QUESTION BANK

PROJECT REPORT

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For the award of the Degree of

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Date:

ILYAS BABU
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DECLARATION

We, here by declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person or material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text

Place: NILAMBUR
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CERTIFICATE

This is to certify that the project report entitled QUESTION BANK submitted by ILYAS BABU (Register Number: AZATSCS036), MUFEED K (Register Number: AZATSCS040), SARATH CHANDRAN K (Register Number: AZATSCS041), SHAFEEQ BADHUSHA M (Register Number: AZASCS020) to University of Calicut for the award of the degree of Bachelor of Science (B.Sc.) in Computer Science is a bonafide record of the project work carried out by him/her under my supervision and guidance. The content of the report, in full or parts have not been submitted to any other Institute or University for the award of any other degree or diploma.

Signature

Mr.Shakkeel Juman

Head of the Department

Department of computer science
Amal college of advanced studies
Myladi, Nilambur

Place:

Date:

(Office seal)

Certified that the candidate was examined by us in the Project Viva Voce Examination held on..... and his/her Register Number is .....

Examiners:

1.

2.

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Abstract

‘QUESTION BANK MANAGEMENT SYSTEM’ is a web application which is used to access previous year questions that were asked on various exams on different subjects of various departments across various universities. It allows users to access questions easily by using search feature and categorisation feature, users can even sort questions based on various conditions like ‘important’, ‘most asked’, etc. Users can also add questions when logged in and verified successfully. An admin or moderator can have the access to verify the questions added by the users and can decide whether the question should be shown on the webpage or not and can add more universities, departments and subjects. A super-admin will have the complete privileges on the web app, i.e., can add/remove moderators, add/remove users etc.

Key features of the project

- Users can view questions based on different categorisation and sorting.
- Trustworthy, because questions will only appear after verification.
- User friendly.

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CHAPTER 1

INTRODUCTION

This project is an web application which is used to access previous year questions that were asked on various exams on different subjects of various departments across various universities. It allows users to access questions easily by using search feature and categorisation feature, users can even sort questions based on various conditions like ‘important’, ‘most asked’, etc. Users can also add questions when logged in and verified successfully. An admin or moderator can have the access to verify the questions added by the users and can decide whether the question should be shown on the webpage or not and can add more universities, departments and subjects. A super-admin will have the complete privileges on the web app, i.e. can add/remove moderators, add/remove users etc.

The key aim of this application is to make the learning process easy by minifying the timing looking for previous year question papers as this provides all the questions and can be accessed easily.

CHAPTER 2

PROBLEM DEFINITION AND METHODOLOGY

2.1 Problem Definition

The project aims to solve the problem faced by the students while studying for exams. It's difficult to collect each and every questions asked previously on exams, also it consumes lot of time in this process. And while looking for questions there will be also a possibility of human error.

2.2 Project Overview

This web-app can be used to access previous year questions that were asked on various exams on different subjects of various departments across various universities. It allows users to access questions easily by using search feature and categorisation feature, users can even sort questions based on various conditions like 'important', 'most asked', etc. Users can also add questions when logged in and verified successfully. There will be less chance of human errors since the moderators will be there for verification. The simple user interface will make the purpose of this project more efficient. And ultimately this system will allow one to effectively manage study resources.

2.3 Methodology

AGILE methodology is a practice that promotes continuous iteration of development and testing throughout the software development lifecycle of the project. Both development and testing activities are concurrent unlike the Waterfall model. The agile software development emphasizes on four core values.

- Individual and team interactions over processes and tools .
- Working software over comprehensive documentation.
- Customer collaboration over contract negotiation Responding to change over following a plan.

Phases of Agile Model:

1. Requirements gathering: In this phase, you must define the requirements. You should explain business opportunities and plan the time and effort needed to build the project. Based on this information, you can evaluate technical and economic feasibility.

2. Design the requirements: When you have identified the project, work with stakeholders to define requirements. You can use the user flow diagram or the high-level UML diagram to show the work of new features and show how it will apply to your existing system.

3. Construction/ iteration: When the team defines the requirements, the work begins. Designers and developers start working on their project, which aims to deploy a working product. The product will undergo various stages of improvement, so it includes simple, minimal functionality.

4. Testing: In this phase, the Quality Assurance team examines the product's performance and looks for the bug.

5. Deployment: In this phase, the team issues a product for the user's work environment.

6. Feedback: After releasing the product, the last step is feedback. In this, the team receives feedback about the product and works through the feedback.

2.4 Purpose

The web-app ‘QUESTION BANK MANAGEMENT SYSTEM’ can be used for accessing previous year questions that were asked on various exams on different subjects of various departments across various universities. It allows users to access questions easily by using search feature and categorisation feature, users can even sort questions based on various

conditions like ‘important’, ‘most asked’, etc. Users can also add questions when logged in and verified successfully.

2.5 Scope

During this COVID-19 pandemic, the necessity of services based online platforms are high. The majority of our society is now depending the internet for learning purpose. This online platform aimed to reduce the time spent on internet for gathering study materials especially previous year question papers and hence improve the efficiency of students by avoiding unnecessary visits of various webpages and searches.

CHAPTER 3

REQUIREMENT ANALYSIS AND SPECIFICATION

3.1 Existing System

Conventional method of gathering previous year question papers include mainly offline ways of collecting from various sources and online from various websites and these contains series of drawbacks. Conventional system creates many difficulties and consumes much of a students time. Also there will be a possibility of human error too. For example one may collect questions of same subject from another university, etc.

Limitations

- Consumes much of a student's time collecting questions.
- There will be a possibility of human errors.

3.2 Proposed system

The web-app is supported to eliminate and, in some cases, to reduce the hardship faced by the existing system. The proposed system is a web-app of question bank management system in which users can access previous year questions that were asked on various exams on different subjects of various departments across various universities. It will be easier and efficient method for students and as well as teachers to provide references. This application is designed to reduce errors as much as possible. And ultimately this system will allow one to effectively manage resources.

Advantages

- Every question asked on exams under one roof.
- Easy and efficient for students and teachers.
- Manges students time well effectively

3.3 Feasibility Study

Nowadays surfing the internet has become an essential part of our life, and as students we look for various things on the internet for the purpose of learning. The implementation of modern technology in the educational sector has become inevitable. This web-app will be more relevant for students since it will be helpful for them in many ways.

In this project feasibility tests include economical, technical, operational and behavioural feasibility of the system

3.3.1 Economical feasibility

This is an important aspect to be considered while developing a project. We decided the system to be based on minimum possible cost factor. We will be developing this in shortest possible time. We don't need to buy an external hardware or other components for the development purpose. Also, all the recourses are already available, it gives an indication of the system is economically possible for development.

3.3.2 Technical feasibility

This included the study of function performance and constraints that may affect the ability to achieve an acceptable system. The developing system must be evaluating with the technical capability. The project is feasible within the limits of current technology. The technology we used here is website technology, which is one of the widely used. We can easily provide the complete services provided by this application with available technology resource constraints. The latest versions of frameworks and IDEs are used for developing. So this system is technically feasible.

3.3.3 Operational feasibility

The application provides effective and reliable way to utilize the online education. The website is highly accurate and efficient. The simple user interface provides easily manageable user experience, flexibility, accuracy to user. The server provides fast experience to the all the users all operations on the system is extremely fast. All the inputs taken are self-explanatory even to a layman.

3.3.4 Behavioural Feasibility

Normal human psychology of human beings indicates that people are resistant to change and computers are known to facilitate change. The project is mainly focused on informing correct and accurate educational information. The users can trust the application and simply look through various information. This application can provide a good user experience. So we expect that the students will accept the project with their open heart.

3.4 Requirement specification

The aim of the project is to create a web-app using python. It is connected to PostgreSQL Server for database information.

Software requirement specification involves the study of the platform being used in detailed and in this case the platform being used is HTML. It also involves the detailed study of the various operations performed by the system and their relation-ship within and outside the system.

The html is a standard mark-up language for creating webpage and web application, with cascading style sheet (CSS) and java script. Its designers also leveraged may tried – and – true approaches proven to work in the wireless world. It's true that many of these features appear in existing in proprietary platform. Web browser receives html document from a web server or from a local storage and the document into multimedia web pages. HTML describes the structure of a web page semantically and originally includes cues for the appearance of document.

3.4.1 Functional Requirements

- Super Admin: Has the complete privileges of this web-app. Only super admin can add/view/delete moderators for this system
- Moderator: Can add/view/delete questions & answers, universities, departments, subjects. Moderators can also view feedbacks given by users.
- User: Users logged in can add questions to the system. The questions added by users will only be shown on webpage after the verification of moderators.

3.4.2 Non-Functional Requirements

- Performance: The website is compatible with major browsers, and will work perfectly
- Usability: The simple user interface, accuracy and flexibility of the website gives ease to use it
- Efficiency: when a user use this website, then it will be easier for him to do different activities specified in the website within a minimum amount of time

3.5 Environmental Details

Environmental requirements for the smooth functioning of this product could be configured based on the requirement needed by the component of the operating environment that works as front – end system. Here we suggest minimum configuration for both hardware and software components.

3.5.1 Hardware specification

The following are the hardware used for development of the application.

- Processor : Intel core i3
- RAM : 4 GB
- Hard disk : 500 GB
- Input device : Standard QWERTY keyboard,
  Two button mouse.
- Output device : Monitor

3.5.2 Software specification

The following are the software needed for the development of the application

- IDE : Visual Studio Code
- Front-end : HTML, CSS, JavaScript
- Backend : Python
- Database : PostgreSQL
- Frameworks : Django, TailwindCss
- Operating system : Windows 10

3.5.3 Software description

HTML

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages.

HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as and directly introduce content into the page. Other tags such as surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page. HTML can embed programs

written in a scripting language such as JavaScript, which affects the behaviour and content of web pages. Inclusion of CSS defines the look and layout of content. The World Wide Web Consortium (W3C), former maintainer of the HTML and current maintainer of the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997.

CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.

The name cascading comes from the specified priority scheme to determine which style rule applies if more than one rule matches a particular element. This cascading priority scheme is predictable.

The CSS specifications are maintained by the World Wide Web Consortium (W3C). Internet media type (MIME type) is registered for use with CSS by RFC 2318 (March 1998). The W3C operates a free CSS validation service for CSS documents.

In addition to HTML, other markup languages support the use of CSS including XHTML, plain XML, SVG, and XUL.

JavaScript

JavaScript often abbreviated as JS, is a programming language that conforms to the ECMA Script specification. JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions.

Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web.

JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behaviour, and all major web browsers have a dedicated JavaScript engine to execute it. As a multi-paradigm language, JavaScript supports event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM). However, the language itself does not include any input/output (I/O), such as networking, storage, or graphics facilities, as the host environment (usually a web browser) provides those APIs.

Originally used only in web browsers, JavaScript engines are also now embedded in server side website deployments and non-browser applications. Although there are similarities between JavaScript and Java, including language name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design.

PostgreSQL

PostgreSQL is a powerful, open source object-relational database system that uses and extends the SQL language combined with many features that safely store and scale the most complicated data workloads. The origins of PostgreSQL date back to 1986 as part of the POSTGRES project at the University of California at Berkeley and has more than 30 years of active development on the core platform. PostgreSQL comes with many features aimed to help developers build applications, administrators to protect data integrity and build fault-tolerant environments, and help you manage your data no matter how big or small the dataset. In addition to being free and open source, PostgreSQL is highly extensible. For example, you can define your own data types, build out custom functions, even write code from different programming languages without recompiling your database. There are many more features that you can discover in the PostgreSQL documentation. Additionally, PostgreSQL is highly extensible: many features, such as indexes, have defined APIs so that you can build out with PostgreSQL to solve your challenges. PostgreSQL has been proven to be highly scalable both in the sheer quantity of data it can manage and in the number of concurrent users it can accommodate. There are active PostgreSQL clusters in production environments that manage many terabytes of data, and specialized systems that manage petabytes.

Python

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to

learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed. Often, programmers fall in love with Python because of the increased productivity it provides. Since there is no compilation step, the edit-testdebug cycle is incredibly fast. Debugging Python programs is easy: a bug or bad input will never cause a segmentation fault. Instead, when the interpreter discovers an error, it raises an exception. When the program doesn't catch the exception, the interpreter prints a stack trace. A source level debugger allows inspection of local and global variables, evaluation of arbitrary expressions, setting breakpoints, stepping through the code a line at a time, and so on. The debugger is written in Python itself, testifying to Python's introspective power. On the other hand, often the quickest way to debug a program is to add a few print statements to the source: the fast edit-test-debug cycle makes this simple approach very effective. Python's features include –

- Easy to learn - Python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly
- Easy to read - Python code is more clearly defined and visible to the eyes
- Easy to maintain – Python source code is fairly easy to maintain
- A broad standard library − Python's bulk of the library is very portable and cross-platform compatible on UNIX, Windows, and Macintosh.
- Interactive Mode − Python has support for an interactive mode which allows interactive testing and debugging of snippets of code.
- Portable − Python can run on a wide variety of hardware platforms and has the same interface on all platforms
- Extendable − You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient
- Databases − Python provides interfaces to all major commercial databases
- GUI Programming − Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems, such as Windows MFC, Macintosh, and the X Window system of Unix.
- Scalable − Python provides a better structure and support for large programs than shell scripting

- It supports functional and structured programming methods as well as OOP
- It can be used as a scripting language or can be compiled to byte-code for building large applications.
- It provides very high-level dynamic data types and supports dynamic type checking

Django

Django is a Python-based free and open-source web framework that follows the model–template–views (MTV) architectural pattern. Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It's free and open source. It is maintained by the Django Software Foundation (DSF), an independent organization established in the US as a 501(c)(3) non-profit. Django's primary goal is to ease the creation of complex, database-driven websites. The framework emphasizes reusability and "pluggability" of components, less code, low coupling, rapid development, and the principle of don't repeat yourself. Python is used throughout, even for settings, files, and data models. Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models. Some well-known sites that use Django include Instagram, Mozilla, Disqus, Bitbucket, Nextdoor and Clubhouse. Django's features include –

- Ridiculously fast- Django was designed to help developers take applications from concept to completion as quickly as possible.
- Reassuringly secure- Django takes security seriously and helps developers avoid many common security mistakes.
- Exceedingly scalable- Some of the busiest sites on the web leverage Django's ability to quickly and flexibly scale.

Tailwind

Tailwind CSS is a CSS framework. It's somewhat similar to popular frameworks, like Bootstrap and Materialize, in that you apply classes to elements and it styles them. But it is also atomic CSS in that one class name does one thing. While Tailwind does have Tailwind

UI for pre-built componentry, generally you customize Tailwind to look how you want it to look.
Tailwind other features include

- With Tailwind, you get thousands of out-of-the-box CSS classes that you just need to apply to your HTML elements.
- The names are simple and they do a good job of telling you what their functions are. For example, `text-sm` gives your text a small font size**.** This is a breath of fresh air for people that struggle with naming custom CSS classes
- By utilizing a mobile-first approach, responsiveness is at the heart of Tailwind's design. Making use of the `sm`, `md`, and `lg` prefixes to specify breakpoints, you can control the way styles are rendered across different screen sizes. For example, if you use the `md` prefix on a style, that style will only be applied to medium-sized screens and larger. Small screens will not be affected.

Tailwind might also not be for you if you are someone who prefers ready-made components to avoid stress and save time, or you are working on a project with a short deadline.

CHAPTER 4

SYSTEM DESIGN

4.1 User of the system

The main users of the system are:

- Super admin
- Moderator
- User

Super Admin:

The super admin will have the complete privilege in the system. The super admin can do the following-

- Add/view/delete/modify Moderators.
- Add/view/delete/modify Users.
- Add/view/delete/modify Universities
- Add/view/delete/modify Departments
- Add/view/delete/modify Subjects
- Add/view/delete/modify Questions
- Can access feedback.

Moderator:

Moderators have the duty of ensuring trustiness and keeping integrity of system. Those questions that is verified by the moderators will only be shown in the website. Their privileges include-

- Add/view/delete/modify Universities
- Add/view/delete/modify Departments
- Add/view/delete/modify Subjects
- Add/view/delete/modify Questions
- Access feedback

Users

Normal website users once logged in can have the access to Add questions. The questions added by users will only be shown on webpage after the verification of moderators or superadmin.

4.2 Architectural design

The software architecture of a computing system is the structure of the system, which comprise application components, the externally visible properties of those components, and the relationships between them. The term also refers to documentation of a system's software architecture. Documenting software architecture facilitates communication between stakeholders, documents early decisions about high-level design, and allows reuse of design components and patterns between projects. Architecture is commonly defined in terms of components and connectors. Components are identified and assigned responsibilities that client components interact with through "contracted" interfaces. Component interconnections specify communication and control mechanisms, and support all component interactions needed to accomplish system behaviour.

4.2.1 Database design

Database name: qbank

1. Table name : User

Field name	Datatypes	Constraints
Id	Integer	Primary key
Username	Varchar	Not null,unique
Password	Varchar	Not null
First name	Varchar	Not null
Last name	Varchar	
Email	Varchar	Not null
Is_staff	Boolean	
Is_superuser	Boolean	
Date_joined	Timestamp with timezone	Not null
Last_login	Time stamp with timezone	

2. Table name: profile

Field name	Datatypes	Constraints
Id	Int	Primary key
Username	Varchar	Not null
University	Varchar	Not null
College	Varchar	Not null
Designation	Varchar	Not null
Phone	Varchar	Not null

3. Table name: User_otp

Field name	**Datatypes**	**Constraints**
Id	Int	Primary key
User_id	Int	Foreign key
Otp	Int	Not null

4. Table name : university

Field name	**Datatypes**	**Constraints**
Id	Int	Primary key
University_name	Varchar	Not null

5. Table name: department

Field name	**Datatypes**	**Constraints**
Id	Int	Primary key
Department_name	Varchar	Not
University_id	Int	Foreign key

6. Table name : subject

Field name	**Datatypes**	**Constraints**
Id	Int	Primary key
Subject_name	Varchar	Not null
Department_id	Int	Not null

7. Table name: questionAnswer

Field name	**Datatypes**	**Constraints**
Id	Int	Primary key
Question	Text	Not null
Answer	Text	Not null
Year	Int	Not null
Department_id	Int	Foreign key
Subject_id	Int	Foreign key
University_id	Int	Foreign key
Semester	Varchar	Not null
Times asked	Int	
Important	Boolean	
Show	Boolean	
Comments	Varchar	
Username	Varchar	Not null

8. Table name: feedback

Field name	**Datatypes**	**Constraints**
Id	Int	Primary key
Name	Varchar	Not null
Email	Varchar	Not null
Message	Text	

4.3 Logical Design

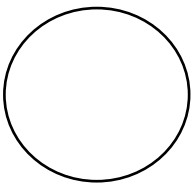
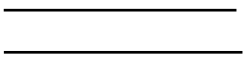
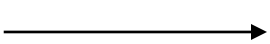
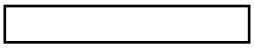
It defines the relationship between major structural elements of the program. This modular framework of a computer program can be derived from the analysis models and the interaction of the subsystems within the analysis model. The primary objective is to develop a modular program structure and represent a relationship between the modules. In addition, the logical design methods program structure and data structure, defining interface that enables data to flow throughout the program. The logical design of various modules in the CDAS is described using Data Flow Diagram.

4.3.1 Data Flow Diagram (DFD)

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. A data flow diagram can also be used for the visualization of data processing (structured design). It is common practice for a designer to draw a context-level DFD first which shows the interaction between the system and outside entities. This context level DFD is then "exploded" to show more detail of the system being modelled.

Data Flow Diagram Notations

We can use different types of notations on Data Flow Diagram. There are four basic symbols in this notation

- Process 
- Data store 
- Data flow 
- External entity 

DFD Level 0

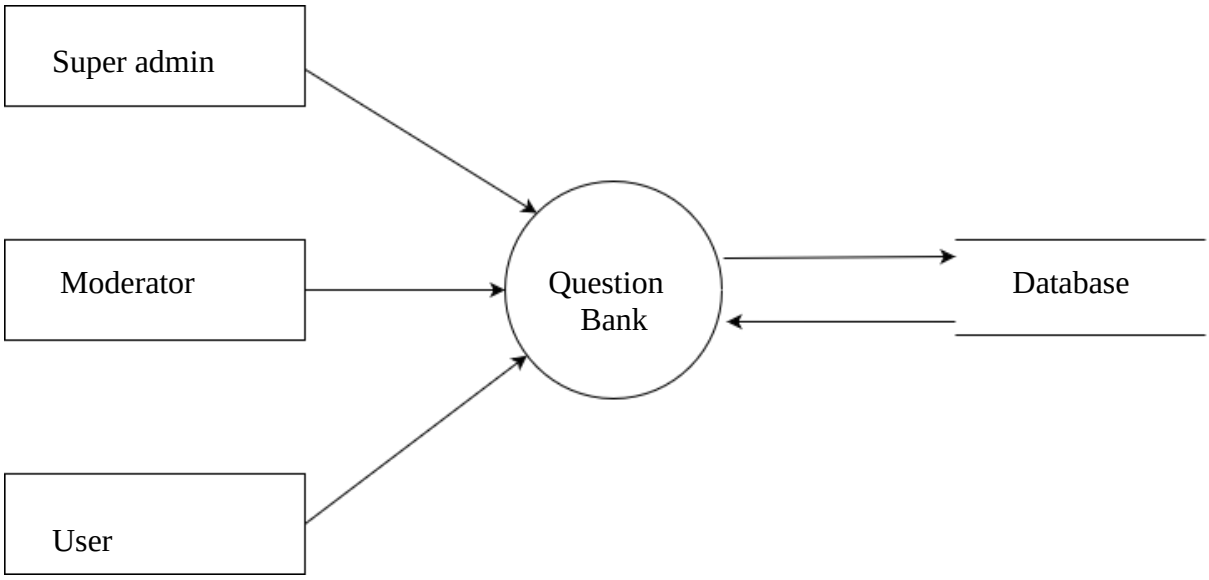


Fig:4.3.1.1

DFD Level 1.1(Super admin)

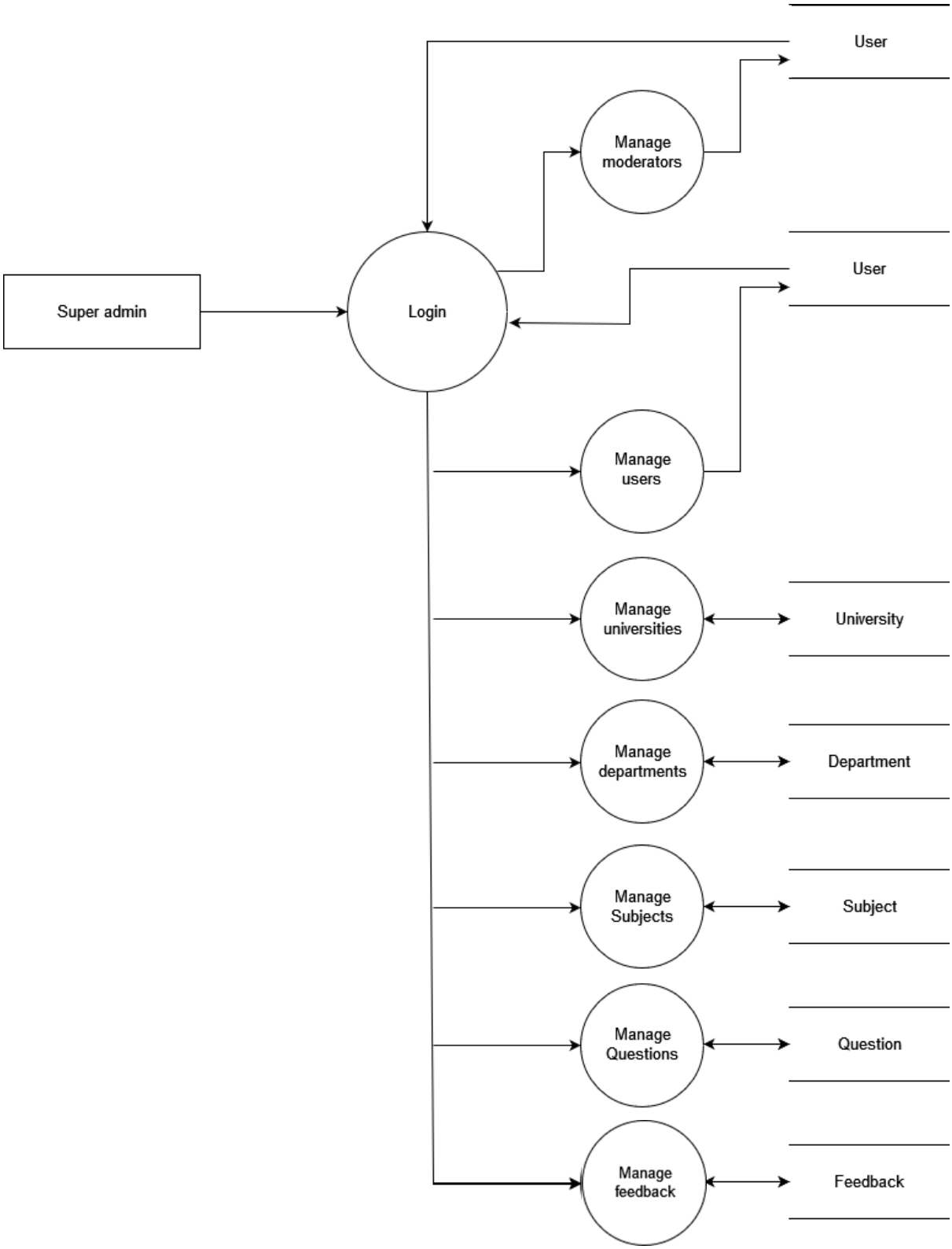


Fig:4.3.1.2

DFD Level 1.2(Moderator)

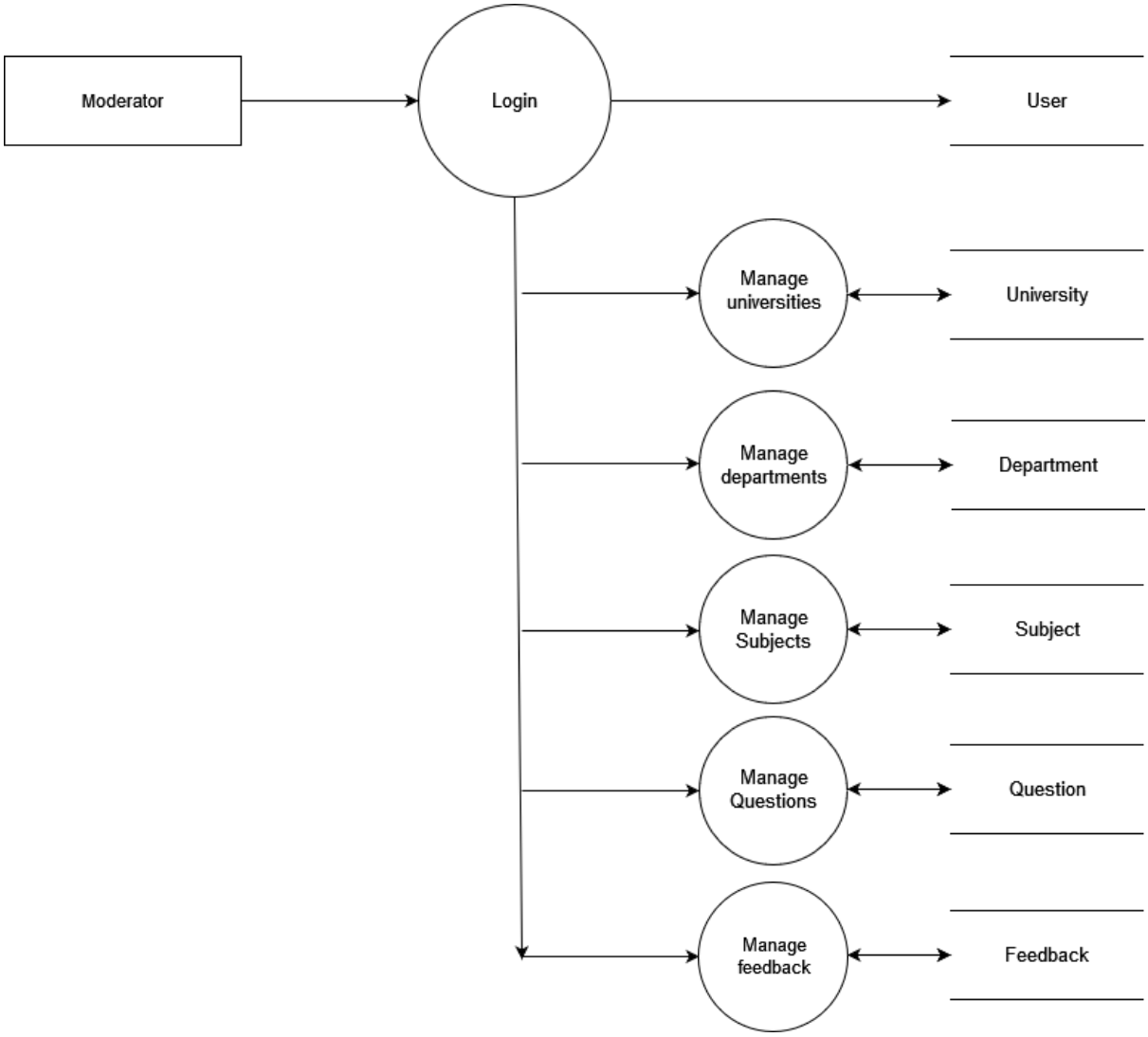


Fig:4.3.1.3

DFD Level 1.3(Users)

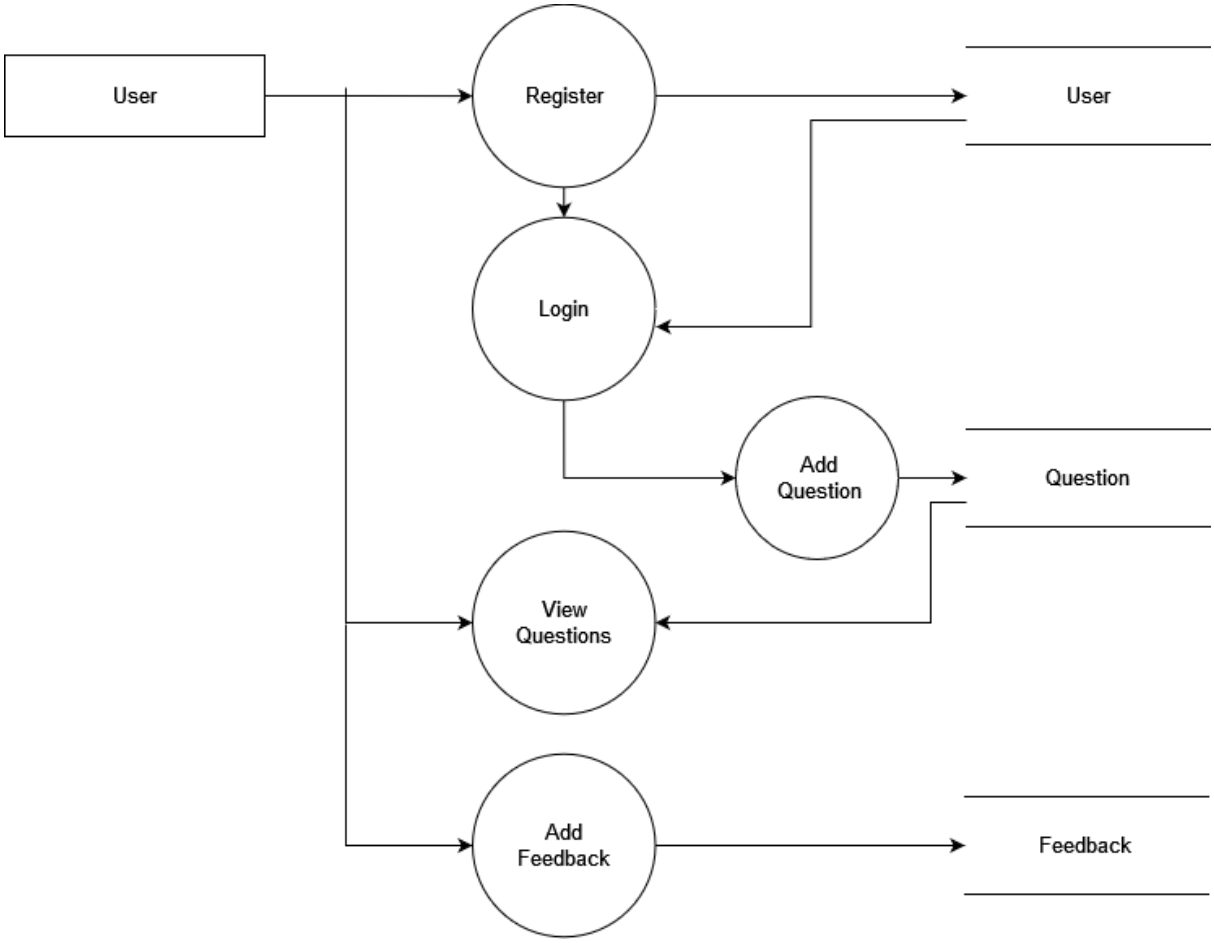


Fig:4.3.1.4

DFD Level 2.1.1(Super admin manage users)

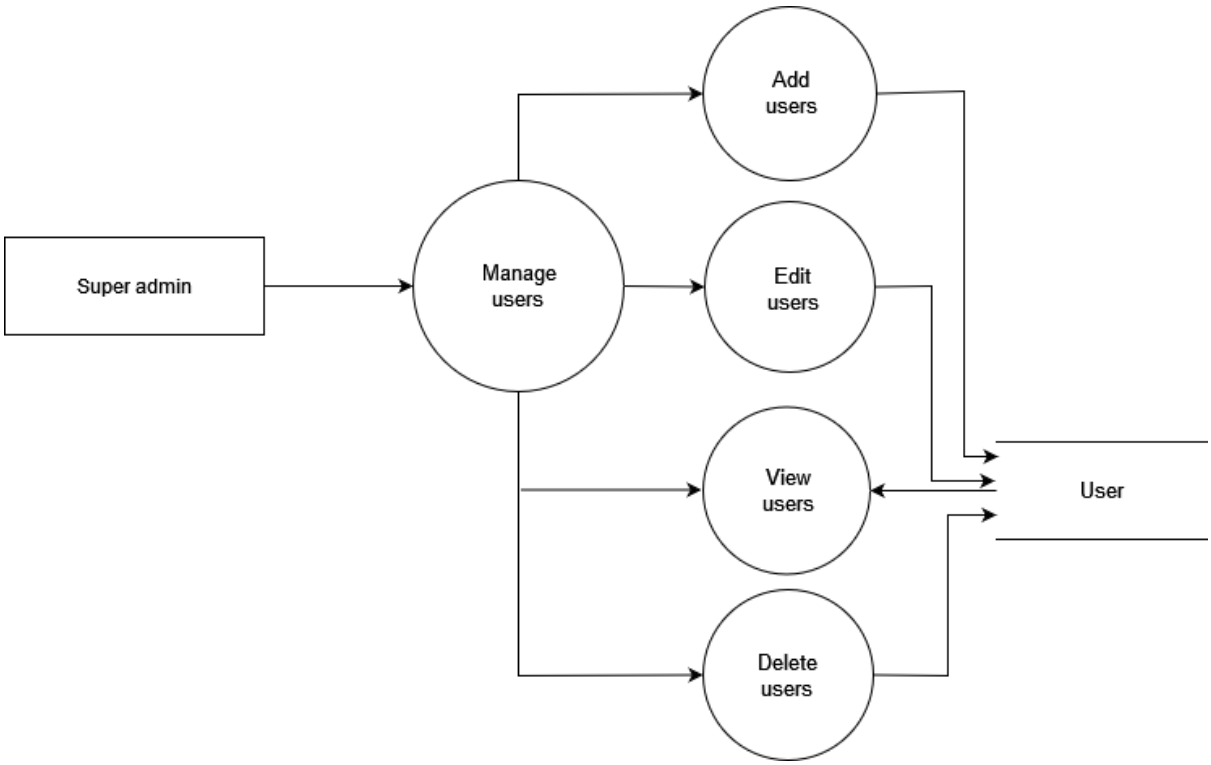


Fig:4.3.1.5

DFD Level 2.1.2(Super admin manage Moderators)

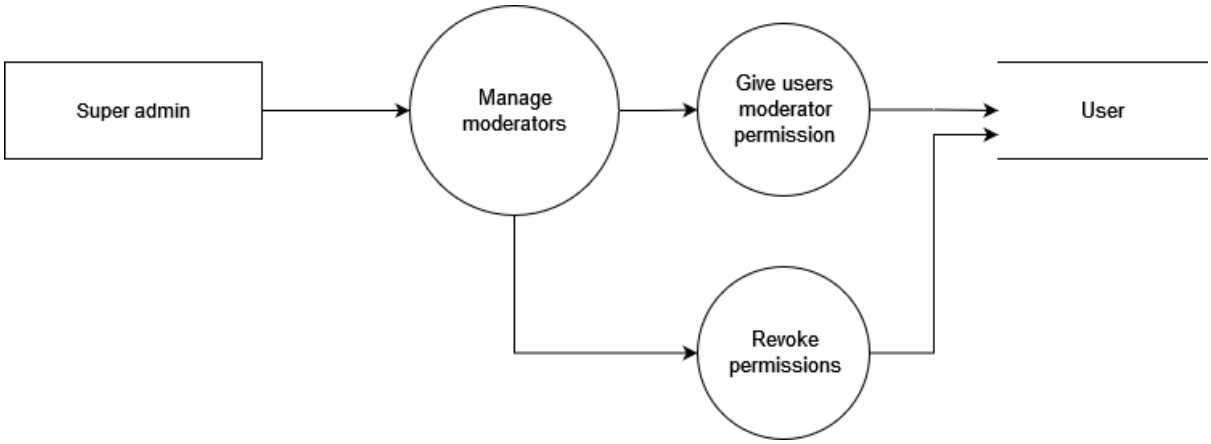


Fig:4.3.1.6

DFD Level 2.1.3(Super admin manage Universities)

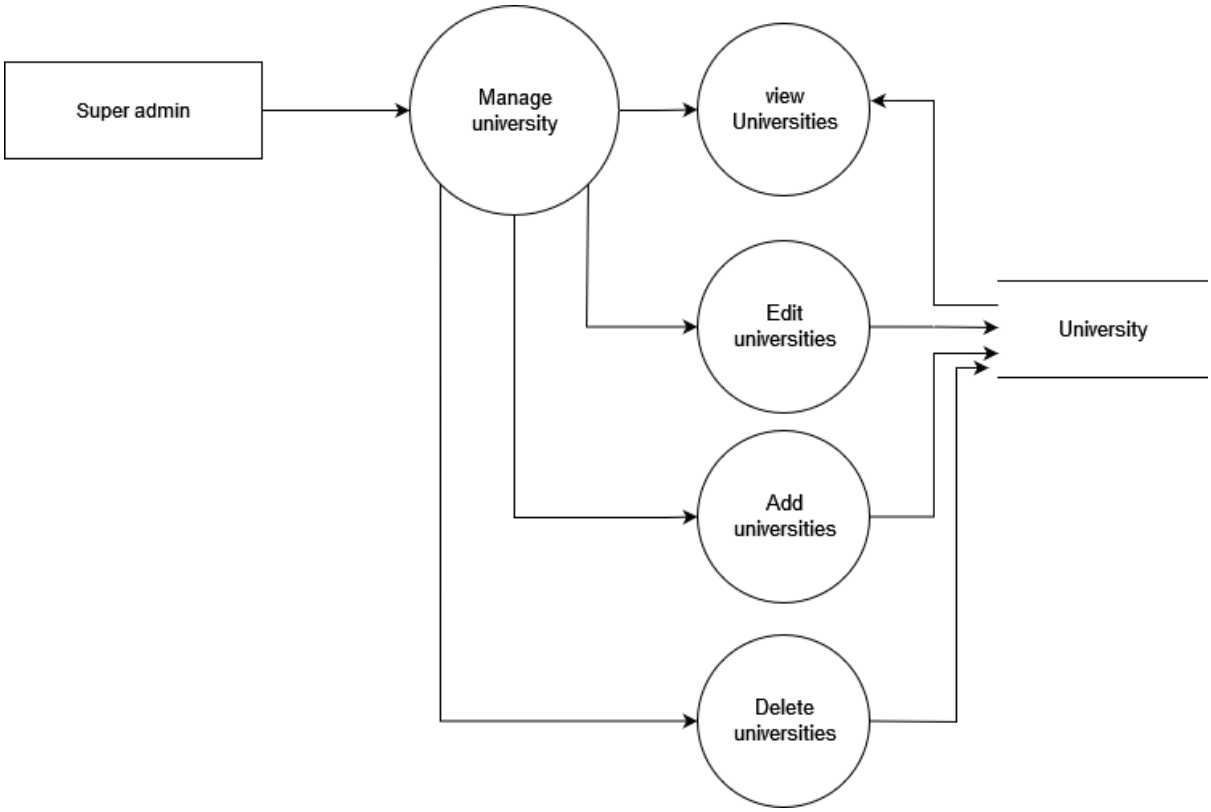


Fig:4.3.1.7

DFD Level 2.1.4(Super admin manage Departments)

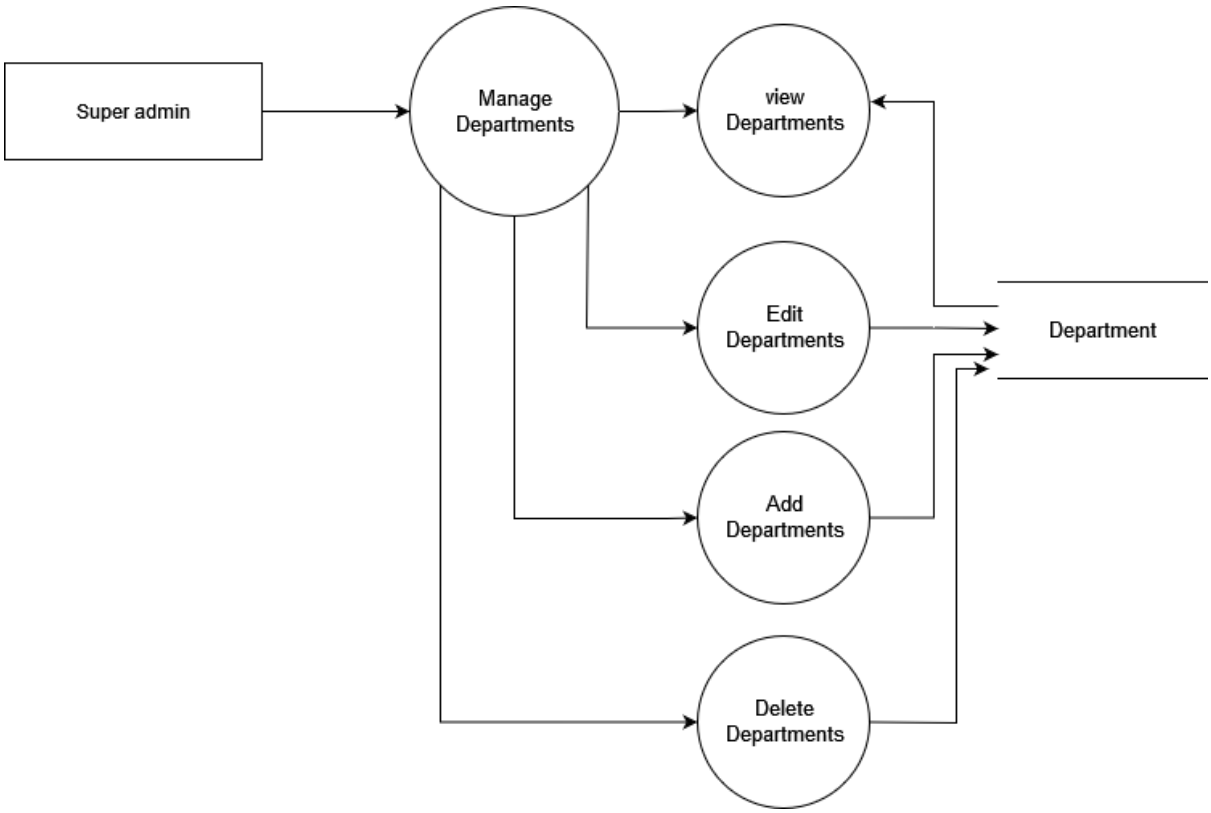


Fig:4.3.1.8

DFD Level 2.1.5(Super admin manage Subjects)

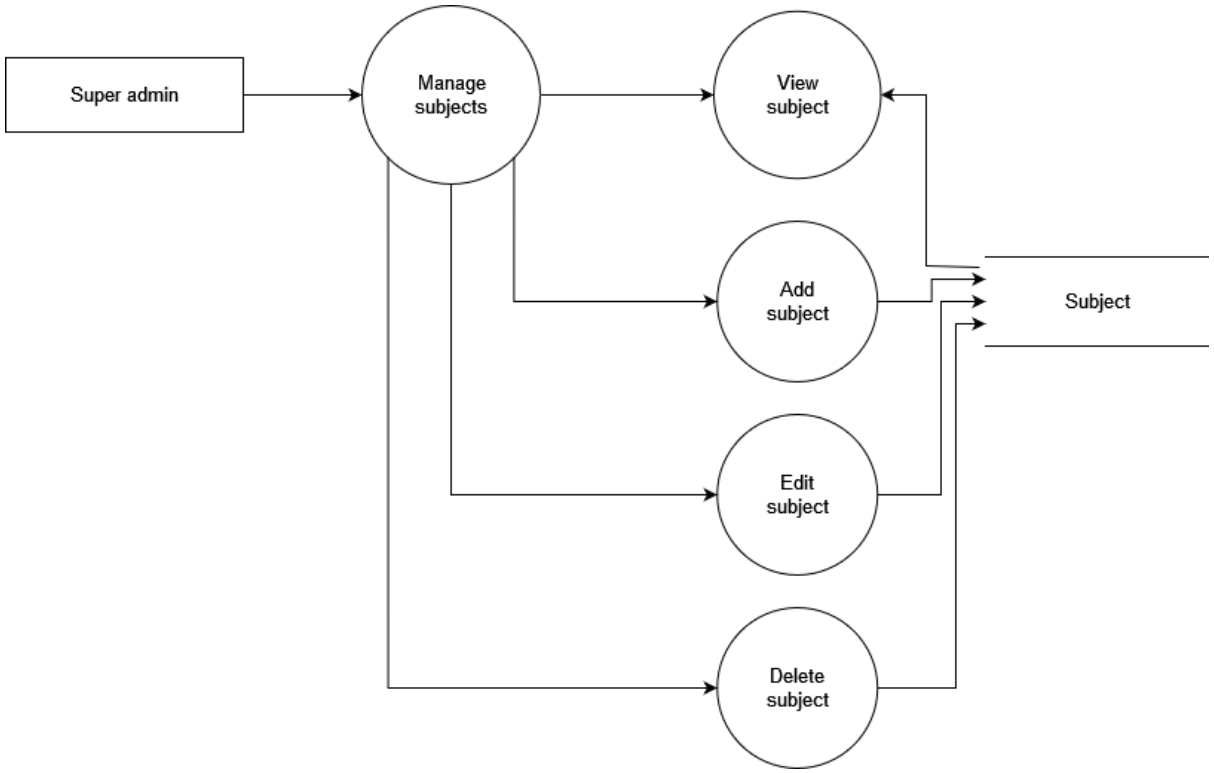


Fig:4.3.1.9

DFD Level 2.1.6(Super admin manage Questions)

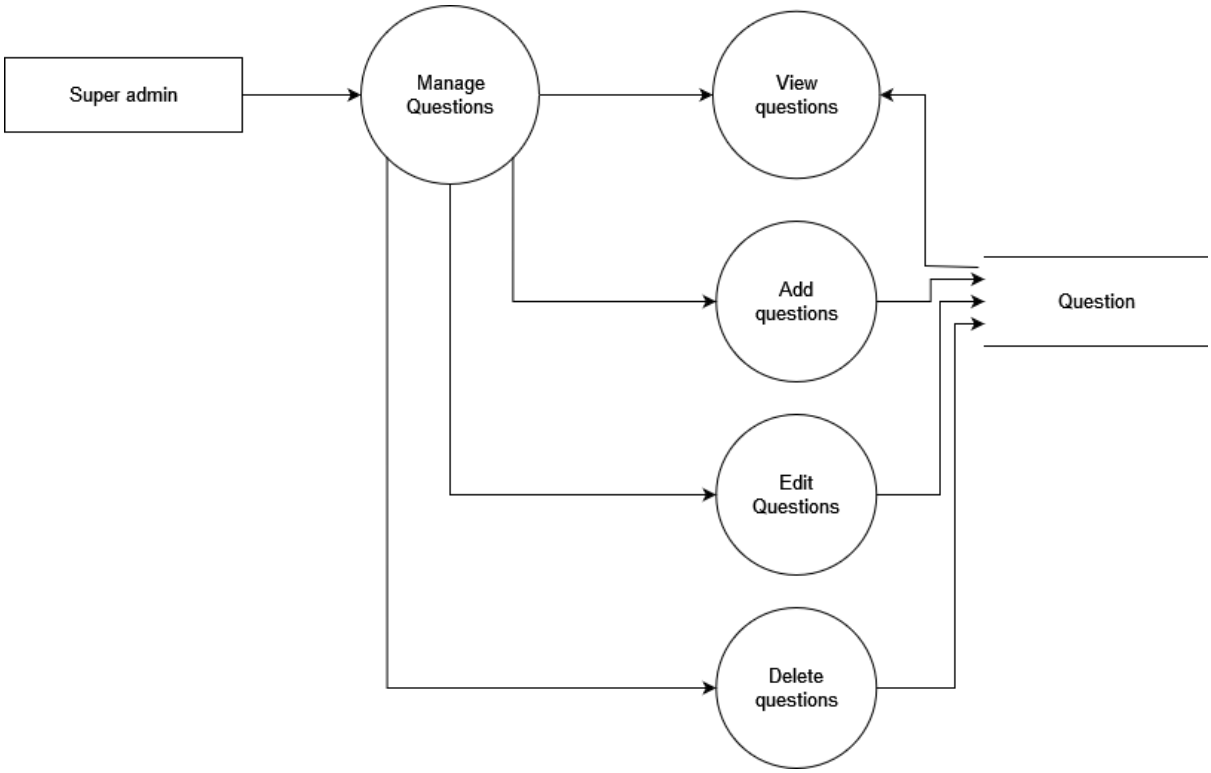


Fig:4.3.1.10

DFD Level 2.1.7(Super admin manage Feedback)

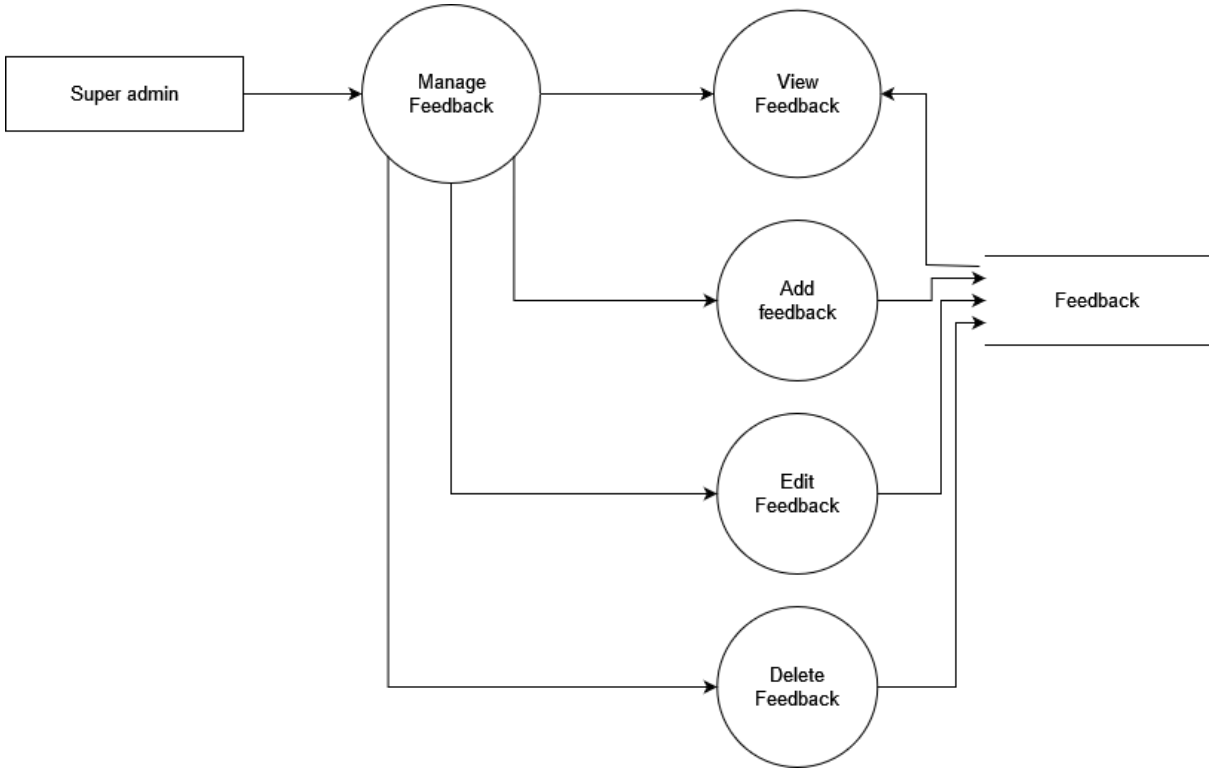


Fig:4.3.1.11

DFD Level 2.2.1(Moderator manage University)

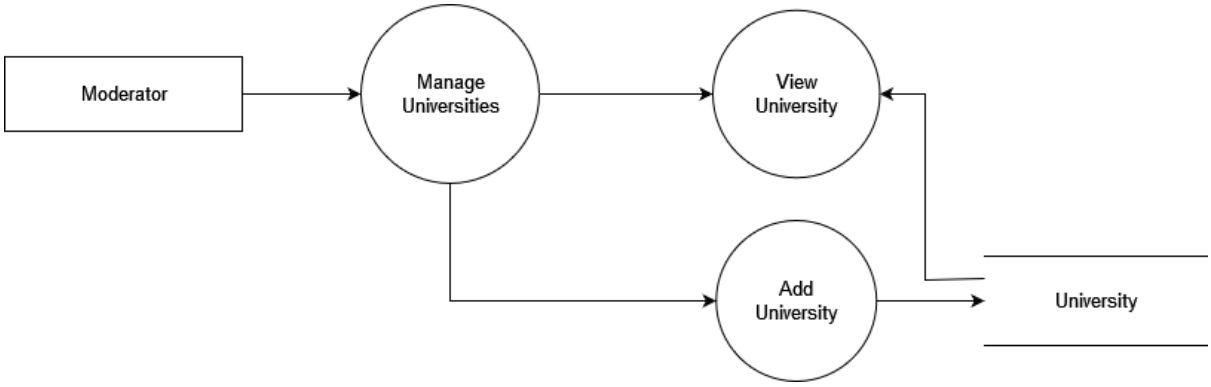


Fig:4.3.1.12

DFD Level 2.2.2(Moderator manage Departments)

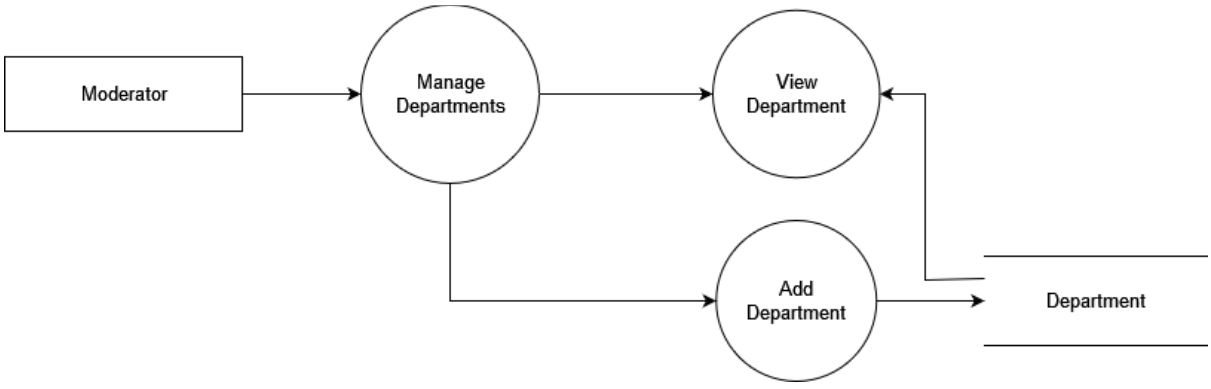


Fig:4.3.1.13

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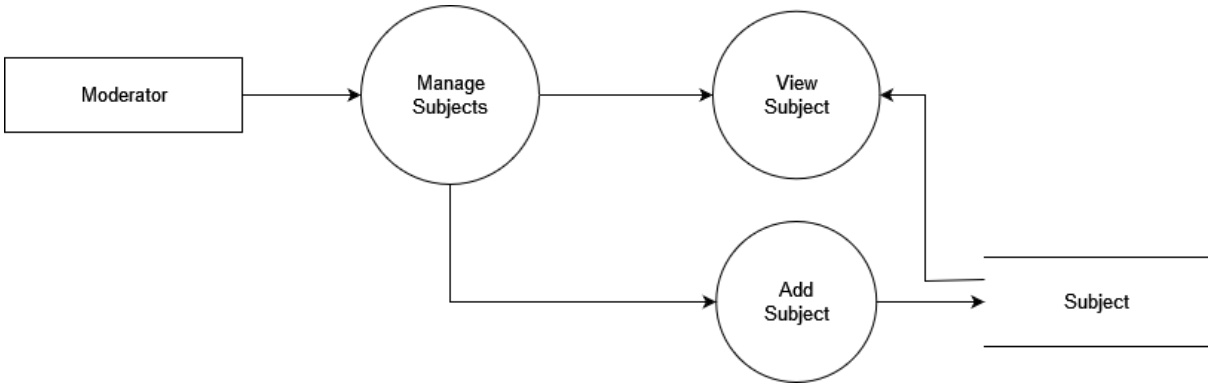


Fig:4.3.1.14

DFD Level 2.2.4(Moderator manage Questions)

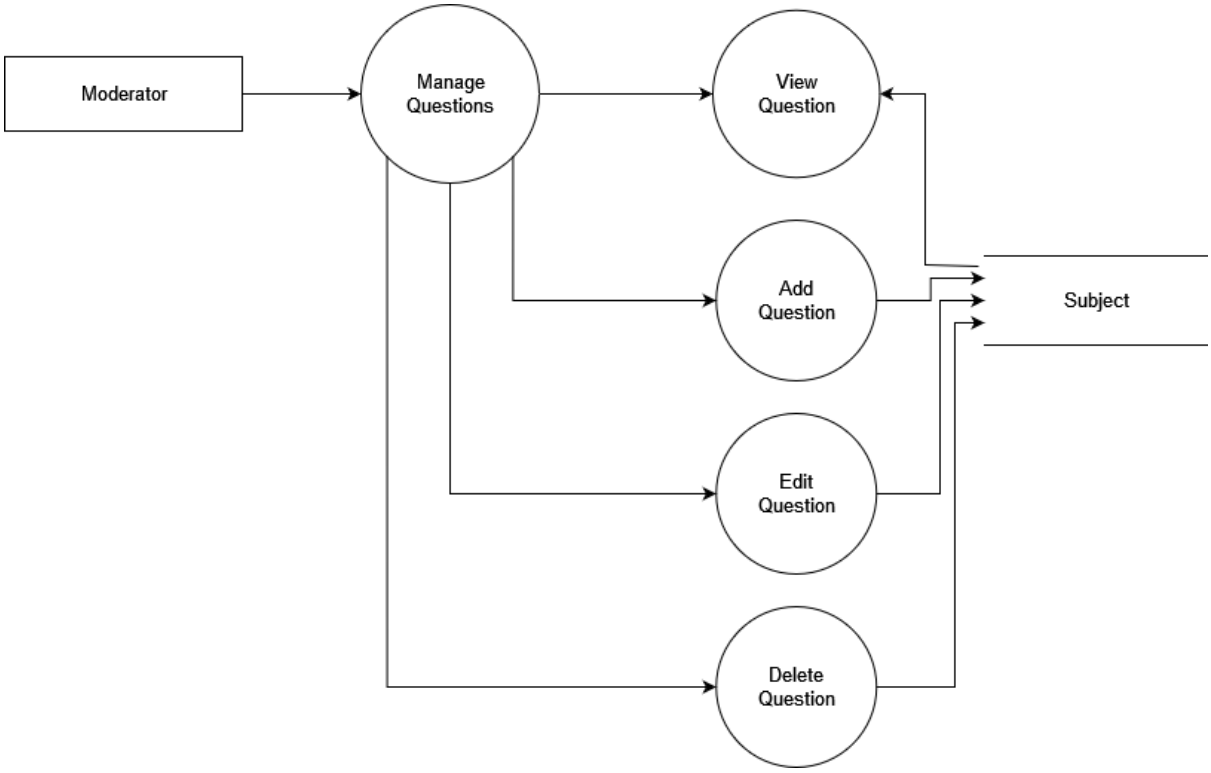


Fig:4.3.1.15

DFD Level 2.2.5(Moderator manage Feedback)

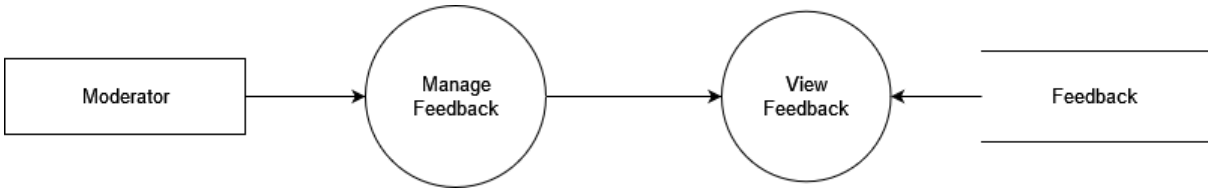


Fig:4.3.1.16

DFD Level 2.3.1(User Manage questions)

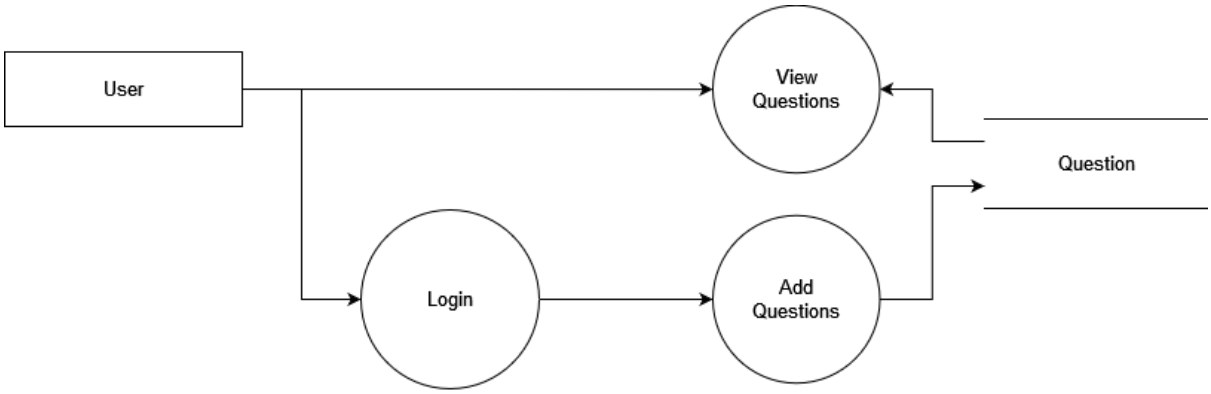


Fig:4.3.1.17

DFD Level 2.3.2(User Add feedback)

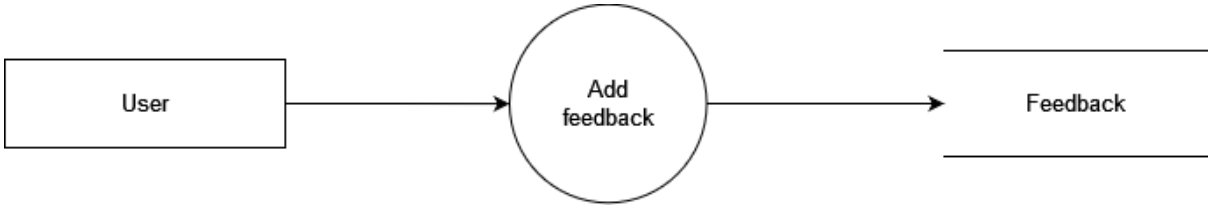
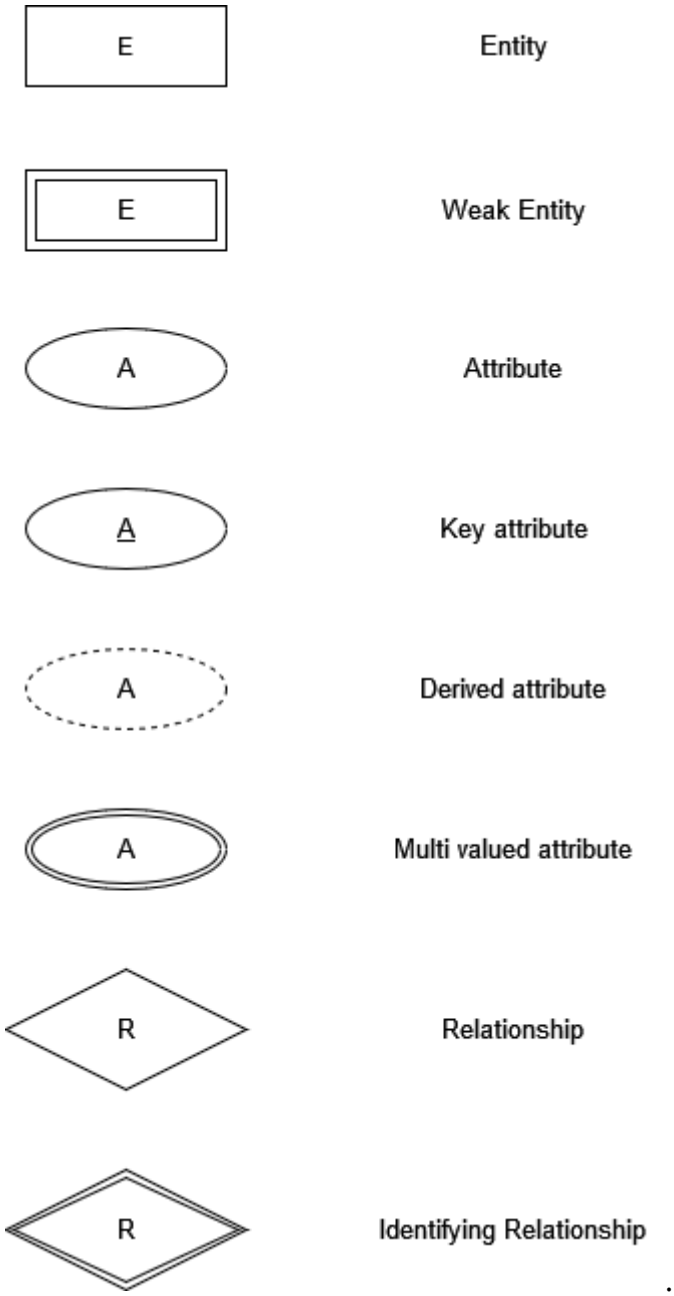


Fig:4.3.1.18

4.3.2 Entity-Relationship Diagram (ER diagram)

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" 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. 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

Entity Relationship Diagram Notation:



ER diagram

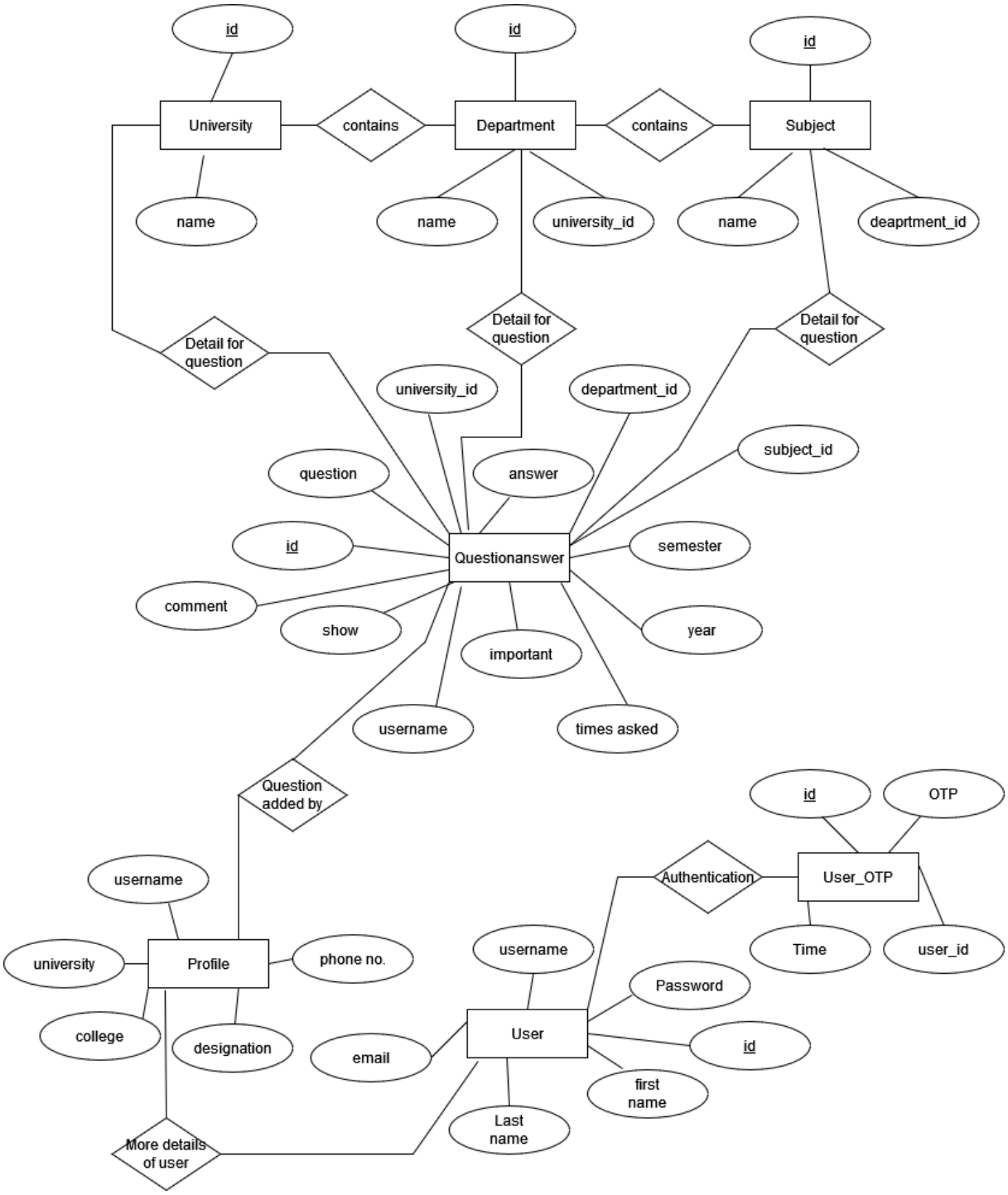


Fig:4.3.2.1

CHAPTER 5

IMPLEMENTATION

The implementation is the important phase. It involves user training, system testing and successful running of the developed proposed system. The user tests the developed systems and changes are made according to their needs.

The implementation phase of software development involves translating of design specification into source code, and debugging, documenting and unit testing the source code.

Implementation is the process of converting a new or a revised system design in to an operational one. Conversion means changing from one system to another. The objective is to put the system into operation while holding costs, risks and personnel irritation to minimum. It involves

- Creating computer compatible files.
- Training operational staff.
- Installing terminals and hardware.

Question Bank Management System is a web-based application system, so it requires some space in the server. To implement the new system, it has to be deployed in the local host. It is also possible to run the system in the local network. First up all build the website, then publish website. After publishing the project, the files will be integrated into a package. These files and database will be published into the online server. Then it is possible to access the functionalities just by using the url. Only a web browser is required to perform the operation. The project is developed in a framework, but the client system doesn't require any framework to be installed. This method also offers the greatest security.

For the complete implementation of the system, we should introduce this project to the public. Then the super admin can login to the system by entering the username and password on the admin portal. Then he/she can manage the system.

5.1 SYSTEM DEVELOPMENT

The development phase of the software design consists of different task to be done sequentially for obtaining the desired results. The different phases are:

- Creating the database:

A database is created, in which all the tables are defined which required to do the different operations such as storage and retrieval of information. Database is designed in such a way it can handle the different database queries. Users and admin can retrieve required details from the system on clicking on the links and buttons.

- Creating graphical user interface:

Graphical user interface is created in Visual studio code for a user-friendly interface. It is intended for two purposes. First is to create a user-friendly interface for the software. Having a good user interface make it easier for the user to use and understand the different functionalities of the website. Secondly, the user interface hides the end users from the complexities in the working of the software. So, the user is made unaware of how a task is performed when he chooses to perform it.

- Creating system environment:

For the intended project to work on, we need to implement its required hardware and software requirements. This system is build using Visual studio code and based on Windows Operating System. Memory and Hard disk should confirm according to hardware mentioned.

CHAPTER 6

SYSTEM TESTING

Testing is the process of examining the application to compare the actual behaviour with that of the excepted behaviour. The major goal of software testing is to demonstrate that faults are not present. In order to achieve this goal, the tester executes the program with the intent offending errors. Though testing cannot show absence of errors but by not showing their presence it is considered that these are not present. The following method of testing are carried out to assure the correctness and reliability of Question Bank Management System.

6.1 Smoke Testing

Smoke testing is the most cost-effective method for identifying and fixing defects in application. It is a preliminary to further testing, intended to reveal simple failures severe enough to reject a prospective application release. In this case the smoke is metaphorical. A subset of test cases that cover the most important functionality of a component or system are selected and run, to ascertain if the most crucial functions of a program work correctly. The purpose is to determine whether the application is so badly broken that further testing is unnecessary. Smoke tests can either be performed manually or using an automated tool. In Question Bank Management System smoke tests are performed by manually. Smoke tests can be broadly categorized as functional tests or unit tests.

6.2 Functional testing

Functional tests exercise the complete program with various inputs. Functional tests may be a scripted series of program inputs, possibly even with an automated mechanism for controlling mouse movements. It ensures that the program physically works the way it was intended and all required menu options are present. It also ensures that the program conforms to the industry standards relevant to that environment.

6.3 Unit testing

Unit testing is carried out in parallel to coding. Functionality of each of the individual modules we have developed is tested using test cases. Unit testing is done according to the test plans prepared for each of the module. Test plan prepared have covered all functional areas, actual input and expected outputs. Modules are tested using different test cases. Actual outputs are compared with expected outputs. The results are also recorded.

6.4 Integration Testing

The major concerns of integration testing are developing incremental strategies that will the complexity of entire actions among components as they are added to the system. Though each program works individually; they should work after linking them together. This is also referred to as interfacing. Data may be lost across interface and one module can have adverse effect on another. Integration testing is a systematic technique for constructing program structure while at the same time, conducting test to uncover errors associated with the interface. In the testing, the programs are constructed and tested in small segments.

6.5 Performance Testing

Performance Testing is designed to test the runtime performance of the integrated system. CDAS can process large number of data with minimum memory and time is tested here.

6.6 Test Plan

A test plan is a systematic approach to testing a system. The plan typically contains a detailed understanding of what the eventual workflow will be. Normally, testing of any large systems will be in two parts.

- The functional verification and validation against the requirement specification.
- Performance evaluation against the indicated requirements.

Testing activity is involved right from the beginning of the project. At the very first stage of testing, the goals and objectives are set. This simplifies the limits or borders of testing process. Before testing, the tester should plan what kind of data he is giving for test. Give data inputs as functional, boundary, stress, performance, usability values etc.

6.7 Characteristics of a Good Test

- Tests are likely to catch bugs
- No redundancy
- Not too simple or too complex

6.8 Test Cases

Specific set of steps and data along with expected results for a particular test objective. A test case should only test one limited subset of a feature or functionality. Test case documents for each functionality/testing area will be written, reviewed and maintained separately in Excel Sheet. In system testing, test data should cover the possible values of each parameter based on the requirements. Since testing every value is impractical, a few values should be chosen from each equivalence class. An equivalence class is a set of values that should all be treated the same. Ideally, test cases that check error conditions are written separately from the functional test cases and should have steps to verify the error messages and logs. Realistically, if error test cases are not yet written, it is OK for testers to check for error conditions when performing normal functional test cases. It should be clear which test data, if any, is expected to trigger errors.

Example

Test cases	Test conditions	Test data	Execution setup	Expected result	Pass/Fail
1	Admin login	Username and password	Click on login button	Admin page displayed	Pass
2	User Registration	Username, password and other details	Click on register button	Redirects to login page	Pass
3	User login	Username and passwords	Click on login button	Home page displayed	Pass

Table 6.8.1

CHAPTER 7

CONCLUSION

Question Bank Management System, the web app is very essential for students' educational growth in current digital scenario. Any users using this web-app can use this for lifelong. This web app will be handled by the super-admin and moderators will help to keep the integrity of system. Users can have the access to error free information on this system. Users have the whole freedom to use the system freely. The program for caring out the various activities have been run and tested successfully to ensure that the software development will meet the needs satisfactory. As a whole we could conclude that this website has met all its objectives of being user friendly.

CHAPTER 8

FUTURE ENHANCEMENT

We have some future visions for the enhancement of the web-app. Now this system is only available as a bowser app. In future we will be developing the system for android and apple application. We will be implementing more features such as rich text, attachments in the near future.

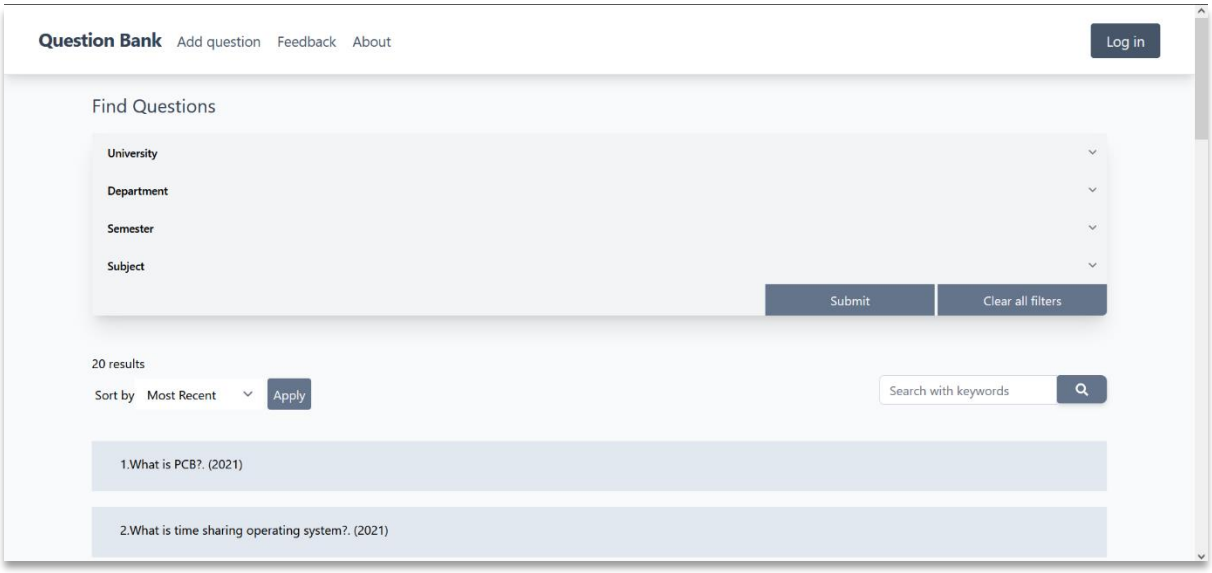
BIBLIOGRPHY

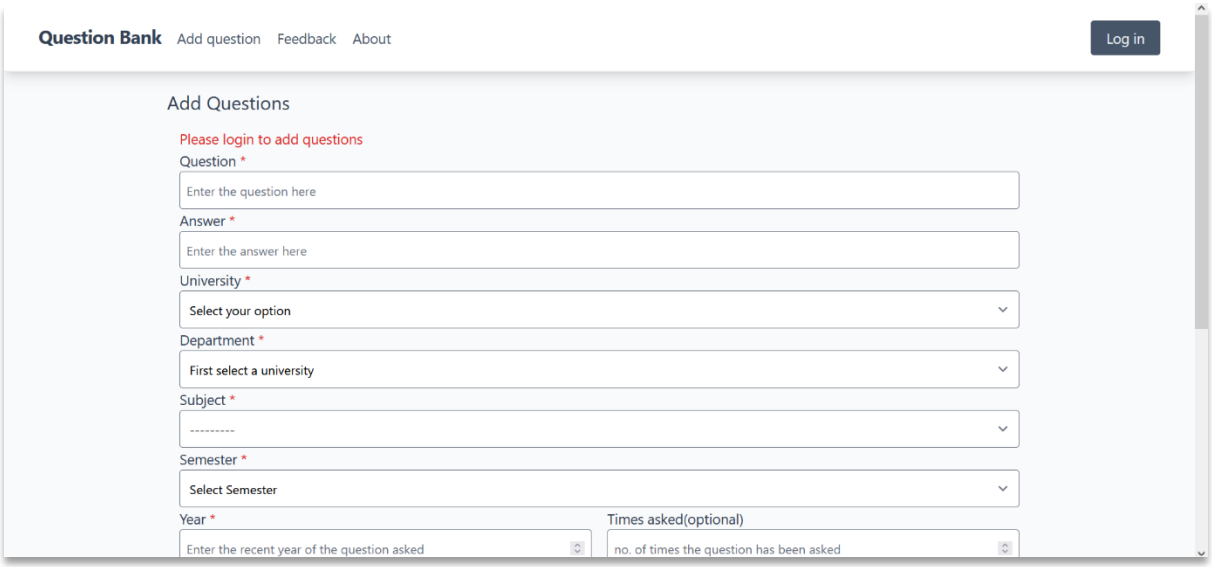
Websites

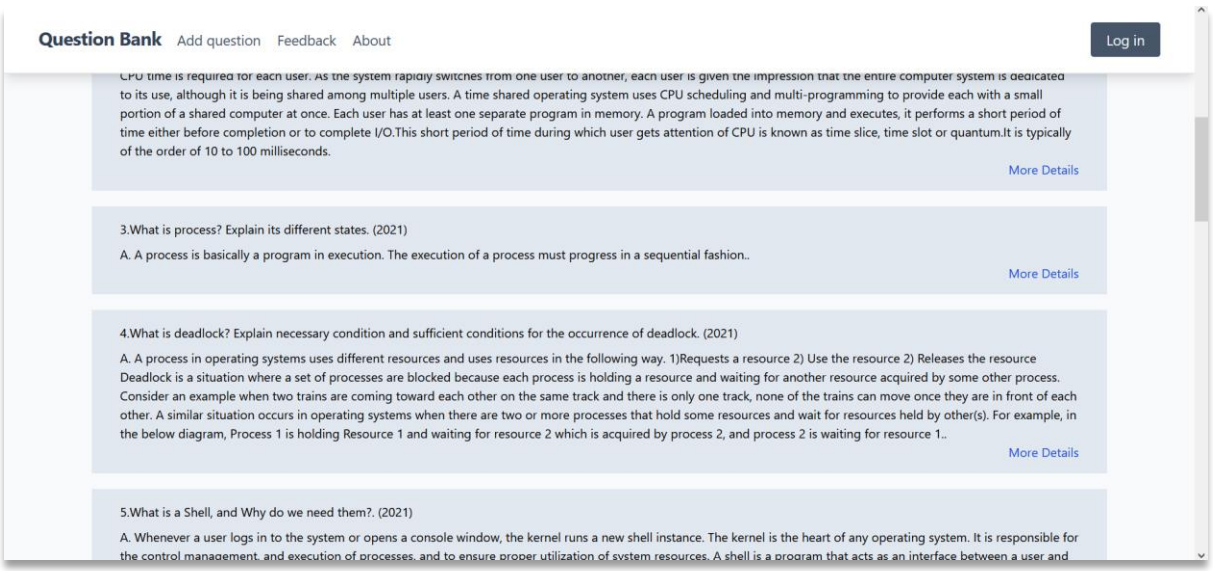
- Medium
- Stack Overflow
- W3Schools
- Django project
- YouTube
- Real Python
- Tailwind CSS

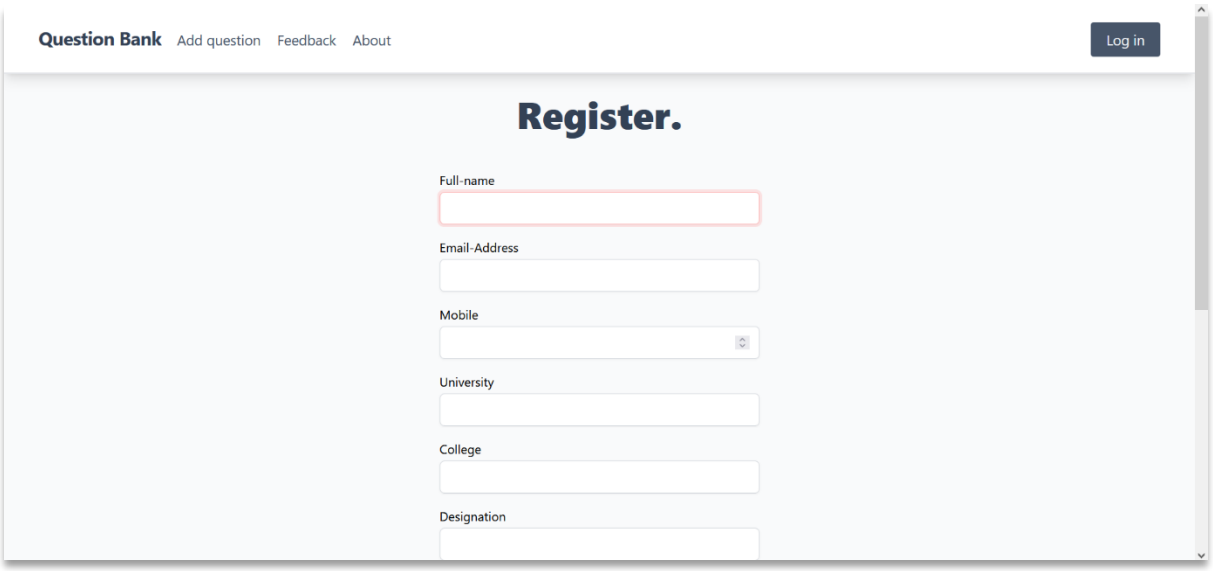
APPENDIX

Screenshots (Desktop view)






Question Bank
Add question
Feedback
About
Log in
CPU time is required for each user. As the system rapidly switches from one user to another, each user is given the impression that the entire computer system is dedicated to its use, although it is being shared among multiple users. A time shared operating system uses CPU scheduling and multi-programming to provide each with a small portion of a shared computer at once. Each user has at least one separate program in memory. A program loaded into memory and executes, it performs a short period of time either before completion or to complete I/O.This short period of time during which user gets attention of CPU is known as time slice, time slot or quantum.It is typically of the order of 10 to 100 milliseconds.
More Details
3.What is process? Explain its different states. (2021)
A. A process is basically a program in execution. The execution of a process must progress in a sequential fashion..
More Details
4.What is deadlock? Explain necessary condition and sufficient conditions for the occurrence of deadlock. (2021)
A. A process in operating systems uses different resources and uses resources in the following way. 1)Requests a resource 2) Use the resource 2) Releases the resource Deadlock is a situation where a set of processes are blocked because each process is holding a resource and waiting for another resource acquired by some other process. Consider an example when two trains are coming toward each other on the same track and there is only one track, none of the trains can move once they are in front of each other. A similar situation occurs in operating systems when there are two or more processes that hold some resources and wait for resources held by other(s). For example, in the below diagram, Process 1 is holding Resource 1 and waiting for resource 2 which is acquired by process 2, and process 2 is waiting for resource 1..
More Details
5.What is a Shell, and Why do we need them?. (2021)
A. Whenever a user logs in to the system or opens a console window, the kernel runs a new shell instance. The kernel is the heart of any operating system. It is responsible for the control management, and execution of processes, and to ensure proper utilization of system resources. A shell is a program that acts as an interface between a user and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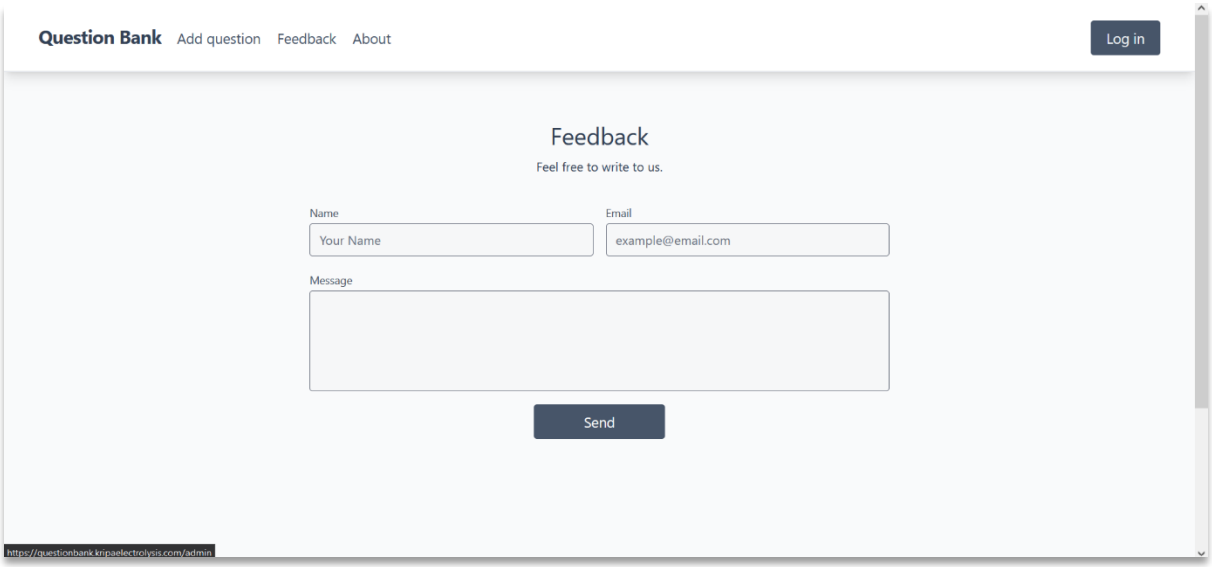
Question Bank
Add question
Feedback
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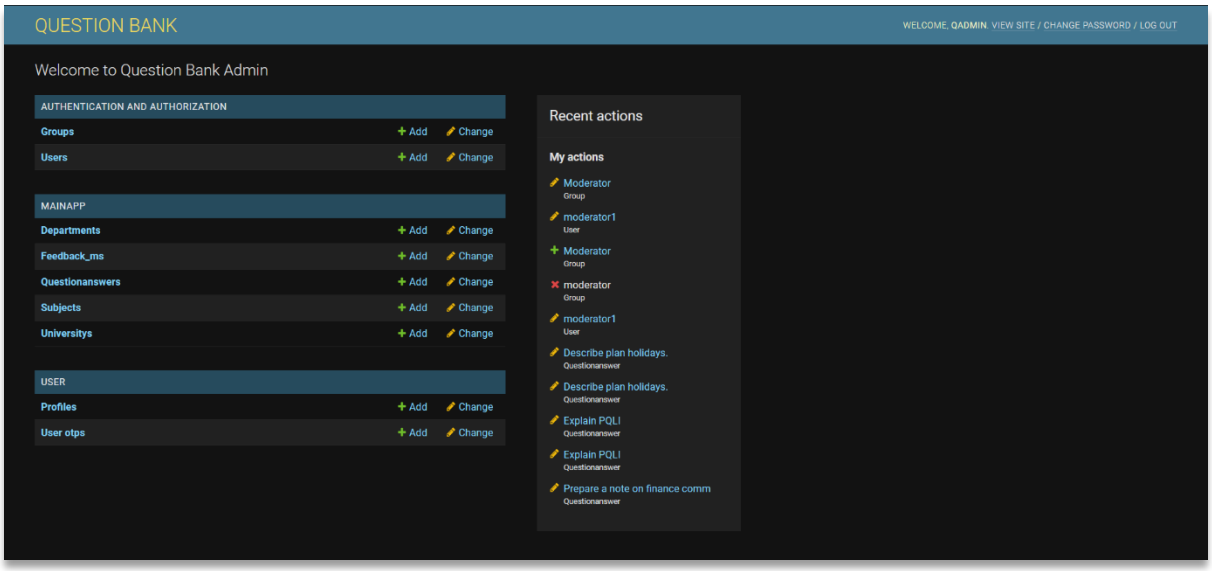
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WELCOME, QADMIN. VIEW SITE / CHANGE PASSWORD / LOG OUT
Welcome to Question Bank Admin
AUTHENTICATION AND AUTHORIZATION
Groups + Add Change
Users + Add Change
MAINAPP
Departments + Add Change
Feedback_ms + Add Change
Questionanswers + Add Change
Subjects + Add Change
Universitys + Add Change
USER
Profiles + Add Change
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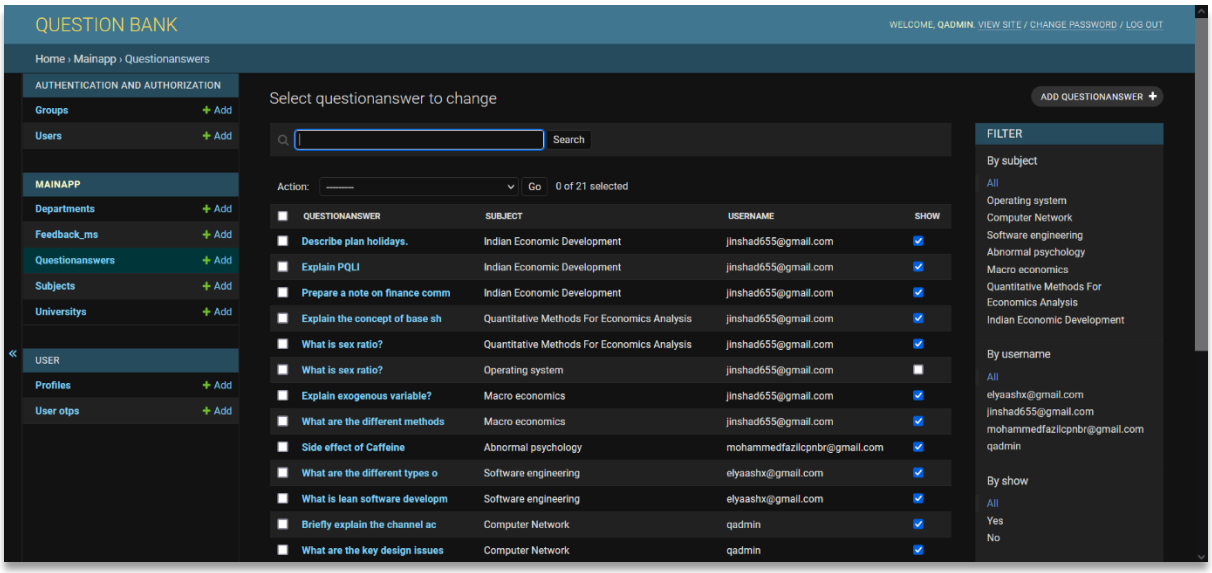
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Action: Go 0 of 21 selected
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Side effect of Caffeine Abnormal psychology mohammedfazilcpnbr@gmail.com
What are the different types o Software engineering elyaashx@gmail.com
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Briefly explain the channel ac Computer Network qadmin
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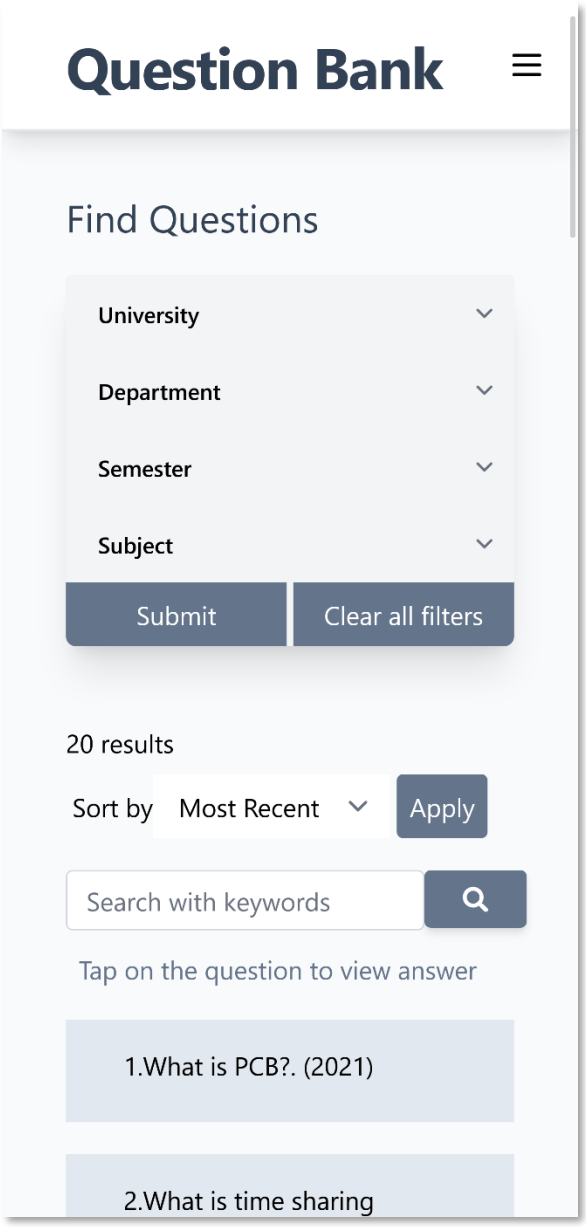
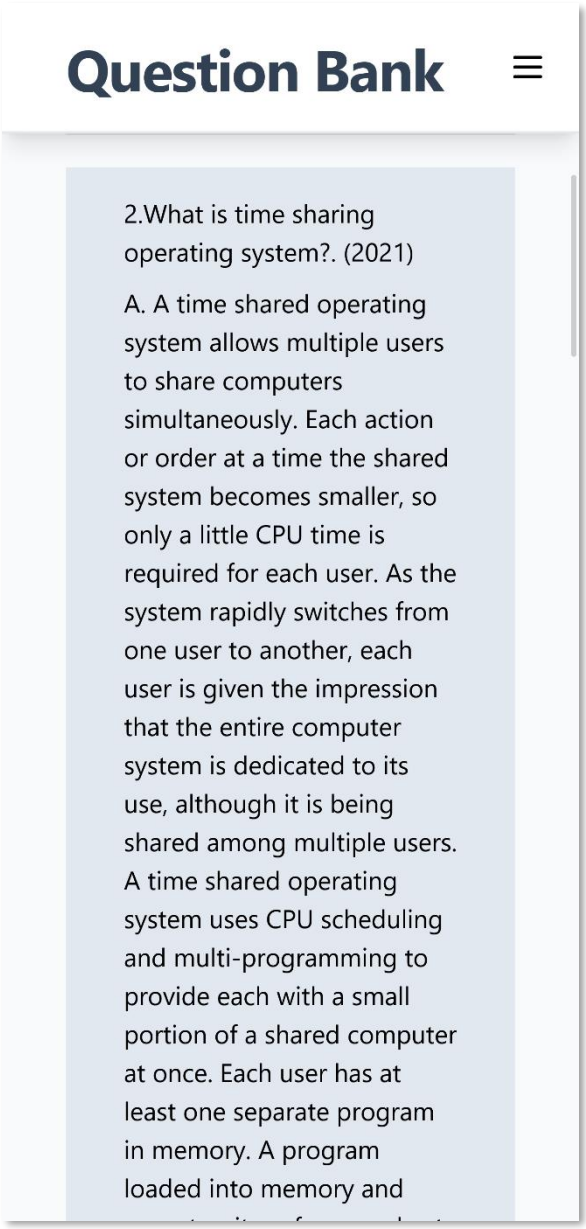
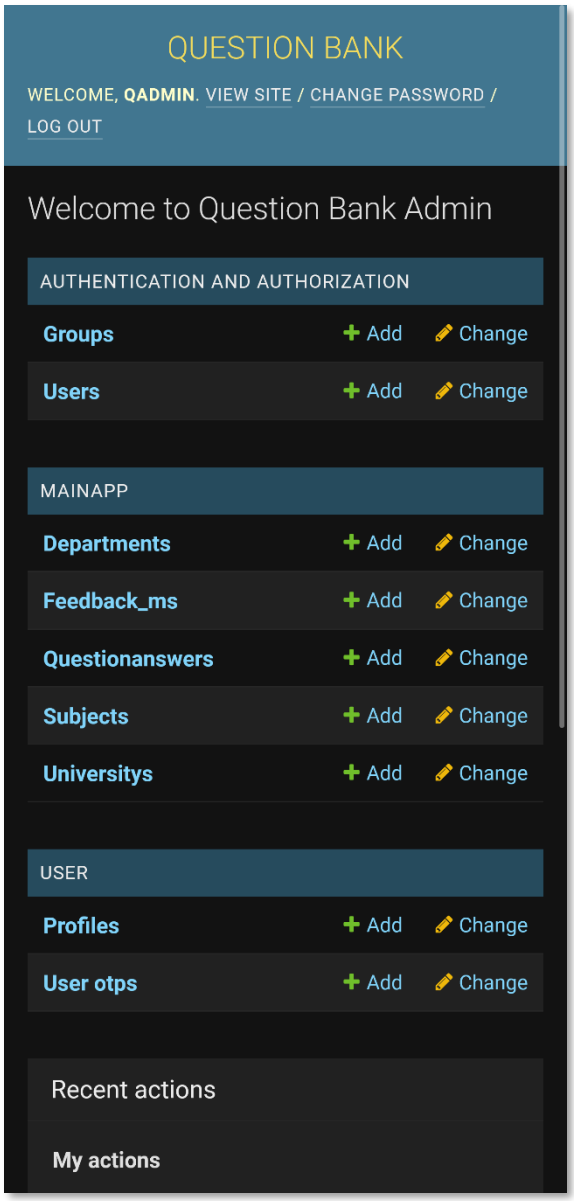
Screenshots (Mobile view)



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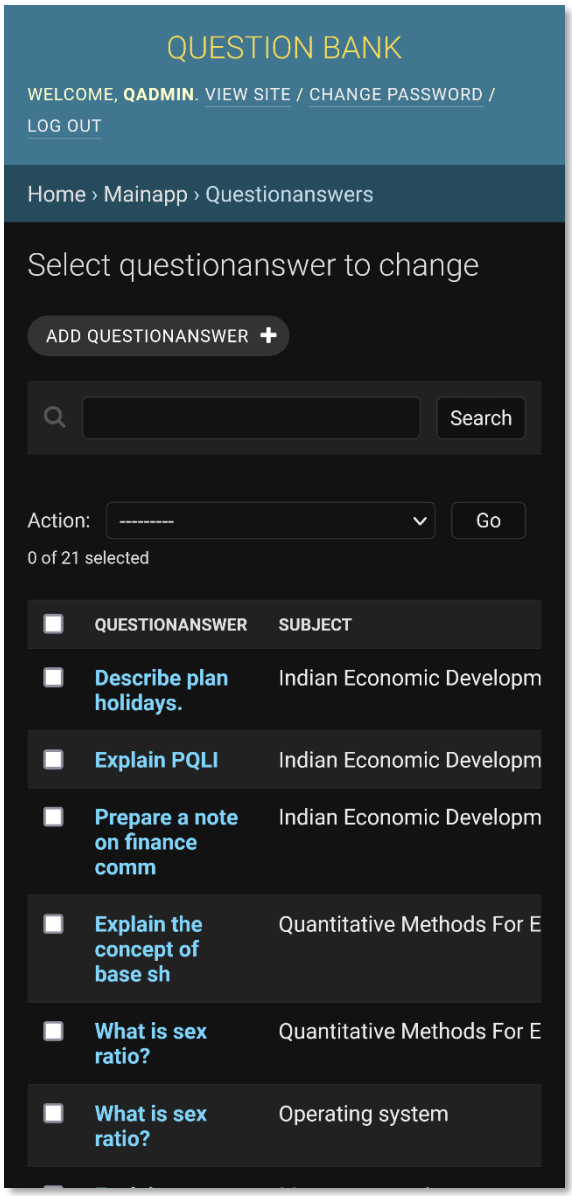
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