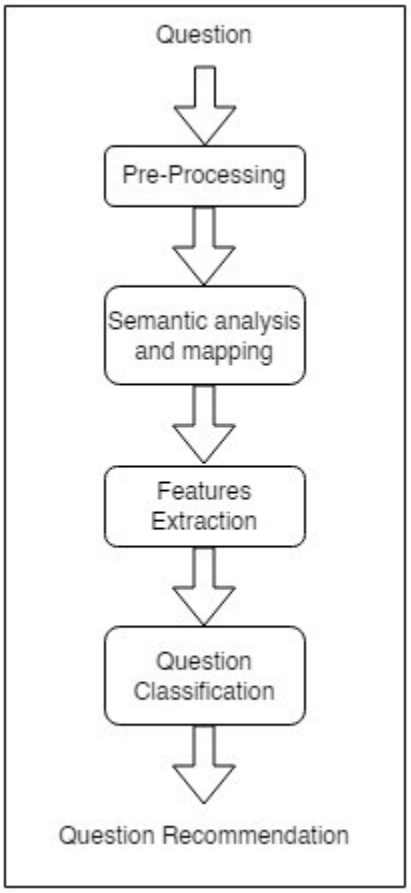
3.1.7.3 Processing

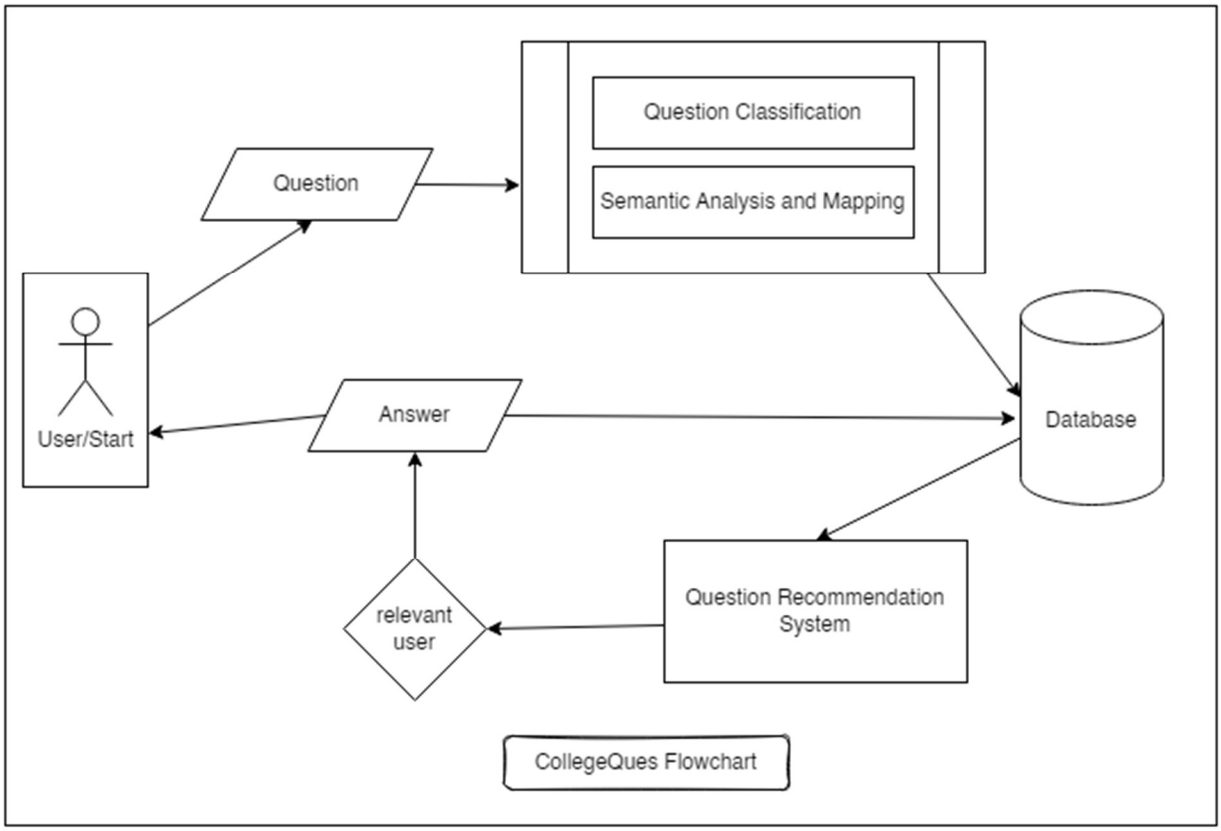


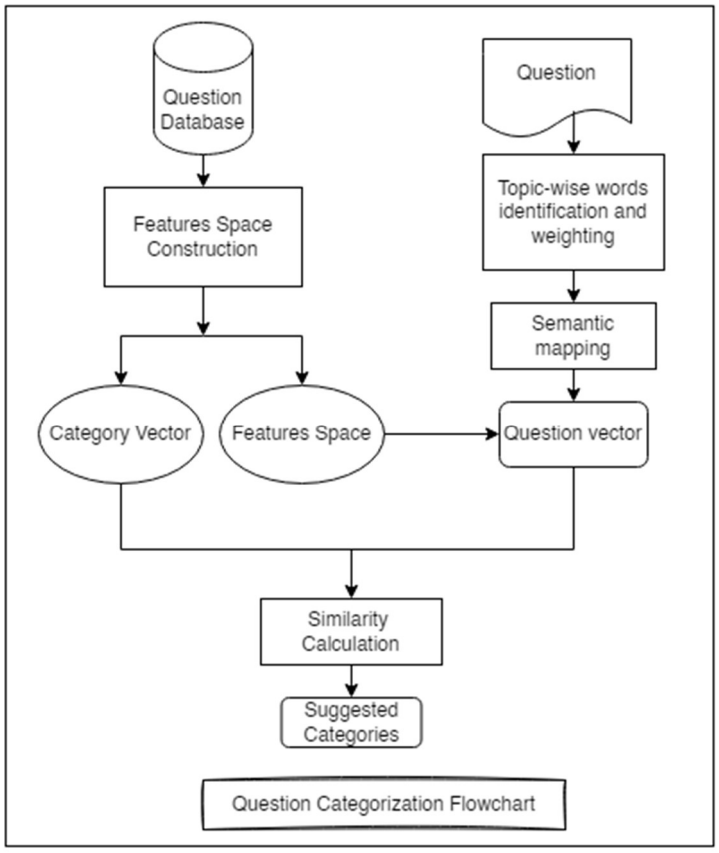
3.1.7.4 Error Handling

Expectation and Try Catch is used to monitor the handling of errors. If the user enters any email that is already used in another account, then application show “An account already exists on this email”, we have handled all the required error.

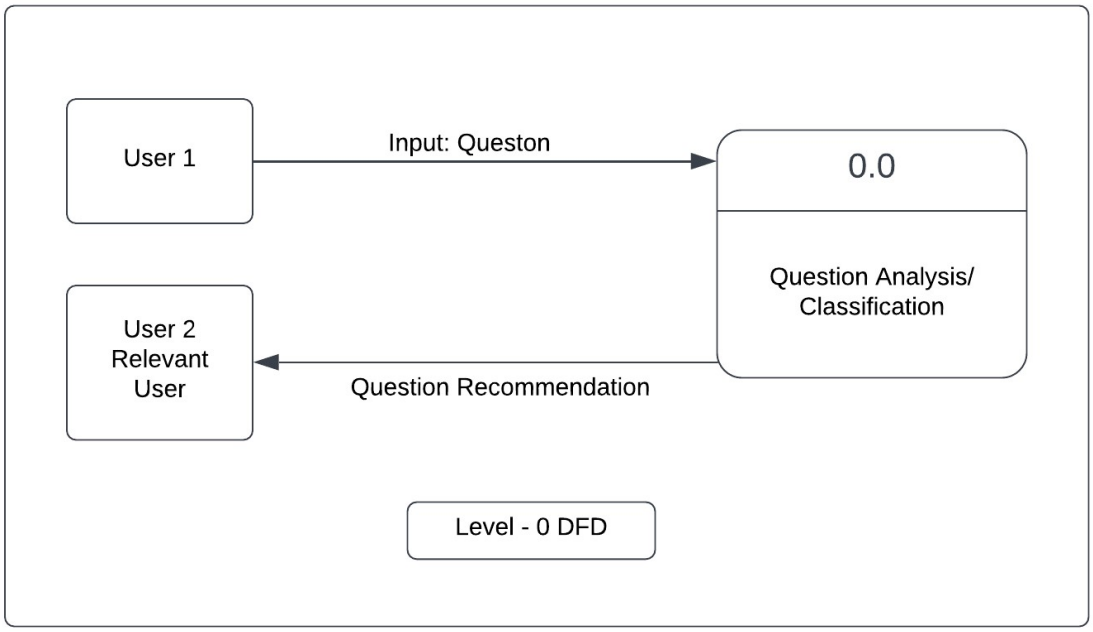
3.2 Flowcharts/DFDs/ERDs

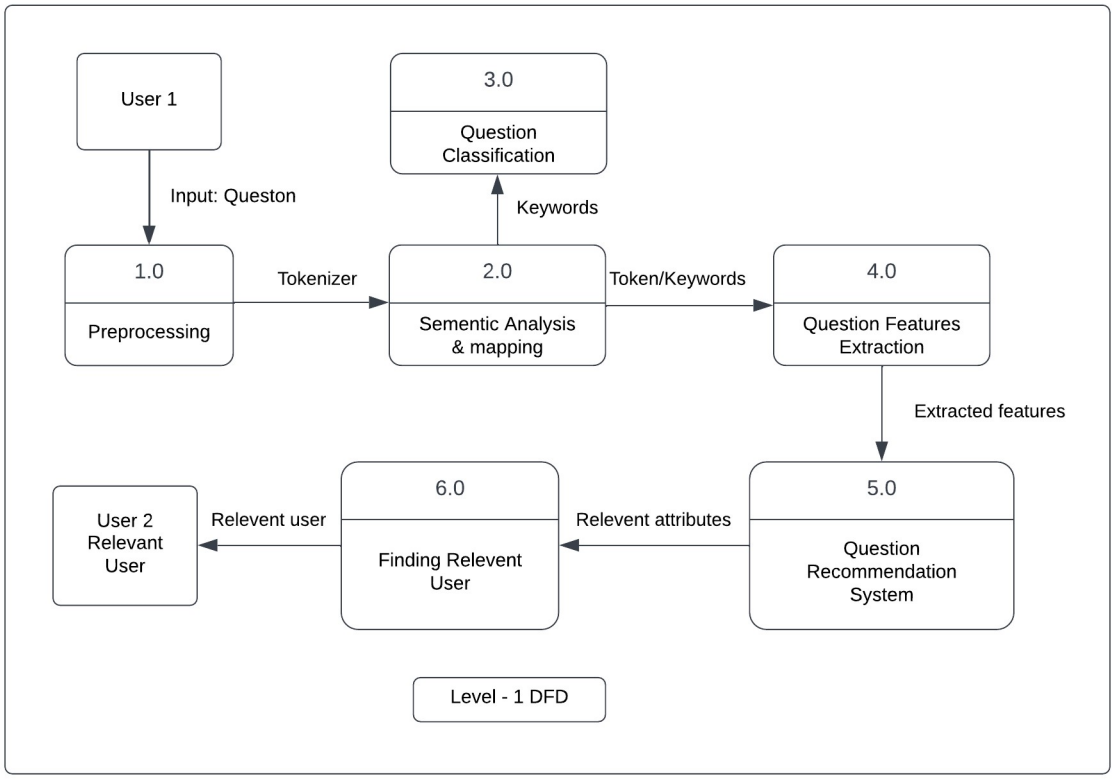
3.2.1 Flowcharts

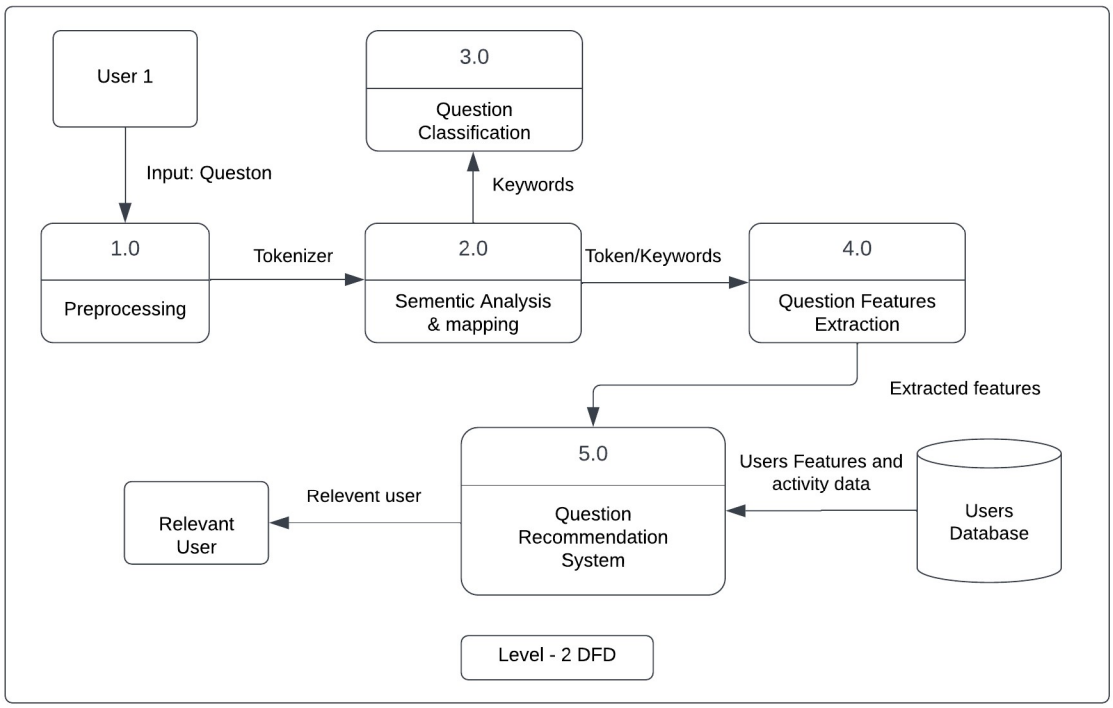


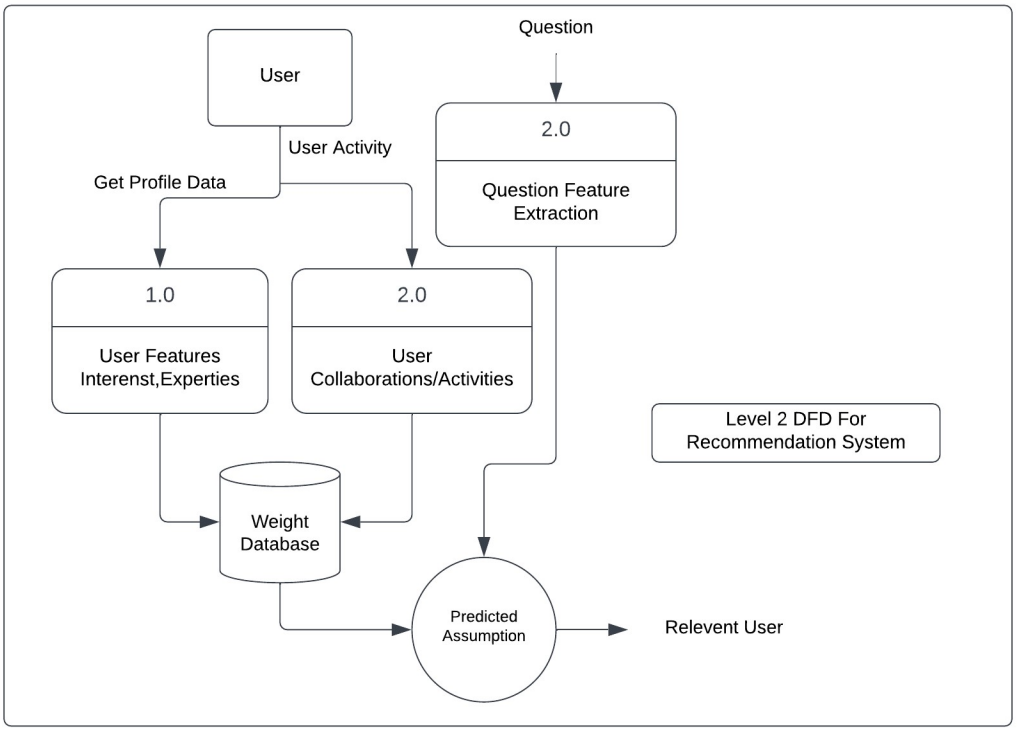

Question Database
Question
Features Space Construction
Topic-wise words identification and weighting
Semantic mapping
Category Vector
Features Space
Question vector
Similarity Calculation
Suggested Categories
Question Categorization Flowchart

3.2.2 DFDs

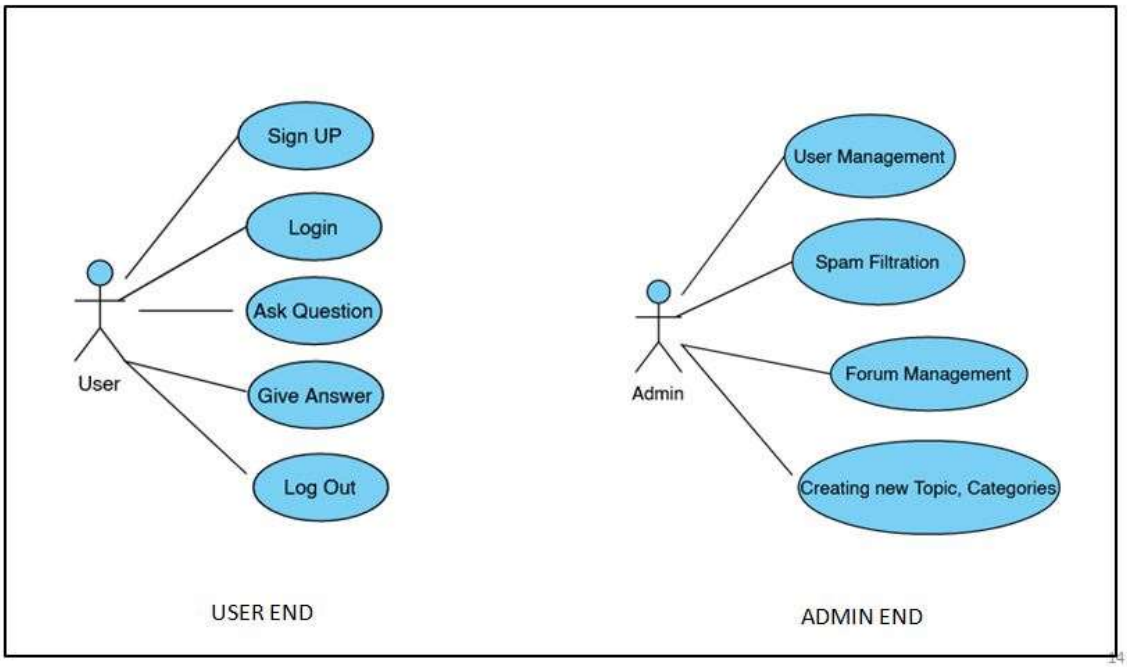

User 1
Input: Queston
0.0
Question Analysis/
Classification
User 2
Relevant
User
Question Recommendation
Level - 0 DFD


User 1
Input: Queston
1.0
Preprocessing
Tokenizer
2.0
Sementic Analysis & mapping
3.0
Question Classification
Keywords
Token/Keywords
4.0
Question Features Extraction
Extracted features
5.0
Question Recommendation System
Relevent attributes
6.0
Finding Relevent User
Relevent user
User 2 Relevant User
Level - 1 DFD


User 1
3.0
Question Classification
Input: Queston
Keywords
1.0
Preprocessing
Tokenizer
2.0
Sementic Analysis & mapping
Token/Keywords
4.0
Question Features Extraction
Extracted features
5.0
Question Recommendation System
Users Features and activity data
Users Database
Relevent user
Relevant User
Level - 2 DFD


Question
User
User Activity
Get Profile Data
2.0
Question Feature Extraction
1.0
User Features Interenst,Experties
2.0
User Collaborations/Activities
Level 2 DFD For Recommendation System
Weight Database
Predicted Assumption
Relevent User

3.2.3 Use Case Diagram



3.3 Design and Test Steps/Criteria

3.3.1 Process Model

A process is grouped into a model of the same kind by the Process Model. As a consequence, a model describes a mechanism on a type-level basis. Even though, paradigm has now reached the type stage, it is still a process of instantiation. The same method model is often used to create multiple iterations and has various instantiations. A system model should be used to prescribe how tasks can be carried out concerning the currently taking place.

The objective of a model is as follows:

- **Descriptive:**

    1. Keep track of what occurs during a procedure.
    2. Consider an outside expert's perspective who examines how an operation is carried out and determines whether changes are to be made to make it more successful or reliable.

- **Prescriptive:**

    1. Definition of the procedures needed including how they're being performed.
    2. Set laws, procedures and patterns of action that will contribute to the desired performance of the process if applied. It can vary between strict adherence and fluid guidance.

- **Explanatory:**

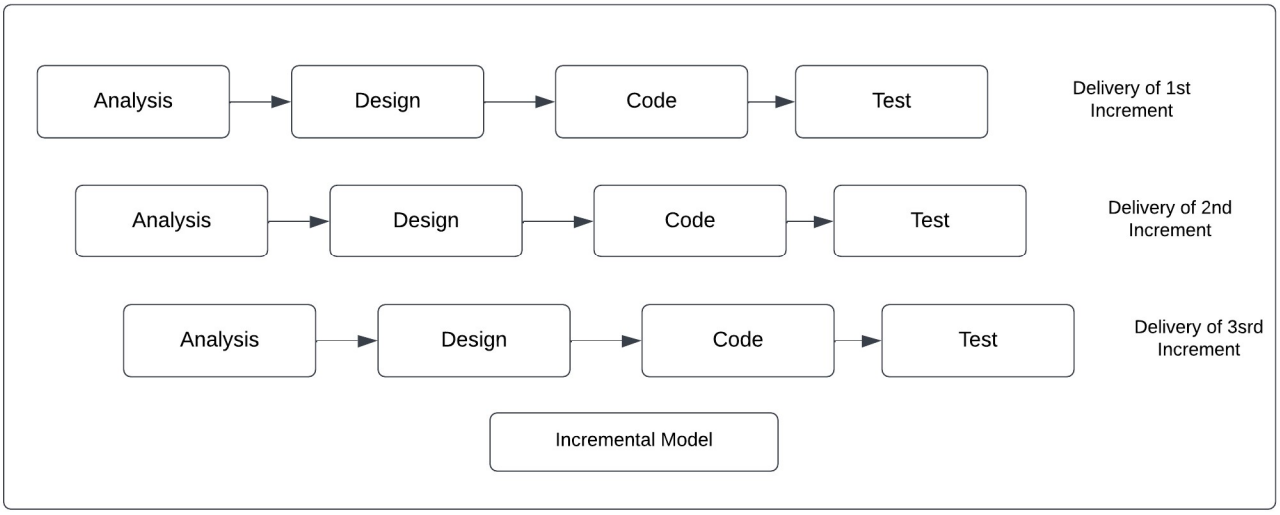
    1. Provide details on the rationale behind such methods.
    2. Centered on logical reasoning, analyze and compare various potential courses of action.
    3. Make a strong connection between both the procedures and the standards which that model would meet.
    4. Also, before the positions at which tracking data can be obtained.

3.3.1.1 Incremental Model

The loop model in our method is seen as an incremental solution. (Pictured) On the basis of the design and implementation of the project is chosen the S/w engineering process model. We have chosen an Incremental Model for our project.

A small collection of specifications are enforced easily and distributed to the authority/customer using the Incremental model.

- Changed & extended demands can be added step by step.
- It combines elements with the iterative prototyping theory of the linear sequential paradigm.
- A deliverable increment of the S/w is generated by each linear sequence.
- The Linear Sequence is divided into four sections: -



1. **Analysis:** Device & software specifications are reported and reviewed.

2. **Design:** Includes four software attributes: Data structure, S/w Architecture, representation of the interface & procedural information.

3. **Coding:** This step is used to convert the design into machine code.

4. **Testing:** Works with S/w logical internals and guarantees that all declarations are right to detect all secret errors.

Advantages of Incremental Model:

- Generates S/w function rapidly & early during the life cycle.
- More versatile & less expensive for changing specifications.
- Easier for checking & debugging
- Customers will react to each designed product.

Why is the Incremental Approach used?

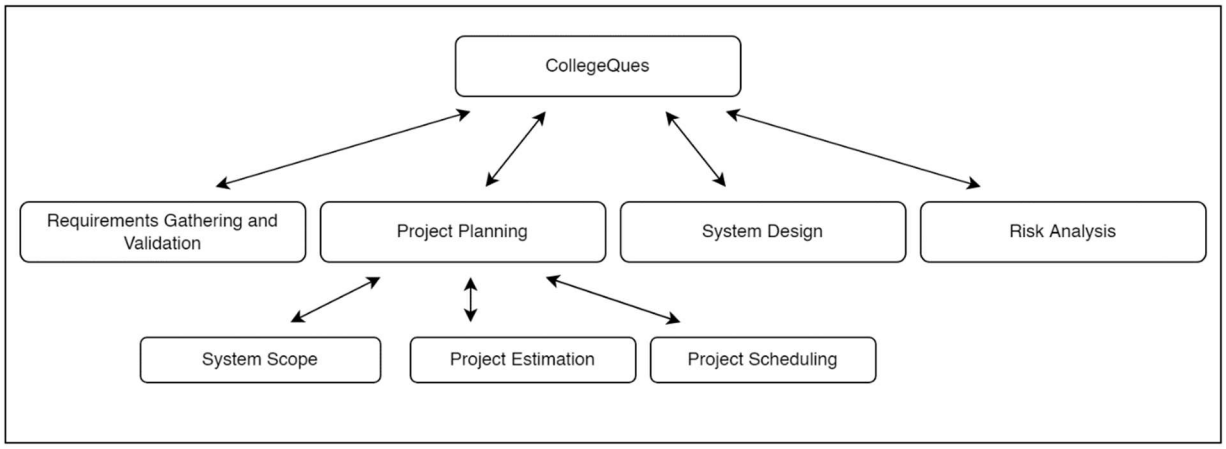
In order to boost the project's performance and usability, the key aim of using the model is to add additional features to the current modules. Using this model, we will adapt to changing consumer needs, which helps to expand the project in a very short period. The next increment in the previous raise incorporates input from consumers and several extra requirements. The process is replicated before the project is completed.

Characteristics of Incremental Model:

1. These models allow the rapid implementation and delivery of a new set of industry requirements to clients and then updating and expanding functionality step by step.
2. Each increment generates the commodity sent to the consumer and proposes certain adjustments and increments that differ with certain extra criteria compared to previous ones.
3. The radical model prevents the initiative from being completed all at once. This is useful for designing and checking components, enabling the project to be modularized for easier management.

Ultimately, the growth of the project in increments is easier. We will create a working prototype form 1 with only core tasks and then in subsequent increments, expand on this layout. By splitting the entire system into separate priority groups, this will serve to reduce system complexity.

3.3.2 Breakdown Structure (Modules Analysis)



- **Communication:**

The phase of product creation begins with user and developer interactions. We also gathered the project-related specifications according to work requirements.

- **System Design:**

A process model that is used in the implementation of the system. This activity also determines the Breakdown Structure (Modules). In the Breakdown Structure, various components used in the framework are shown.

- **Project Planning:**

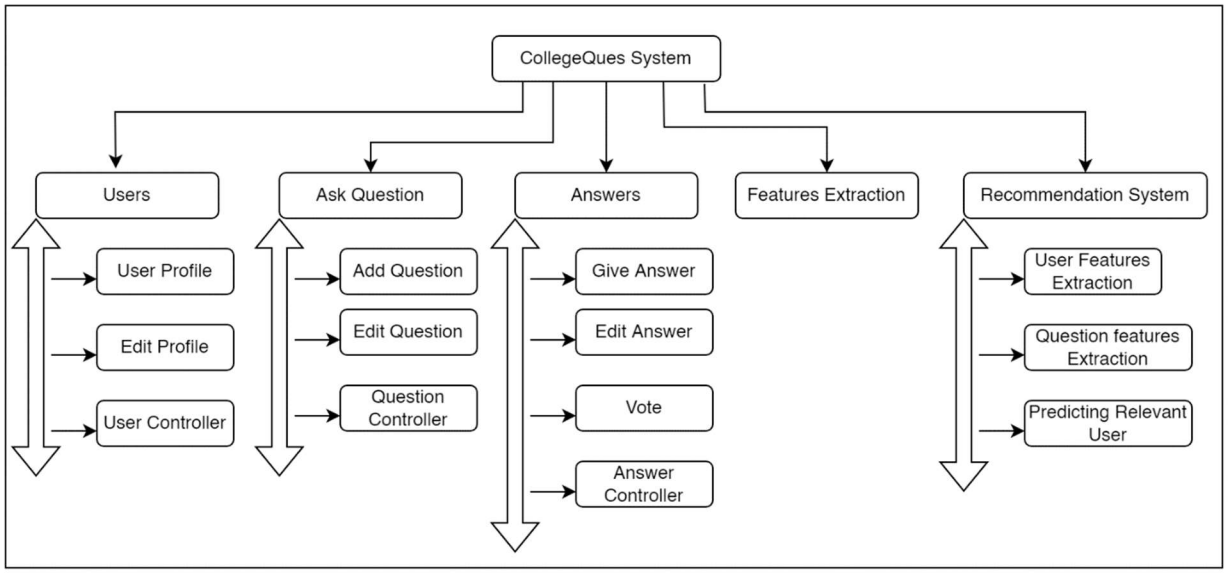
Full calculation and timing of the entire time line diagram for project development and for monitoring are included. Tasks are often expected to identify tools, time line, and other details relevant to the project.

1. **Modeling (Analysis & Design):**

It entails thorough review of specifications and project planning. In the analysis of demands, system analysis is done in accordance with customer requirements and what the start of the system will be in which direction it moves and what the destination will be is provided by the analysis process. In architecture, device design takes place according to research.

3.3.2 Breakdown Structure

The proposed work is split into the following modules, as shown in Fig:



Modules Implementation

- Users
- Ask Question
- Answer
- Features Extraction
- Question Recommendation System

1. Users

In Users module we Implemented all the requirements for users like, user profile, user edit profile where user can able to add their location, images and interest.

2. Ask Question

We created question model and implemented the controller, and User Interface for it, ask question module provide function to users like, ask question using the UI, and they also able to ass description to the question so that users whose can answer able to understand question.

3. **Answer**

   In answer module we implemented the controller and UI for the answer modules, using answer modules functionality user can able to give answer to a question asked by user, we have implemented the answer modules in such way that multiple user can give answers for same question; we have used many-to-one relationship property for this.

4. **Features Extraction**

   Features extraction modules will implement in such a way that it work as a mediator between the CollegeQues web application and the recommendation system. This modules can use to extract the user features and Question features and store data into database, and the stored data further used by recommendation system.

5. **Question Recommendation System**

   We have Implemented question recommendation system as a separate module from the CollegeQues web app, this module fetches user's features and question features and predict the relevant user who has higher probability to give the answer for a certain questions.

3.4 Testing Process

3.4.1 Software Testing

3.4.1.1 Introduction: -

The role of software testing is to ensure that programmers are efficient and accurate. Software testing is an observational science investigation conducted to provide consumers with information regarding a product's quality in the environment in which it is intended to function. This can include but is not limited to running a programmers or application to detect errors.

3.4.2 Unit Testing: -

In this case, each module is evaluated independently. The standards for defining unit test modules were selected to identify modules that have key functionality. A module may be either an individual or a method.

The unit testing functions that will be tested are as follows:

Choose the handwritten document's scanned input image.

- Preprocessing can be used.
- Make use of segmentation.
- We are using Feature Extraction to extract features.
- Take out a digital character.

3.4.3 Integration Testing: -

Relevant components are integrated and analyzed as a group during integration planning. Integration testing takes unit-tested elements like data, groups them into larger aggregates, applies integration test plan tests to those aggregates, and produces the integrated testing framework.

3.4.4 Validation Testing: -

At the start or end of the production process, this approach is used to determine if the software satisfies the specified specifications.

3.4.5 GUI Testing: -

GUI testing is the process of examining a product's graphical user interface to ensure that it complies with standards, such as retaining navigation between icons/buttons with source code.

Test Cases:

Use Case ID	1
Test Case Name	Check New User can able to register
Test Case Description	To verify the User Registration is working fine
Steps	1. Open Website 2. Fill Required Fields and press Create Account Button
Expected Results	Account created Success Message
Actual Results	As expected

Use Case ID	2
Test Case Name	Check for user can able to Login
Test Case Description	To verify the User Login is working fine
Steps	1. Go to login page of website 2. Enter Username and password
Expected Results	If Username and Password is right then login success and redirected to home page
Actual Results	As expected

Use Case ID	3
Test Case Name	Check for Wrong username and password is authenticated
Test Case Description	To check if user enter Wrong Username and password then the app is authenticated or nor
Steps	1. Go to login page of website 2. Enter Wrong Username and password
Expected Results	If Username and Password is right then login success and redirected to home page otherwise show error
Actual Results	As expected

Use Case ID	4
Test Case Name	Check for Ask Question is working
Test Case Description	To verify that user can able to ask questions.
Steps	1. Login first 2. Go to Ask Question page
Expected Results	User can able to ask question easily.
Actual Results	As expected

Use Case ID	5
Test Case Name	Check for Answer is Working
Test Case Description	To Verify, is the user can able to answer the questions.
Steps	1. First Login 2. Go to home and click on any suggested question and give answer
Expected Results	If user is login then there is an answer box below every question using that box user can able to answer the question
Actual Results	As expected

Use Case ID	6
Test Case Name	Check for Up Vote and Down Vote
Test Case Description	To Verify, is Up vote and Down Vote is working
Steps	1 First Login 2 Go to home and click on any suggested question which have answers also, and click on up vote and down vote to check for its working
Expected Results	If user is login and click on up vote then vote count will increase by 1 and same as down vote decrease by 1
Actual Results	As expected

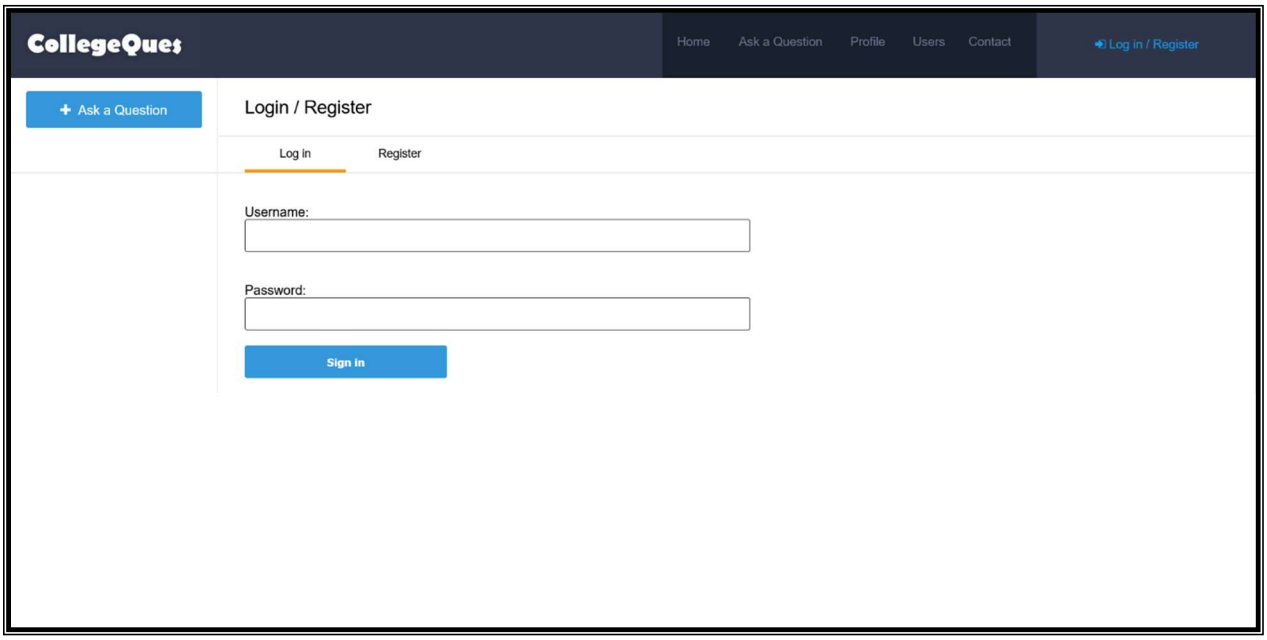
Use Case ID	7
Test Case Name	Check for User can able to Update their question
Test Case Description	To Verify that user can able to Update their question
Steps	1 First Login 2 Go to profile section and select your any one of your questions and click on Update button and try to Update the question
Expected Results	If user click on update button, it shows a update box with question, user can able to update the by clicking on submit question
Actual Results	As expected,

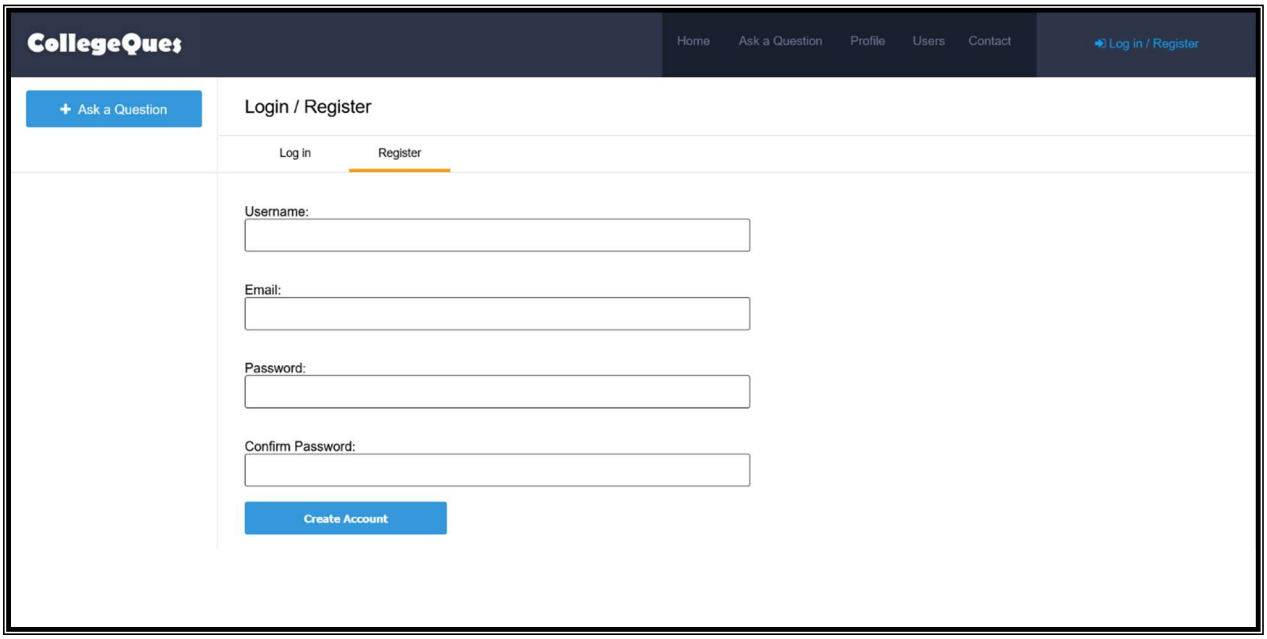
Use Case ID	8
Test Case Name	Check for User can able to delete their question
Test Case Description	To Verify that user can able to delete their question
Steps	1 First Login 2 Go to profile section and select your any one of your questions and click on delete.
Expected Results	If user click on delete button, then the question is deleted and redirected to home and show “Successfully deleted” message
Actual Results	As expected,

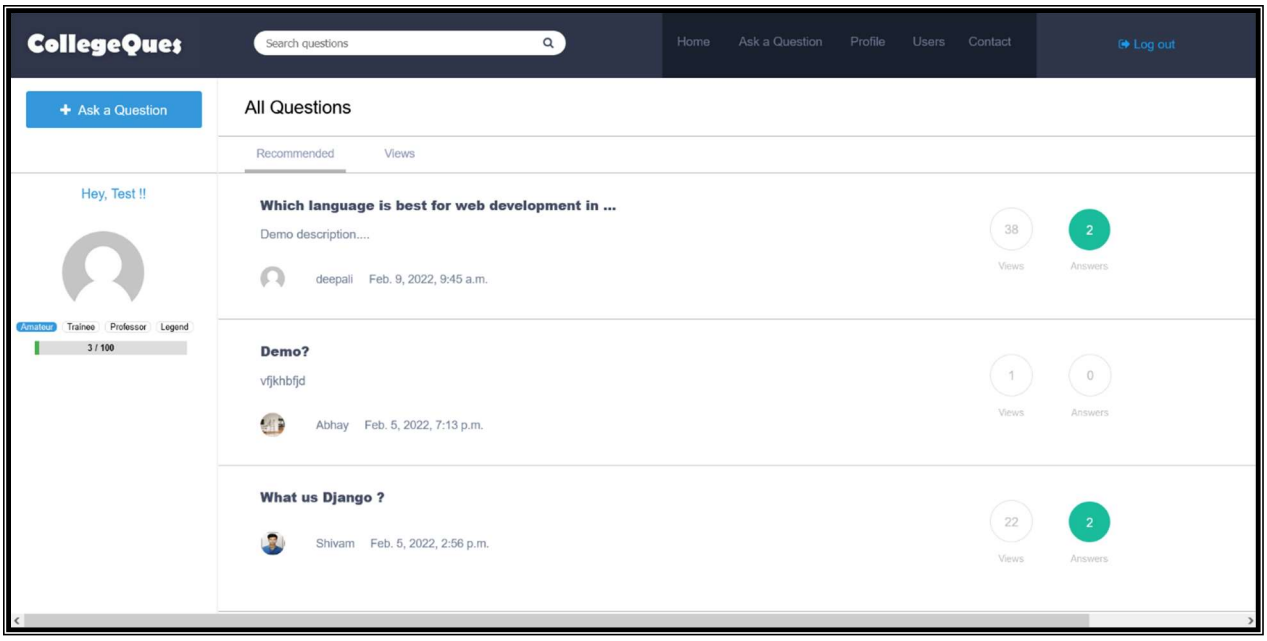
Use Case ID	9
Test Case Name	Check for User can able to update their answer
Test Case Description	To Verify that user can able to delete their question
Steps	1 First Login 2 Go to profile section and select answers tab and choose ay of your any one of your answers and click on update.
Expected Results	After click on Update a update edit box will come, here user can able to update the answer
Actual Results	As expected

Use Case ID	10
Test Case Name	Check for User can able to delete their Answer
Test Case Description	To Verify that user can able to delete their question
Steps	1 First Login 2 Go to profile section and select answers tab and choose any of your answer and click on delete.
Expected Results	If user click on delete button, then the answer is deleted and redirected to home and show “Successfully deleted” message
Actual Results	As expected

Chapter 4: RESULTS / OUTPUTS






CollegeQues
Search questions
Home
Ask a Question
Profile
Users
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+ Ask a Question
All Questions
Recommended
Views
Hey, Test !!
Amateur
Trainee
Professor
Legend
3 / 100
Which language is best for web development in ...
Demo description....
deepali Feb. 9, 2022, 9:45 a.m.
38
Views
2
Answers
Demo?
vfjkhbfjd
Abhay Feb. 5, 2022, 7:13 p.m.
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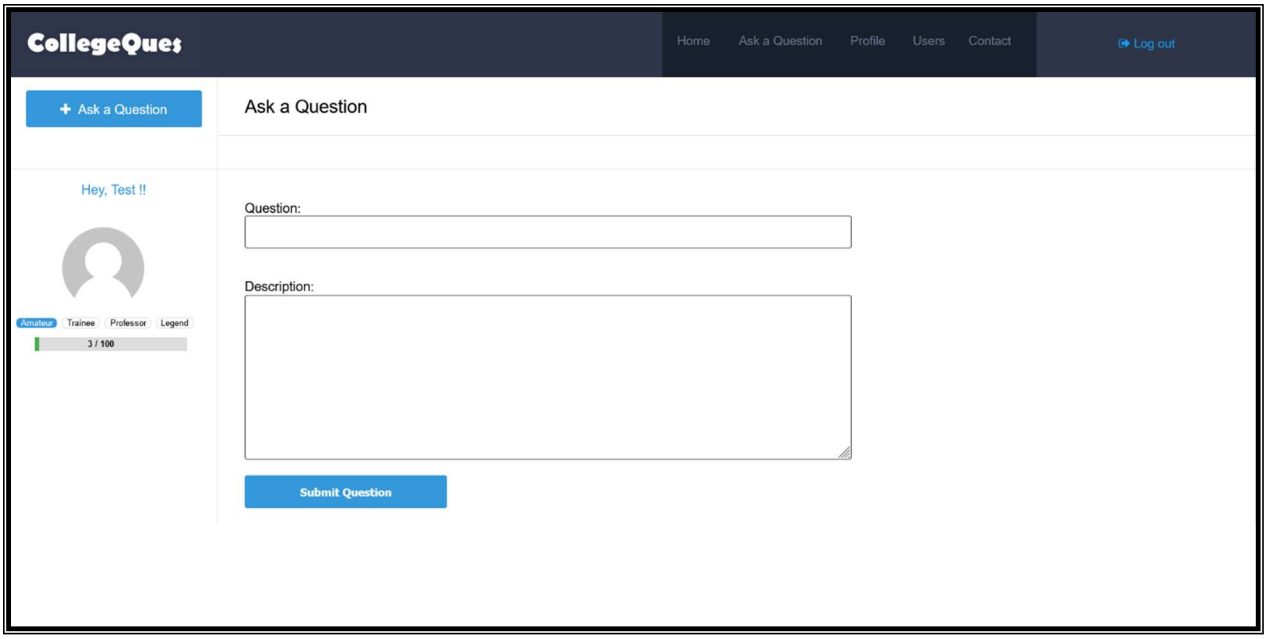
CollegeQues
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Ask a Question
Hey, Test !!
Amateur
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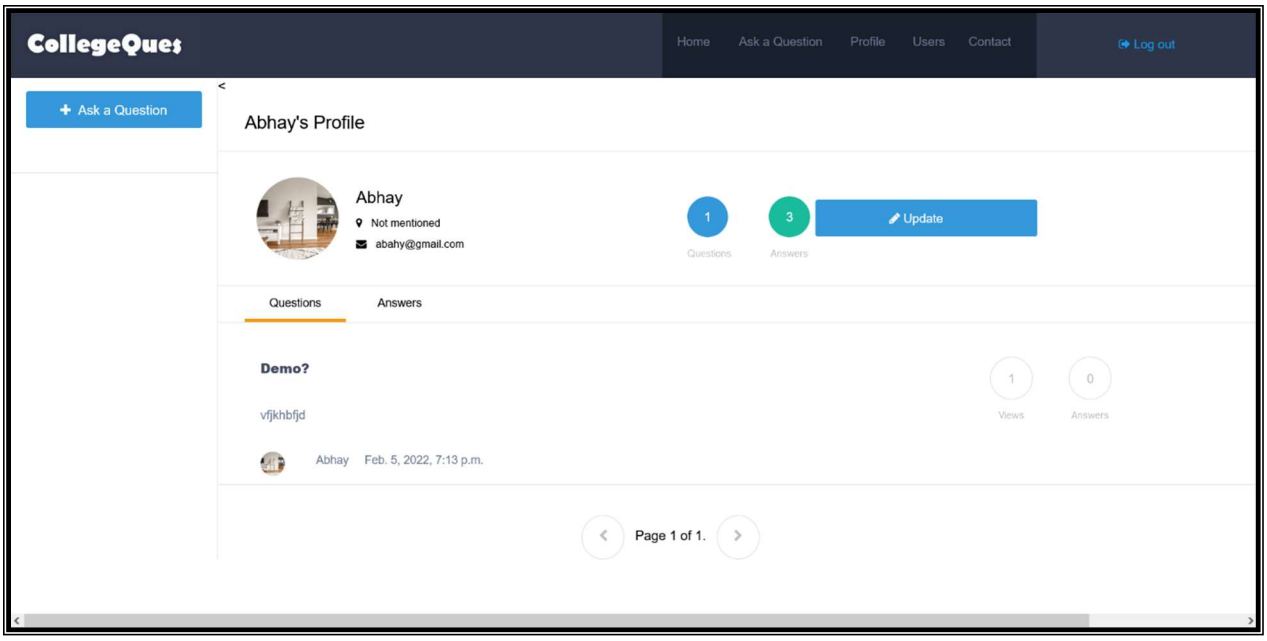
Professor
Legend
3 / 100
Question:
Description:
Submit Question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Abhay
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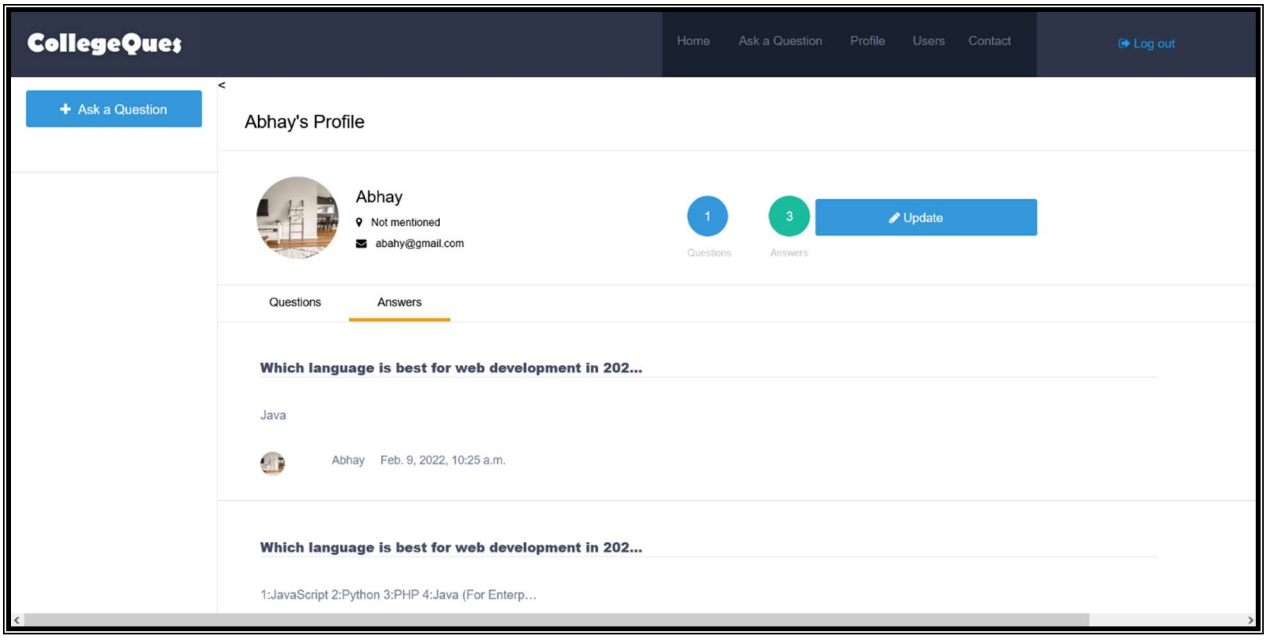
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3
Answers
Update
Questions
Answers
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Java
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Which language is best for web development in 202...
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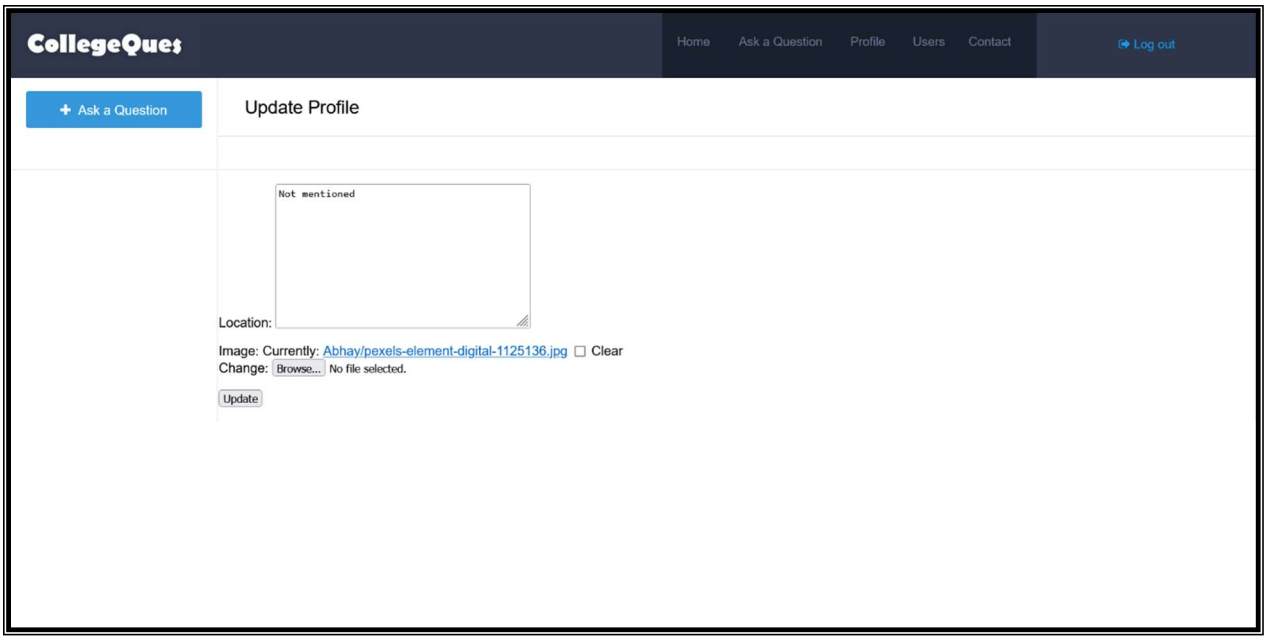
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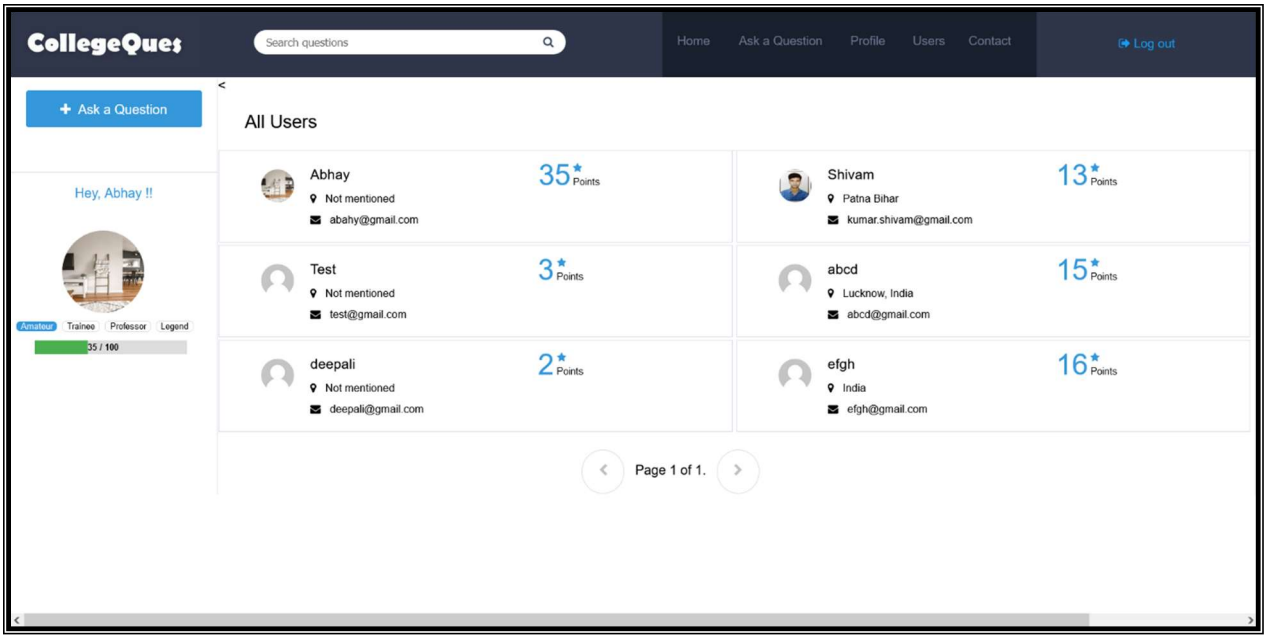
Update Profile
Not mentioned
Location:
Image: Currently: Abhay/pexels-element-digital-1125136.jpg Clear
Change: Browse... No file selected.
Update


CollegeQues
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Hey, Abhay !!
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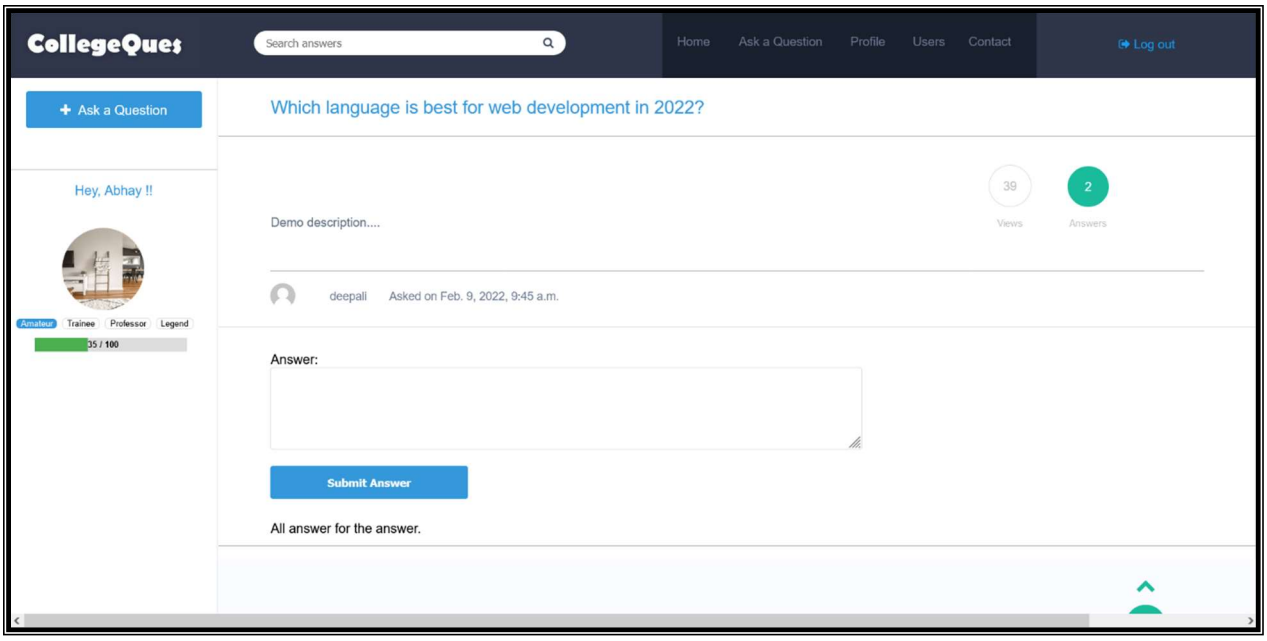
CollegeQues
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Ask a Question
Which language is best for web development in 2022?
Hey, Abhay !!
Amateur
Trainee
Professor
Legend
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Demo description....
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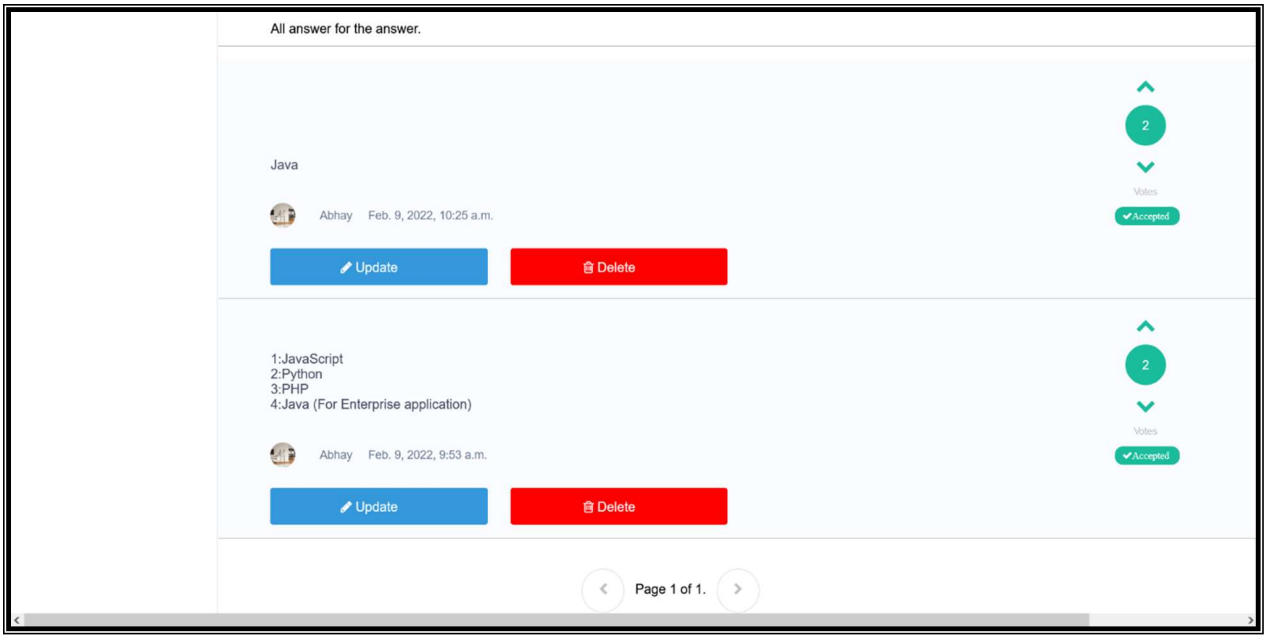
Views
2
Answers
deepali
Asked on Feb. 9, 2022, 9:45 a.m.
Answer:
Submit Answer
All answer for the answer.


All answer for the answer.
Java
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3:PHP
4:Java (For Enterprise application)
2
Votes
Abhay
Feb. 9, 2022, 9:53 a.m.
Accepted
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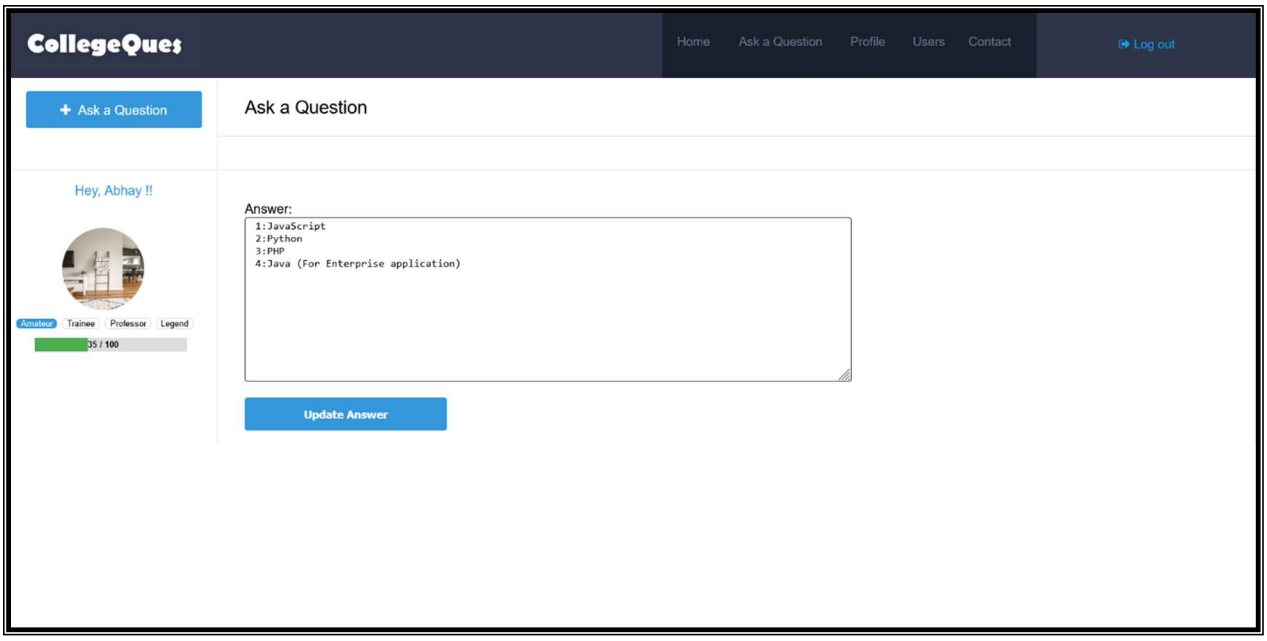
Page 1 of 1.


CollegeQues
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Ask a Question
Hey, Abhay !!
Amateur
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Professor
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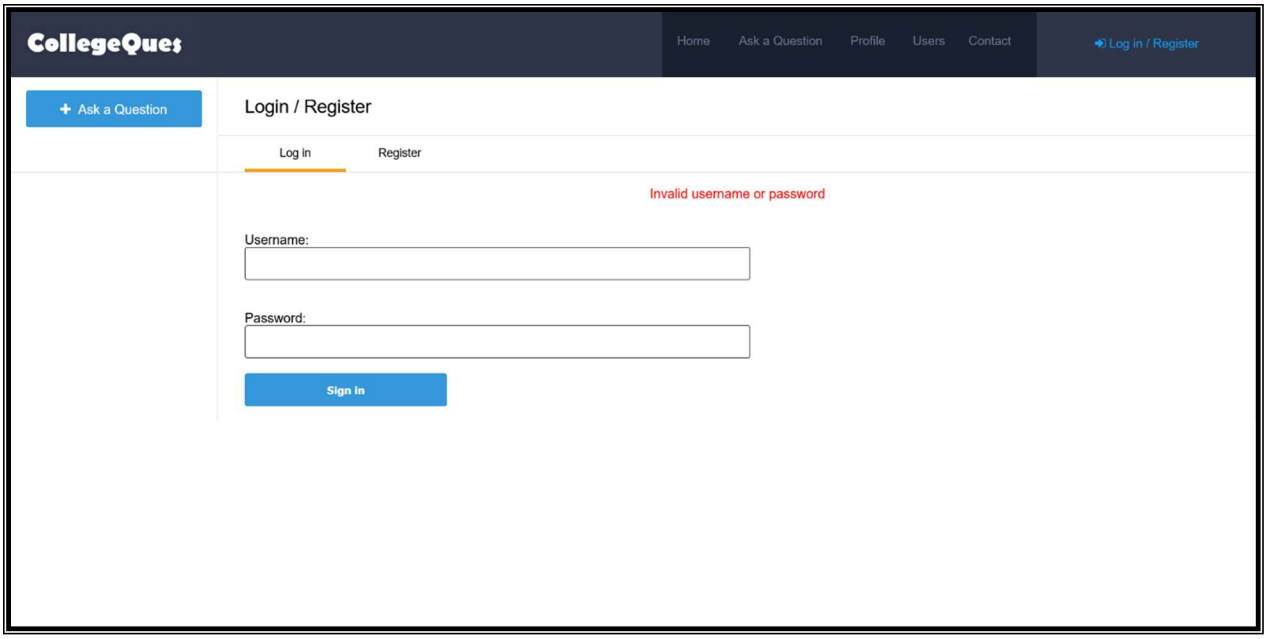
35 / 100
Answer:
1:JavaScript
2:Python
3:PHP
4:Java (For Enterprise application)
Update Answer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Chapter 5: Conclusion

A Question- answering platform has been presented for departmental use, a social question-and-answer-based platform that will help the user get the answers for their questions via the community we will build. In this, we are focusing on niche audiences like students and will help them get the answers to their questions not only from their fellow students but also from the college professors. The platform will be able to build a community for college for various interactions with the staff and students. This will also help the students of various colleges to interact with each other and learn about the specific domain they are interested in. We will also have a feature to drop the questions anonymously which will act as an advantage over other platforms for the students who are too shy to ask questions publicly. It is based on NLP which categorized the content according to student's interest, search, and domain. Central management of course information has also been added as a feature to the e-learning platform. The administrator supplies information and content for all related courses and questions to the e-learning database, Html pages, and information for all courses are automatically generated.

5.1 Further Improvement

As of now the Question addressing framework is accepting text as an info and returns text as a result. This could be improved by coordinating voice library, so it can ready to answer the by paying attention to the inquiry.

The framework can't respond to address of critical thinking, similar to why something occurred. We can upgrade its usefulness so it very well may have the option to respond to those questions moreover.

Performance Management: Professors can also track the student's academic performance and marks. A professor can only have the access to grades of those students related to courses in which he has been assigned as a faculty.

Sentiment Analysis*:* Sentiment Analysis is a method of natural Language Processing that helps to identify the type of tone or what is the purpose behind the text or content. It is also recognized as a popular way for many organizations to identify and categories the opinion about the product or idea.

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