ONLINE QUIZ APPLICATION

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Submitted by

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DECLARATION

I hereby declare that the work presented in this report entitled “Online quiz application”, was carried out by me. I have not submitted the matter embodied in this report for the award of any other degree or diploma of any other University or Institute. I have given due credit to the original authors/sources for all the words, ideas, diagrams, graphics, computer programs, experiments, results, that are not my original contribution. I have used quotation marks to identify verbatim sentences and given credit to the original authors/sources. I affirm that no portion of my work is plagiarized, and the experiments and results reported in the report are not manipulated. In the event of a complaint of plagiarism and the manipulation of the experiments and results, I shall be fully responsible and answerable.

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Certified that **Palak Singh (2200290140104)** has/ have carried out the project work having "**Title of Report Online Quiz Application"** (**Mini Project-KCA353**) for **Master of Computer Application** from Dr. A.P.J. Abdul Kalam Technical University (AKTU) (formerly UPTU), Lucknow under my supervision. The project report embodies original work, and studies are carried out by the student himself/herself and the contents of the project report do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

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Online Quiz Application

Palak Singh

ABSTRACT

The Online Quiz Application is a web-based platform designed to provide an engaging and interactive way for users to create, participate in, and manage quizzes. In today's digital age, the demand for online educational tools and entertainment is rapidly increasing. This project aims to fulfil this demand by offering a user-friendly and feature-rich online quiz platform. The Online Quiz Application offers a wide range of functionalities for both quiz creators and participants. Users can register and log in to their accounts, create quizzes on various topics, customize quiz settings, and invite others to participate.

The platform supports multiple question types, including multiple-choice, true/false, and open-ended questions, allowing creators to design diverse and engaging quizzes. For quiz participants, the application offers a seamless and enjoyable experience. Users can browse and search for quizzes based on their interests, join public quizzes, or take private quizzes shared with them. Real-time scoring and feedback are provided, enhancing the competitiveness and educational value of the quizzes. Users can track their progress and view detailed performance statistics to identify areas for improvement.

The Online Quiz Application is built with scalability and security in mind. It is developed using modern web technologies, ensuring a responsive and intuitive user interface across various devices. Robust security measures are implemented to protect user data and prevent unauthorized access. Furthermore, the project emphasizes collaboration and social interaction. Users can follow their friends and view their quiz activity, creating a sense of community around learning and entertainment. Integration with social media platforms enables users to share their quiz results and challenge their friends, fostering healthy competition.

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Palak Singh

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INTRODUCTION

1.1 OVERVIEW

The project "Quiz Application" is a collection of number of different types of quizzes like technical, games, sports, etc. A user can access/play all of the quiz and can attempt any of the one. There will be limited number of questions and for each correct answer user will get a credit score. User can see answers. There are many quiz applications available currently on internet. But there are few which provide better understanding between users and the application like, providing proper answers, user query solving. To develop a user-friendly quiz application which will contain: Numbers of quiz, Answers to every question and to improve the knowledge level of users. To develop an application which will contain solution to the above problems. By this application the user will come to know about his/her level and can learn additional knowledge. Also, by this application a user can expand his/her knowledge among the world.

This project deals with use of web technology in the field of e-learning. Nowadays e-learning platform are encouraged as lot of manual work is not done and also it helps in saving time. People anywhere in the world with an internet connection can easily use these platforms. Not only in this field but anyone connected to an internet connection can use internet from any place in the world to shop online, pay bills, read books or newspaper, book movie tickets, reservation of buses or railway and many more.

Although the project is not exactly about teaching or studying but it is about testing students' knowledge on particular topic with the help of some objective type questions with some options. Though some set of questions cannot completely judge anyone's knowledge but this project aims to help students to evaluate themselves so that when after studying any particular topic they can corelate their concepts and some concepts that were not clear to them or those one which they have skipped can be presented to them in the form of questions by their teacher.

To build the web application JSP technology is used with HTML and CSS with it. JSP stands for Java Server Pages which is a server-side technology for programming. JSP

enables the creation of dynamic (to be built on run time) and platform independent method for building various Web-based applications. With the help of JSP we can access a wide variety of Java APIs which also 9 include JDBC API to access databases. JSP have extension .jsp. Like Servlet, JSP files also need to be executed on a web server. In simple terms we can say that HTML + Java is JSP which implies that a JSP file have both HTML and Java code.

1.2 OBJECTIVE

The main objective of this Online Quiz Application is to provide an online platform for both teachers and students so that teacher can take various tests or assignments in the form of quiz and students after going through a concept can assess him/herself by the quiz questions being uploaded by teacher thus also reducing the manual paper work.

The project presents the following features:

- Making of a quiz.
- Taking of quiz.
- Registration of teachers and students.
- Any type of queries from users.

PROJECT SCOPE

The main purpose of the project on Cladusss was to reduce paper work and support digitalization. It may help collecting perfect management in detail. In a noticeable short time, collection will be obvious, simple, and sensible. It will help a person to know the management of passed records perfectly and vividly.

This system can be implemented in the locality of KIET Group of Institutions. The system recommends a facility to accept the orders 24*7 and a customer verification system by which the customer can view the products before buying and get fully satisfied before buying which can make customers happy.

The CLADUSS is providing an online portal where their customers can enjoy easy shopping from anywhere, this website won't be losing any more customers to the trending online shops such as OLX or eBay. Since the application is available in the Web form and it is easily accessible and always available.

Our project aims at Business process automation, i.e., we have tried to computerize various processes of Inventory Management.

In CS, it is not necessary to create the manifest, but we can directly print it which saves our time.

To assist the staff in capturing the effort spent on their respective working areas.

To utilize resources in an efficient manner by increasing their productivity through automation.

- Be easy to operate.
- It satisfies the user requirement
- Have a good user interface

- Be expandable
- Manage the information of cost
- Editing and updating of records is improved which results in proper resource management.

1.3 PROJECT FEATURES

1.3.1 User Authentication:

- User registration and login functionality.
- Password recovery options.

1.3.2 Quiz Creation:

- Intuitive quiz creation interface for admins.
- Support for different question types (multiple-choice, true/false, short answer, etc.).
- Ability to set time limits for each quiz.

1.3.3 Quiz Management:

- Option to edit, delete, or archive quizzes.
- Categorization and tagging of quizzes.
- Quiz scheduling for future release.

1.3.4 Question Bank:

- Centralized repository for storing and managing questions.
- Ability to add, edit, and organize questions.
- Randomized question selection for quizzes.

1.3.5 Scoring:

- Real-time scoring and feedback for users.
- Detailed results with correct answers and explanations.

1.3.6 Security:

- SSL encryption for secure data transmission.
- Protection against common security threats like SQL injection and cross-site scripting.

1.3.7 Real-time Updates:

- Real-time updates on leader board changes.
- Instant feedback during the quiz.

1.3.8 Analytics:

- User engagement analytics.
- Quiz performance analytics for admins.

1.3.9 Feedback and Ratings:

- Option for users to provide feedback on quizzes.
- Rating system for quizzes.

1.3.10 Accessibility:

- Accessibility features for users with disabilities.
- Compliance with web content accessibility guidelines (WCAG).

1.3.11 Search and Filter:

- Search functionality to find specific quizzes or questions.
- Filter options based on categories, difficulty levels, etc.

1.3.12 Progress Tracking:

- Visual representation of user progress.
- Historical performance data.

1.4 HARDWARE / SOFTWARE USED IN A PROJECT

1.4.1 Software Requirements

- OS - Windows 7,8,10,11
- Language – ASP Dot Net (C#)
- Platform - Web Browser

1.4.2 Hardware Requirements

- Processor – Dual Core and above
- RAM – 512 MB
- Storage – 20 GB
- Monitor – 15” Colour Monitor
- Keyboard – 122 keys

CHAPTER 2

LITERATURE REVIEW

Web in simple terms means a network of Internet servers that are ready to support some formatted documents and can be accessed by a web browser. About these formatted documents these are formatted in HTML (Hypertext mark-up language). Not these formatted documents create their links to their type but they also support links to some documents including video, graphics and audio files. Terms Web and Internet are interchangeably used but they are not same. While Internet refers to global network of servers that makes sharing of information, Web is the collection of information being accessed via Internet. Also, we can say that Web is a service and Internet is an infrastructure where web is a service on top of it. Alternatively, we can say Web is just a portion of the Internet. Particularly whenever a client surfing web makes a request to web server, it first find resources and then sends some return response in HTML to the browser and a web browser know how to display them to client.

Web pages are the documents written in HTML which provides meaning and some structure to any web content and collection of these web pages is called a website which consists of static files. A web application however is same as a website but with dynamic functionality like where user can manipulate the restricted data. A website seems to be too informational while a web application is interactive. User spend more of its time reading, listening or viewing a website but in a web application like social media applications where user spend a lot of interaction or banking application that performs transactions on customer's input. Authentication can also be a point of difference between website and web application. Since in a web application, interaction of user is high and manipulation of data is there, therefore user accounts must be secured in order to prevent unauthorized access and any leakage of sensitive data. Most of the web application requires authentication but for the informational websites it is not obligatory. An example for this can be that while reading any news or article you don't need to go through any authentication process but to comment on it that includes interaction you have to go through a log in process.

HTTP which is Hypertext Transfer Protocol is a set of protocols that is used by clients and servers to communicate on web. HTTP protocol defines how messages are to be formatted and transmitted between client and the server and what actions should be taken by Web servers and browsers in response to various commands. Basically, HTTP is a TCP/IP based communication protocol, that is used to deliver data which includes HTML files, image files, query results, etc. on the World Wide Web. HTTP is the foundation of data communication for the World Wide Web since 1990. HTTP represents Hyper Text Transfer Protocol. WWW is about correspondence between web customers and servers. Communication between customer PCs and web servers is finished by sending HTTP Requests and accepting HTTP Responses

- A client (a program or browser) sends a HTTP request to the web
- A web server gets the solicitation
- The server runs an application to process the request
- The server restores an HTTP response.
- The client gets the response.

HTTP is a simple and powerful protocol because:

- **Connectionless:** An HTTP client which might be a browser will initiate an HTTP request to the server. The server processes the request and sends a response back after which client disconnect the connection. In this way we can say that client and server only know about each other only during the current request is initiated and response is received. For further requests new connection is made like client and server are new to each other.
- **Media Independent**: It means, any type of data can be sent by HTTP as long as both the client and the server know how to handle the data content.
- **Stateless Protocol:** By Stateless Protocols we mean the type of network protocols in which Client send request to the server and server response back according to current state. For the execution of server response, it does not require the server to retain session information or a status about each other.

Some examples of Stateless Protocol are

HTTP (Hypertext Transfer Protocol), UDP (User Datagram Protocol), DNS (Domain Name System). As HTTP is connectionless and it is because HTTP is a stateless protocol. Each command is executed independently, without any knowledge of the commands that came before it. The server and client are known about each other only during a particular request. After execution of that request/response both of them forget each other.

Servlet

Servlet can be defined in different ways. In simple language we can say that it is a 15 technology which resides on the server side and is used to create web application. Because of the Java language it is robust and scalable.

Fig 2.1 Client Request

It is also an API which provides many different classes as well as interfaces. The most important feature of servlet is that it extends capabilities of the server thus creating dynamic web pages. They are also able to handle complex requests that is obtained from the web server.

When a client requests a file from the server then the server can respond in two ways. If the file that the client is asking is static then it as already built. Server will already have that file and send it in response. But in case the file that client seeks for is dynamic then it has to be built during run time. In that case server goes to a helper application called Web container that contains servlets which is a java file that which take request and process it and provides response in form of an HTML page. Some examples of Web

containers are Apache Tomcat, Glassfish, Web spheres etc. But requesting an Html file and in response of it using a java file i.e. a servlet can't be done without the help of a special file within the web container. This file is called Deployment descriptor which is a web.xml file. This file provides a mapping that for which request which servlet should be called.

Servlet is a class which extends HTTP Servlet which provides many different features to the class and some of them include taking request from the client, processing of the request etc.

Execution of Servlets:

In the execution of Servlets following are some of the basic steps:

- The clients send the request to the web server.
- A request is received by the web server
- The request is intercepted for static (html files) or dynamic files.
- If dynamic, the request is passed to the corresponding servlet.
- The servlet processes the request and provides a response.
- The servlet sends the response back to the web server and the web server sends this response to the client.
- Finally, the browser on client side displays it on the screen

In recent years, online buying and selling have become increasingly popular due to the convenience and accessibility it offers. With the growth of e-commerce platforms and the increasing use of mobile devices, more people are turning to online marketplaces for their shopping needs. This paper examines the various aspects of online buying and selling, including consumer behavior, e-commerce platforms, security and privacy, mobile commerce, payment systems, and customer service. As the status and usage of the Internet continues to grow, the security and privacy of online transactions bring to light the necessity for trust; however, lack of trust is regarded as the greatest barrier preventing consumers from transacting online.

Consumer behavior plays a significant role in online buying and selling. Online shoppers have different needs and preferences than those who shop in physical stores. Factors such as trust, convenience, and pricing influence consumer behavior in online marketplaces. Trust is particularly important, as consumers need to feel confident that the seller is reliable and will deliver the product as described. Convenience is another important factor, as consumers expect fast and efficient transactions. Finally, pricing is also critical, as consumers can easily compare prices across different online stores. With the development of internet of things, the online exchange of used goods among consumers, that is C2C exchanges have been greatly facilitated. The buyers and sellers remain anonymous to each other in C2C exchanges until the time of final deal .

There are different types of e-commerce platforms available for online buying and selling. B2B (business-to-business), B2C (business-to-consumer), and C2C (consumer-to-consumer) are the most common. B2B platforms connect businesses with other businesses, while B2C platforms connect businesses with individual consumers. C2C platforms, on the other hand, allow individuals to buy and sell goods and services with

each other. Each type of platform has its strengths and weaknesses, and it's important to choose the right one depending on the business model.

There are many factors related to online service providers that affect consumers' perception towards them and the subsequent attitude formation. One of them is online security. Positive customer experiences on the security aspect provided by online e-tailers lead to formation of a positive security perception and subsequent attitude formation towards the same .

CHAPTER 3

FEASIBILITY STUDY

3.1 TECHNICAL FEASIBILITY

This is concerned with specifying equipment and software that will successfully satisfy the user requirement. The system must be evaluated from the technical point of view first. The assessment of this feasibility must be based on an outline design of the system requirements in the terms of input, output, programs and procedures.
On having identified an outline system, the investigation must go on to suggest the type of equipment, required method developing the system, of running the system once it has been designed.

The technical needs of the system may vary considerably but might include:

- The facility to produce outputs in given time
- Response time under output conditions
- Ability to process a certain volume of at a particular speed
- Facility to communicate data to distant location
- Technical feasibility centre on the existing computer system (hardware, software, etc. and to extent it can support the proposed addition.

3.2 OPERATIONAL FEASIBILITY

Proposed project is beneficial only if they can be turned into information. Systems that will meet the operating requirement of the organization. This test of feasibility asks if the system will work when it is developed and installed. It is mainly related to human organization and political aspect.

The points to be considered are:

- What changes will be brought with the system?
- What organizational structures are distributed?
- What new skill will be required?

Do the existing staff members have these skills? If not, can they be trained in due course of time? Generally, project will not be rejected simply because of operational in feasibility but such consideration is likely critically affecting the nature and scope of the eventual recommendations.

This feasibility study is carried out by a small group of people who are familiar with information systems techniques who understand the parts of the business that are relevant to the project and are skilled in system analysis and design process.

3.3 BEHAVIORAL FEASIBILITY

Behavioural Feasibility is the measure of how the society is looking towards our project, what is the reaction of people who are going to use this in upcoming future. It includes how strong the reaction of user will be towards the development of new system that involves computer's use in their daily life by taking the online quizzes of the different subjects.

This includes the following questions: -

- Is there sufficient support for the users?
- Will the proposed system cause harm?

The project would be beneficial because it specifies the objectives when developed and installed. All behavioural aspects are considered carefully and conclude that the project is behaviourally feasible.

3.4 ECONOMICAL FEASIBILITY

Economical is most frequently used technique for evaluating the effectiveness of a proposed system. More commonly known as cost or benefit analysis, the procedure is to determine the benefits and saving that are expected from a proposed system and compare with cost.

It benefits out weight costs a decision taken to design and implement the system. Otherwise, further justification or alternative in the proposed system will have to be made if it is to have a chance of being approved. This is an ongoing effort that improves in accuracy at each phase of the system life cycle.

An evaluation of development cost weighed against the ultimate income of benefit derived from the development system or project among the most important information contained in feasibility study is cost benefit analysis an assessment of the economic justification for a computer-based system project.

The benefits of a project include four types:

- Cost saving benefits.
- Cost avoidances benefits.
- Improved service level benefits.

- Improved the information benefits.
- The cost of the hardware and software.
- he costs conduct a full system investigation.
- The benefits in the form of reduced costs or fewer costly errors.

Cost saving benefits of our projects lead to the reduction in administration & operational costs. A cost avoidance benefits our project does not require future and additional staff and also reduces any future operational cost. This project leads the quicker and enhanced administrative decision thus making improved information benefits.

CHAPTER 4

REQUIREMENT ANALYSIS

4.1 METHODOLOGIES FOLLOWED

In the development of an augmented reality project, various methodologies can be employed. One commonly used methodology is the Scrum framework, which is an agile approach to project management. Here's an explanation of how the Scrum methodology can be applied:

4.2 Scrum Methodology:

Description: Scrum is an iterative and incremental framework that promotes collaboration, flexibility, and continuous improvement. It divides the project into time- bound iterations called sprints, typically lasting 2-4 weeks, during which a set of prioritized tasks are completed.

Application, we utilize the Scrum methodology as follows:

- **Product Backlog:** Create a product backlog, which is a prioritized list of features, functionalities, and tasks required for the augmented reality project. The backlog items are typically defined as user stories, representing the needs and expectations of the end-users.
- **Sprint Planning:** At the beginning of each sprint, conduct a sprint planning meeting. During this meeting, the team selects a subset of items from the product backlog to be worked on during the sprint. The team estimates the effort required for each task and determines the sprint goal, which represents the desired outcome of the sprint.
- **Daily Scrum:** Hold daily scrum meetings, also known as daily stand-ups. These brief meetings serve to synchronize the team, discuss progress, and identify any obstacles or issues that need to be addressed. Each team member shares their accomplishments, plans, and potential challenges.
- **Sprint Execution:** Throughout the sprint, the team works on the tasks identified during the sprint planning. The team collaborates closely, with regular communication and coordination, to develop and integrate the augmented reality application's features and functionalities.

- **Sprint Review:** At the end of each sprint, hold a sprint review meeting to showcase the completed work to stakeholders, including the augmented reality application's features, functionalities, and any other deliverables. Collect feedback and review whether the sprint goal was achieved.
- **Sprint Retrospective:** After the sprint review, conduct a sprint retrospective meeting. This retrospective allows the team to reflect on the sprint, discuss what went well and what could be improved, and identify action items for enhancing the development process in subsequent sprints.
- **Iterative Development:** Repeat the sprint cycle by selecting new items from the product backlog and continuing the iterative development process. The team learns from each sprint, adjusts priorities, and continuously improves the augmented reality application based on feedback and evolving requirements.

By applying the Scrum methodology, the project team benefits from improved collaboration, flexibility in adapting to changing requirements, and regular feedback cycles. The iterative nature of Scrum allows for the early and continuous delivery of valuable features, ensuring that the augmented reality project remains aligned with user expectations and generates a high-quality product.

4.3 FUNCTIONAL REQUIREMENT

Functional requirements for an online quiz application can be categorized into various aspects, including user management, quiz creation, quiz-taking, result management, and administration. Here are some functional requirements that you may consider:

4.3.1 User Management:

- Users should be able to create accounts with unique usernames and passwords.
- User registration may include additional information, such as email addresses.
- Optionally, support for social media login (e.g., Google, Facebook).

4.3.2 User Authentication:

- Secure authentication mechanisms to ensure user identity.
- Password recovery/reset functionality.

4.3.3 Quiz Creation:

- Admins should be able to create and manage quizzes.
- Specify quiz title, description, and duration.
- Set the number of questions, points per question, and passing criteria.

4.3.4 Quiz Categories:

- Group quizzes into categories or topics.

4.3.5 Quiz-Taking:

- Intuitive and user-friendly quiz interface.
- Support for different devices (desktop, tablet, mobile).

4.3.6 Timer:

- Display and manage the quiz timer.
- Automatic submission when the timer expires.

4.3.7 Submission:

- Users should be able to submit their quizzes once completed.

4.3.8 Detailed Results:

- Show a breakdown of scores for each question.
- Highlight correct and incorrect answers.

4.3.9 Accessibility:

- Ensure that the application is accessible to users with disabilities.
- Provide text alternatives for multimedia elements.

These requirements can serve as a starting point for developing a comprehensive online quiz application. Adjustments and additional features may be necessary based on specific project requirements and user needs.

4.3 NON-FUNCTIONAL REQUIREMENT

Non-functional requirements, also known as quality attributes or constraints, define the characteristics and constraints of the system beyond its functionality. These requirements describe how the system should perform, rather than what it should do. Non-functional requirements are often related to performance, reliability, security, usability, and other aspects that contribute to the overall system quality. Examples include response time, system availability, data encryption, user interface design, and regulatory compliance.

- **Performance:** The application should have fast and responsive image

recognition, with minimal latency or delay in detecting and overlaying digital objects on the image targets. It should also deliver smooth playback of videos or animations without any significant lag.

- **User Interface (UI) and User Experience (UX):** The application should have an intuitive and user-friendly interface, with clear instructions or visual cues to guide users in scanning the college brochure and interacting with the augmented reality content. The user experience should be immersive, engaging, and visually appealing.
- **Compatibility and Device Support:** The application should be compatible with a wide range of smartphones or devices, supporting both Android and iOS platforms. It should consider various screen sizes, resolutions, and camera capabilities to ensure a consistent experience across different devices.
- **Stability and Reliability:** The application should be stable and reliable, capable of handling potential errors or exceptions during image recognition or content playback. It should gracefully handle situations such as low lighting conditions or variations in brochure positioning.
- **Security and Privacy:** The application should prioritize user privacy and data security, adhering to relevant privacy regulations. It should obtain necessary permissions for accessing device features, such as camera and storage, and ensure secure transmission and storage of any user-related data.
- **Scalability:** The application should have the potential to scale, accommodating future updates, additional content, or expanded functionality. It should be designed in a modular and extensible manner, allowing for easy integration of new image targets or features without significant rework.

In a project report, a flowchart can be used to illustrate the various steps involved in the project. For example, a flowchart could be used to show the steps involved in developing a software application, from requirements gathering to testing and deployment. By using a flowchart, project stakeholders can better understand the project workflow and identify areas where improvements can be made.

4.4 Problem Definition

"Our aim is to develop a application for the users in which a user can attempt any number of quiz related to his/her choice." Firstly, we have to make interfaces for Home Page, Registration, Login Page, Questions Attempting forum, Result Page, & Profile of user. These all pages have connectivity with the server and database. So, that it can work properly. Currently, there are websites which only provide limited number of quizzes related to different domain. Many websites do not have a single platform for quizzes related to technical, G.K, Aptitude, Games, etc. And there is not a website where the users can upload his/her questions and answers for the others.

We have to develop a application which can resolve all of the above problems. By this user can gain knowledge, can solve his/her query, and spread his/her knowledge among the world.

Proposed Solution

The main requirement of application is to find questions and answers. In this application firstly the user need to register or login using user-id and password. Then the user can choose any of the quiz of his/her choice. Before starting the quiz there is a instruction window in which there are instruction related to attempt the quiz. After it user can start attaining the quiz. Here user can see his/her answers are right or wrong and can also see the answer of each. If there is any query related to it user can ask it. After completion of the quiz user will get credit score for each of its correct answers. Initially the questions are given by the admin but after sometime the user itself can submit questions and its answers. After verification by the admin the questions are shown on the window. The query related to a question can we solved by admin as well as the users of this application. This application initially contain admit and some higher prior user which can submit question and answers. The user profile will contain its name, age, qualification, gender, mobile number, credit score, etc. This application will provide link to additional useful website for learning purpose.

Methodology Used

The programming language used for the development of the project is JAVA and the software model used is the classic lifecycle model.

Waterfall Process model

The Classical Life Cycle or waterfall Process Model was the first process model to present a sequential framework, describing basic stages that are mandatory for a successful software development model. It formed the basis for most software development standards and consists of the following phases: Requirement analysis, design, coding, testing, and maintenance.

Advantages of waterfall model:

- Simple goal.
- Simple to understand and use.
- Clearly defined stages.
- to arrange tasks.
- Process and result are well documented.
- Customers/end users already know about it.

Disadvantage of Waterfall model:

- Rigid design and inflexible procedure.
- Waterfall model faced "Inflexible point solution" which meant even small amendments in the design were difficult to incorporate later design phase.
- As the requirement were froze before moving to the design phase, using the incomplete set of requirements, a complete design was worked amendments In case of a large project, completing a phase and then moving back to reconstruct the same phase, incurred a large overhead

CHAPTER 5

SYSTEM ARCHITECTURE AND DESIGN

5.1 FLOW CHART DIAGRAM

A flowchart is a visual representation of the sequence of steps and decisions needed to perform a process. Each step in the sequence is noted within a diagram shape.

Steps are linked by connecting lines and directional arrows. This allows anyone to view the flowchart and logically follow the process from beginning to end.

A flowchart is a powerful business tool. With proper design and construction, it communicates the steps in a process very effectively and efficiently.

A flowchart is described as "cross-functional" when the chart is divided into different vertical or horizontal parts, to describe the control of different organizational units. A symbol appearing in a particular part is within the control of that organizational unit. A cross-functional flowchart allows the author to correctly locate the responsibility for performing an action or making a decision, and to show the responsibility of each organizational unit for different parts of a single process.

Flowcharts represent certain aspects of processes and are usually complemented by other types of diagram. For instance, Kaoru Ishikawa defined the flowchart as one of the seven basic tools of quality control, next to the histogram, Pareto chart, check sheet, control chart, cause-and-effect diagram, and the scatter diagram. Similarly, in UML, a standard concept-modeling notation used in software development, the activity diagram, which is a type of flowchart, is just one of many different diagram types.

Common alternative names include: flow chart, process flowchart, functional flowchart, process map, process chart, functional process chart, business process model, process model, process flow diagram, work flow diagram, business flow diagram. The terms "flowchart" and "flow chart" are used interchangeably.

The underlying graph structure of a flowchart is a flow graph, which abstracts away node types, their contents and other ancillary information.

Symbol	Name	Function
	Start/end	An oval represents a start or end point
	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectagle represents a process
	Decision	A diamond indicates a decision

Fig 5.1: Flow chart Symbols

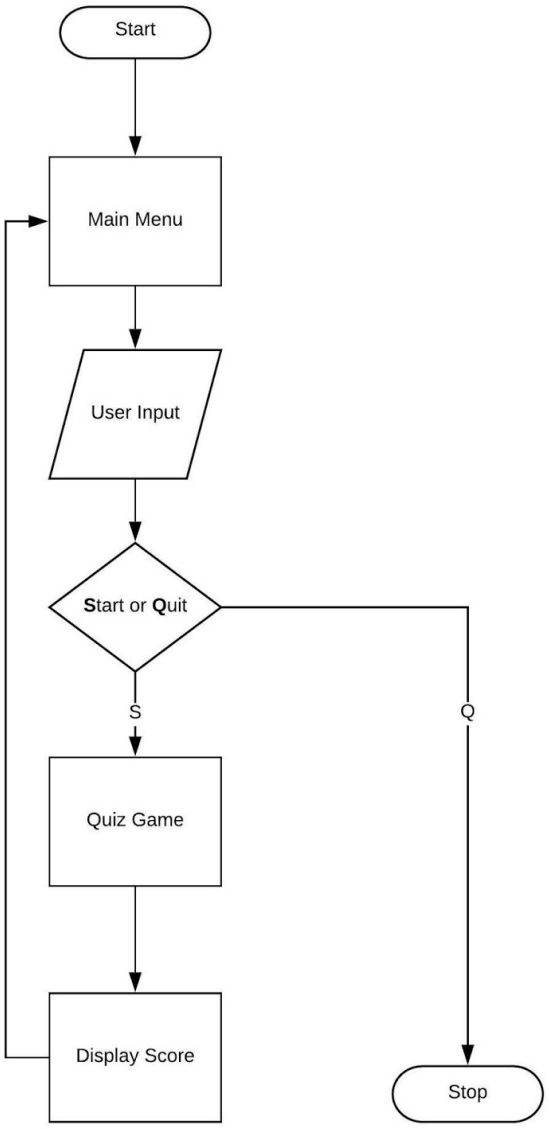

Fig 5.2 Flow Chart Diagram

5.2 ENTITY RELATIONSHIP DIAGRAM

Entity-Relationship model stands for an ER model. It is a high-level data model. This model is used to define the data elements and relationship for a specified system.
It develops a conceptual design for the database. It also develops a very simple and easy to design view of data.
In ER modelling, the database structure is portrayed as a diagram called an entity relationship diagram.

The Entity Relational Model is a model for identifying entities to be represented in the database and representation of how those entities are related. The ER data model specifies enterprise schema that represents the overall logical structure of a database graphically.

The Entity Relationship Diagram explains the relationship among the entities present in the database. ER models are used to model real-world objects like a person, a car, or a company and the relation between these real-world objects. In short, the ER Diagram is the structural format of the database.
Why Use ER Diagrams In DBMS?

- ER diagrams are used to represent the E-R model in a database, which makes them easy to be converted into relations (tables).
- ER diagrams provide the purpose of real-world modeling of objects which makes them intently useful.
- ER diagrams require no technical knowledge and no hardware support.
- These diagrams are very easy to understand and easy to create even for a naive user.
- It gives a standard solution for visualizing the data logically.
- Symbols Used in ER Model

ER Model is used to model the logical view of the system from a data perspective which consists of these symbols:

- **Rectangles:** Rectangles represent Entities in the ER Model.
- **Ellipses:** Ellipses represent Attributes in the ER Model.
- **Diamond:** Diamonds represent Relationships among Entities.
- **Lines:** Lines represent attributes to entities and entity sets with other relationship types.
- **Double Ellipse:** Double Ellipses represent Multi-Valued Attributes.
- **Double Rectangle:** Double Rectangle represents a Weak Entity.

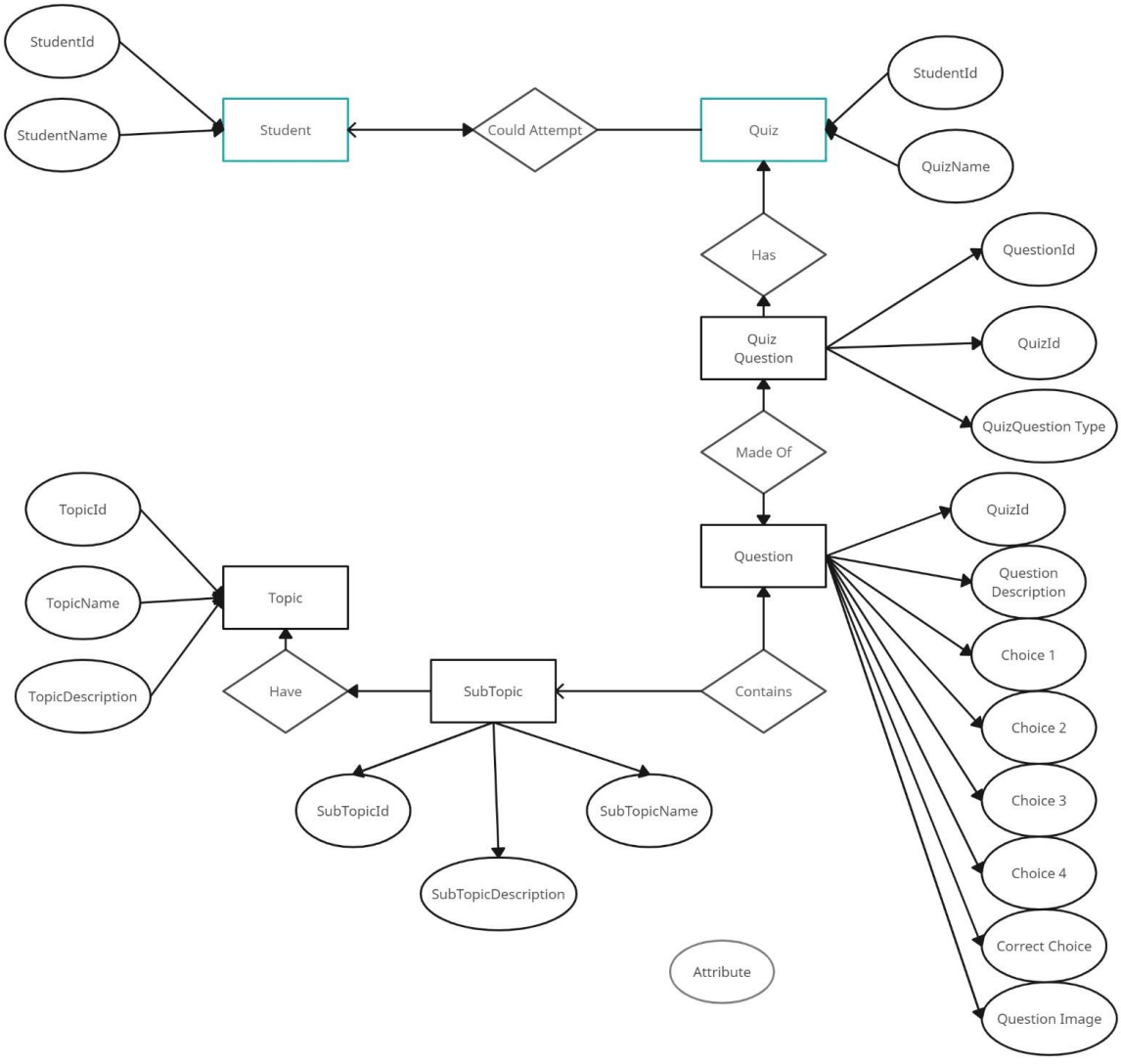

Fig 5.3 Entity-Relationship Diagram

5.3 USE CASE DIAGRAM

A use case diagram (UCD) is used to represent the dynamic behaviour of a system. It encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system/subsystem of an application. It depicts the high-level functionality of a system and also tells how the user handles a system.

The main purpose of a use case diagram is to portray the dynamic aspect of a system. It accumulates the system's requirement, which includes both internal as well as external influences. It invokes persons, use cases, and several things that invoke the actors and elements accountable for the implementation of use case diagrams. It represents how an entity from the external environment can interact with a part of the system.

While a use case itself might drill into a lot of detail about every possibility, a use-case diagram can help provide a higher-level view of the system. It has been said before that "Use case diagrams are the blueprints for your system".

Due to their simplistic nature, use case diagrams can be a good communication tool for stakeholders. The drawings attempt to mimic the real world and provide a view for the stakeholder to understand how the system is going to be designed. Siau and Lee conducted research to determine if there was a valid situation for use case diagrams at all or if they were unnecessary. What was found was that the use case diagrams conveyed the intent of the system in a more simplified manner to stakeholders and that they were "interpreted more completely than class diagrams".

Use Case Diagram is a type of Unified Modeling Language (UML) diagram that represents the interaction between actors (users or external systems) and a system under consideration to accomplish specific goals. It provides a high-level view of the system’s functionality by illustrating the various ways users can interact with it.

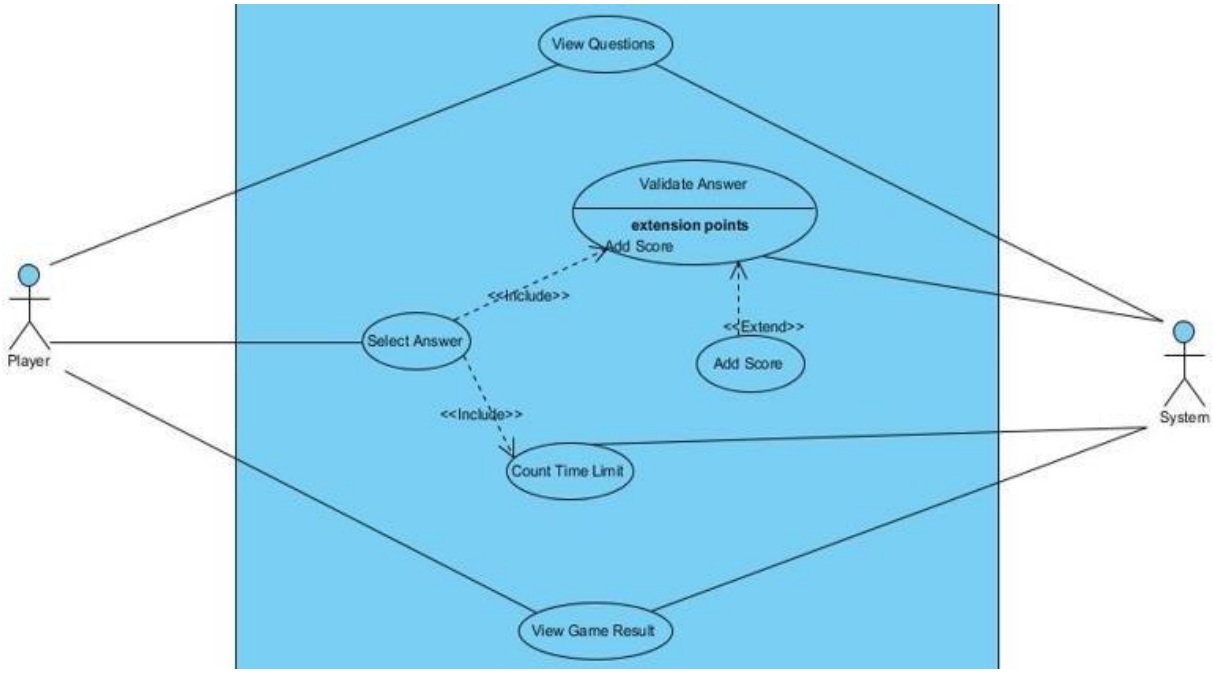

Fig 5.4 Use Case Diagram

5.4 SEQUENCE DIAGRAM

The sequence diagram (SD) represents the flow of messages in the system and is also termed as an event diagram. It helps in envisioning several dynamic scenarios. It portrays the communication between any two lifelines as a time-ordered sequence of events, such that these lifelines took part at the run time.
In UML, the lifeline is represented by a vertical bar, whereas the message flow is represented by a vertical dotted line that extends across the bottom of the page. It incorporates the iterations as well as branching.

Unified Modelling Language (UML) is a modeling language in the field of software engineering that aims to set standard ways to visualize the design of a system. UML guides the creation of multiple types of diagrams such as interaction, structure, and behavior diagrams. A sequence diagram is the most commonly used interaction diagram.

Interaction diagram

An interaction diagram is used to show the **interactive behaviour** of a system. Since visualizing the interactions in a system can be difficult, we use different types of interaction diagrams to capture various features and aspects of interaction in a system.

- A sequence diagram simply depicts the interaction between the objects in a sequential order i.e. the order in which these interactions occur.
- We can also use the terms event diagrams or event scenarios to refer to a sequence diagram.
- Sequence diagrams describe how and in what order the objects in a system function.
- These diagrams are widely used by businessmen and software developers to document and understand requirements for new and existing systems

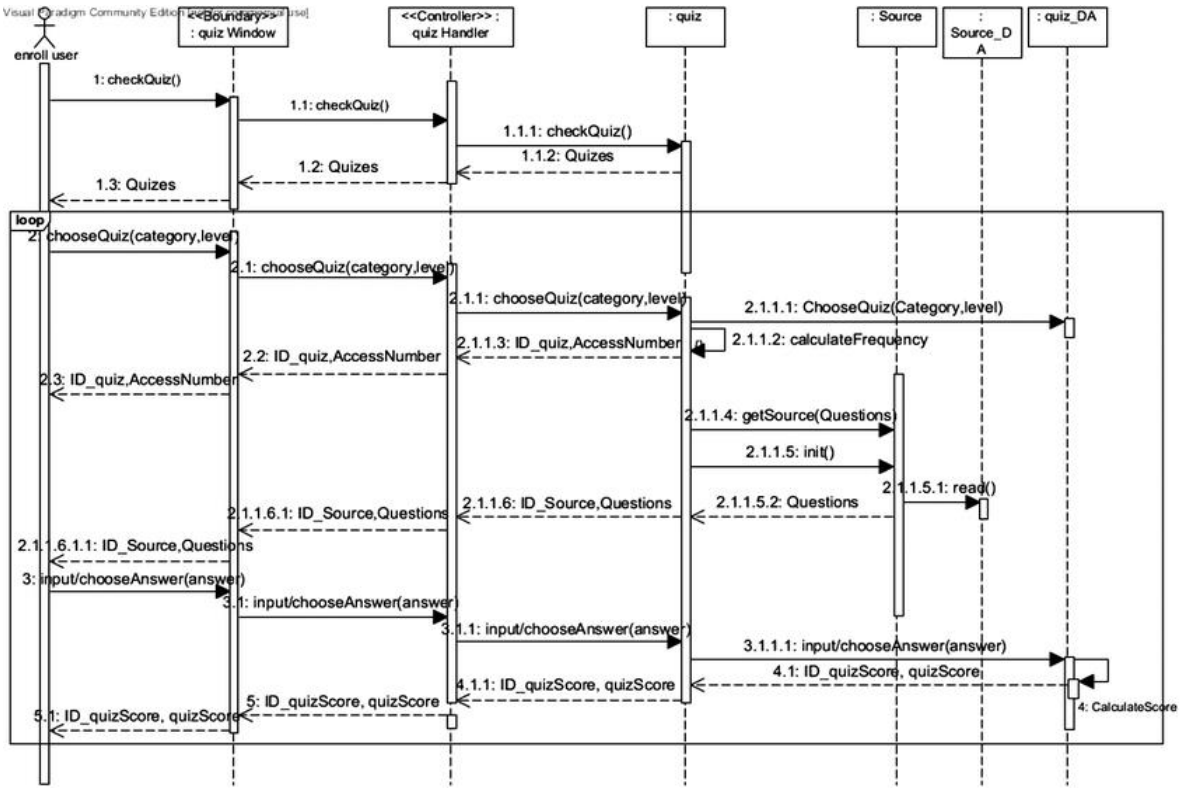

Fig 5.5 Sequence diagram

5.5 Activity Diagram

Activity Diagrams are used to illustrate the flow of control in a system and refer to the steps involved in the execution of a use case. It is a type of behavioural diagram and we can depict both sequential processing and concurrent processing of activities using an activity diagram ie an activity diagram focuses on the condition of flow and the sequence in which Activity Diagrams are used to illustrate the flow of control in a system and refer to the steps involved in the execution of a use case. We can depict both sequential processing and concurrent processing of activities using an activity diagram ie an activity diagram focuses on the condition of flow and the sequence in which it happens.

- We describe what causes a particular event using an activity diagram.
- An activity diagram portrays the control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed.
- They are used in business and process modelling where their primary use is to depict the dynamic aspects of a system.

Activity diagrams are used in software development and system design to model and visualize the dynamic aspects of a system. Here are some common uses of activity diagrams:

- Dynamic modelling of the system or a process.
- Illustrate the various steps involved in a UML use case.
- Model software elements like methods, operations and functions.
- We can use Activity diagrams to depict concurrent activities easily.
- Show the constraints, conditions and logic behind algorithms.
- During the requirements analysis phase, activity diagrams assist in capturing and documenting the dynamic aspects of user interactions.

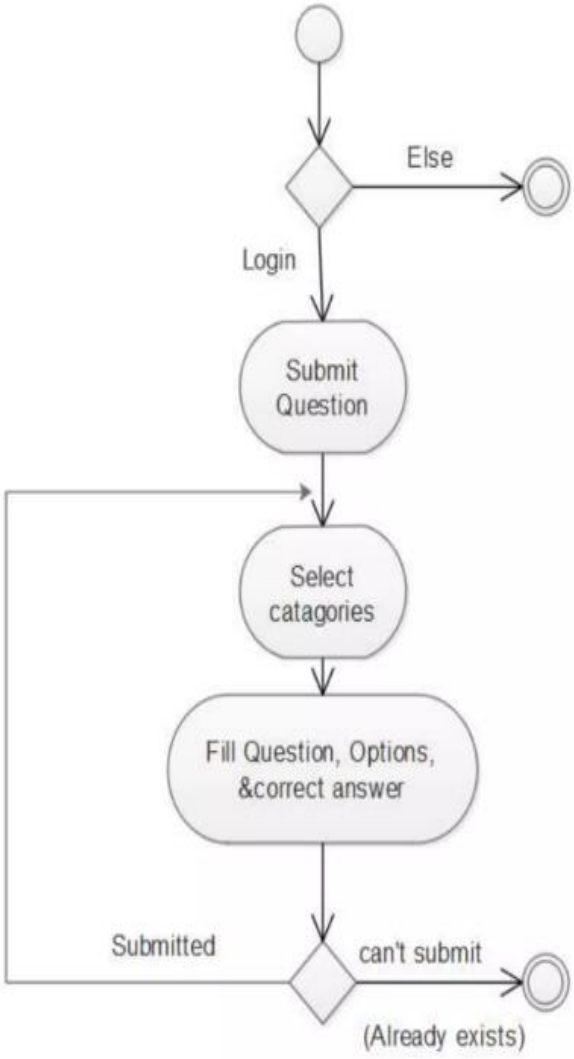

Fig.5.6 Activity Diagram for Submit Quiz

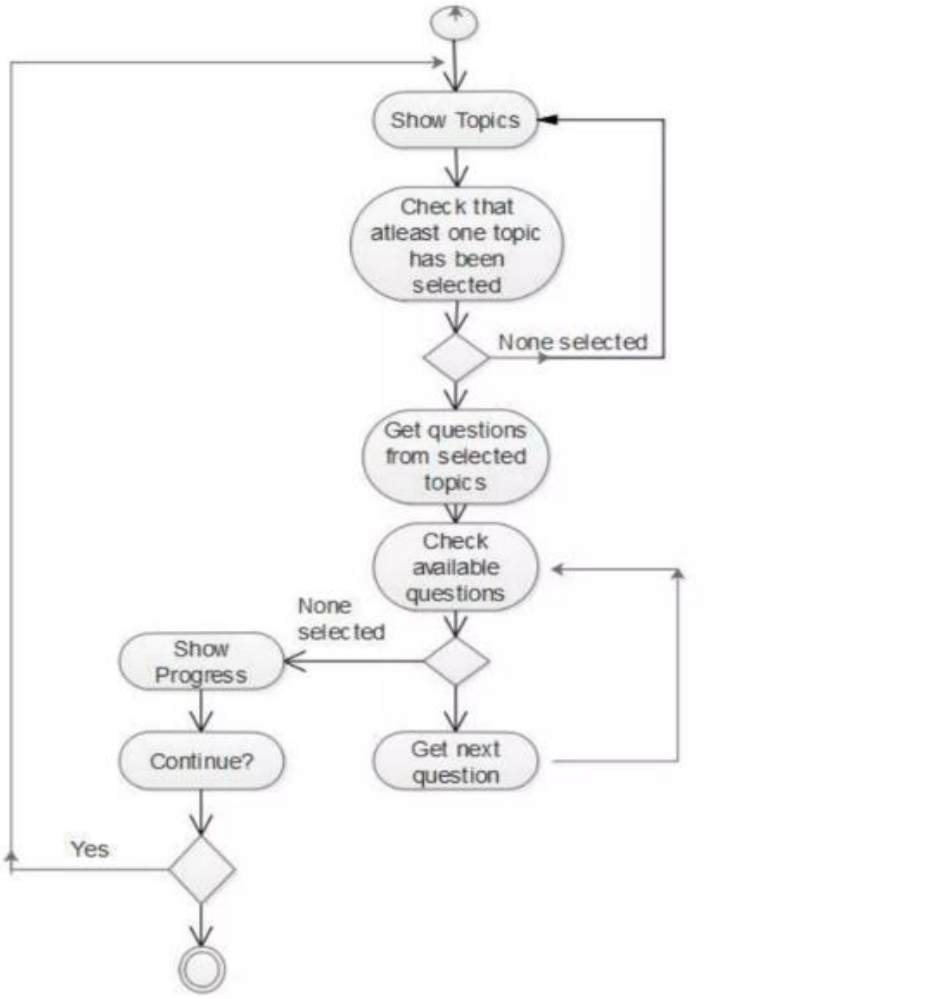

Fig.5.7 Activity Diagram to play quiz

CHAPTER 6

IMPLEMENTATION AND RESULT

Implementing an online quiz application involves several steps and components. Below, I'll outline a basic architecture and some key features you might want to include. Please note that this is a high-level overview, and actual implementation details can vary based on your specific requirements, technology stack, and platform preferences.

Architecture Overview:

1. **Frontend:** The user interface through which users interact with the quiz application.
2. **Backend:** The server-side logic responsible for managing quizzes, questions, user authentication, and scoring.
3. **Database:** Storage for quiz questions, user data, scores, etc.
4. **Authentication:** Mechanism to verify the identity of users accessing the application.
5. **APIs:** Communication layer between the frontend and backend.

Key Features:

User Authentication:

- Allow users to sign up, sign in, and manage their accounts.
- Implement authentication mechanisms like email/password, social login (e.g., Google, Facebook), or OAuth.

Quiz Management:

- Create, edit, and delete quizzes.
- Add, update, and remove questions from quizzes.
- Define categories and tags for quizzes.

Quiz Taking:

- Display quizzes with multiple-choice, true/false, or other types of questions.

- Timer functionality for timed quizzes.
- Immediate feedback on correct/incorrect answers.

Scoring:

- Calculate and display scores upon completing quizzes.
- Leader board to show top scorers.
- Progress Tracking:
- Keep track of quizzes attempted, scores achieved, and overall progress.

Implementation Steps:

Planning & Design: Define the requirements, design the database schema, and sketch out the user interface.

Setting Up the Development Environment: Install necessary tools and frameworks.

Backend Development: Implement server-side logic, database operations, and authentication.

Frontend Development: Create user interfaces for signing up, signing in, taking quizzes, etc.

Integration: Connect the frontend with the backend using APIs.

Testing: Perform unit tests, integration tests, and user acceptance tests.

Deployment: Deploy the application to a web server or a cloud platform like AWS, Heroku, or Azure.

Monitoring & Maintenance: Monitor the application for performance issues, bugs, and security vulnerabilities. Regularly update dependencies and fix issues as they arise.

Remember to follow best practices for security, scalability, and user experience throughout the development process. Additionally, consider incorporating feedback from users to improve the application over time

6.1 HOME PAGE

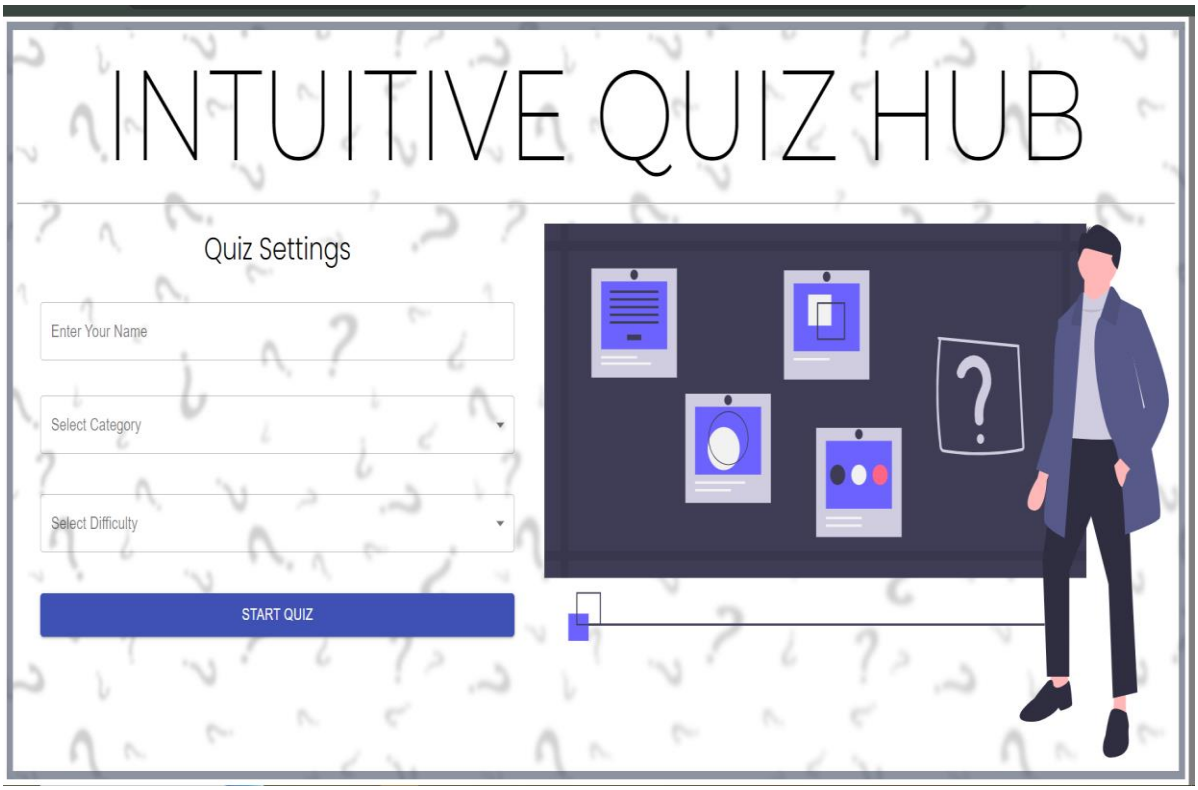

Fig 6.1 Home Page

6.2 SELECT SUBJECT

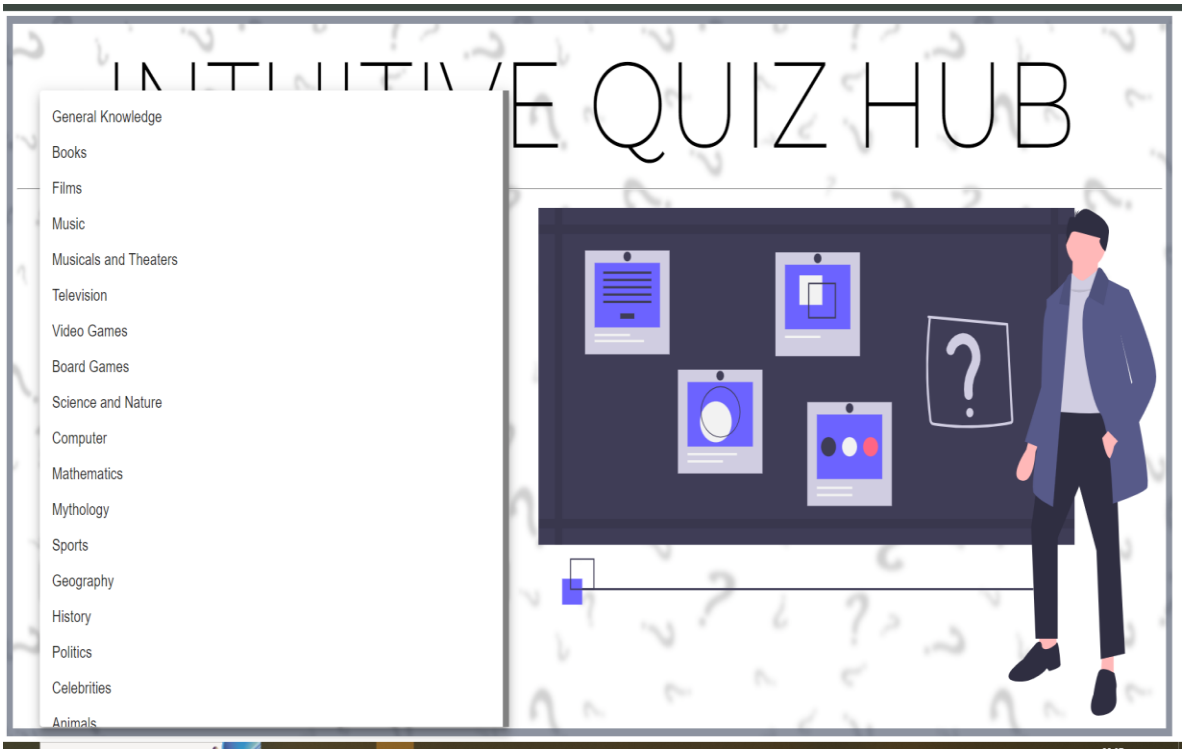

Fig 6.2 Showing Subjects

6.3 SELECT DIFFICULTY

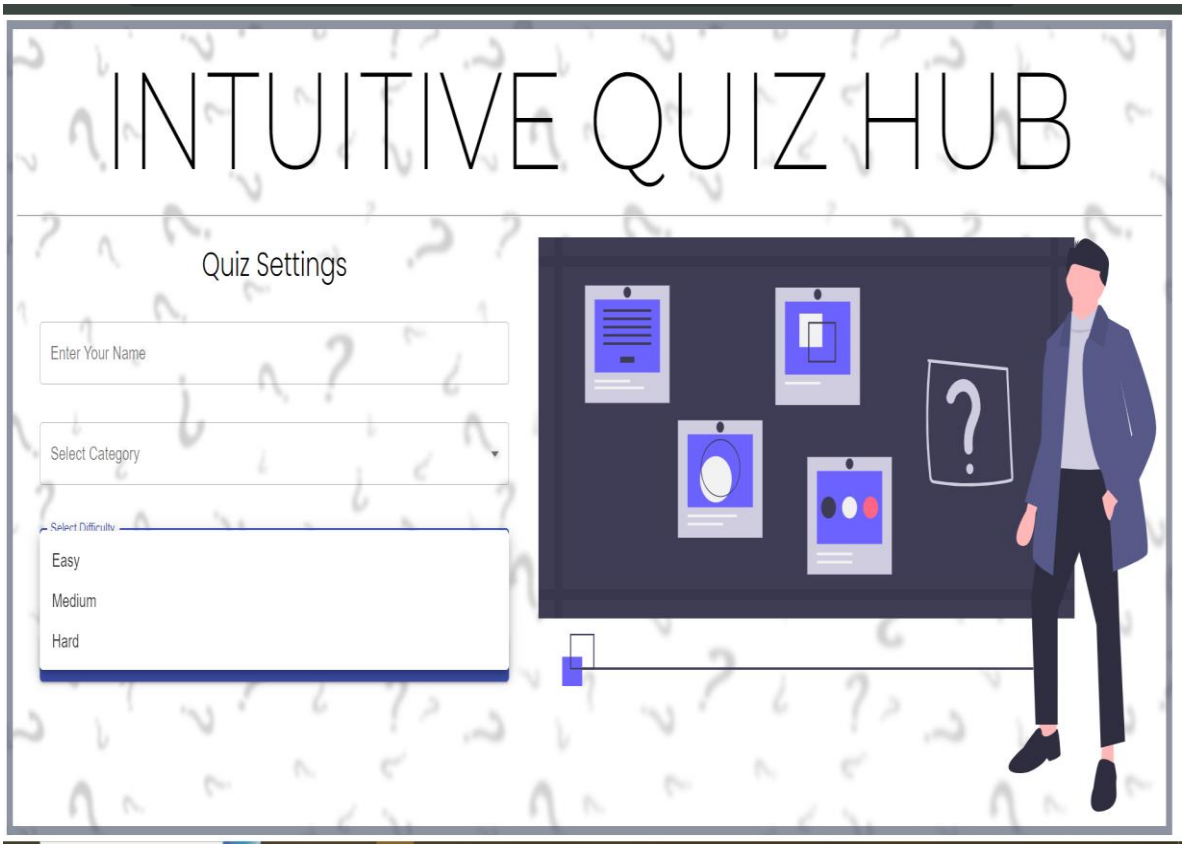

Fig 6.3 Showing Difficulty

6.4 QUIZ PAGE

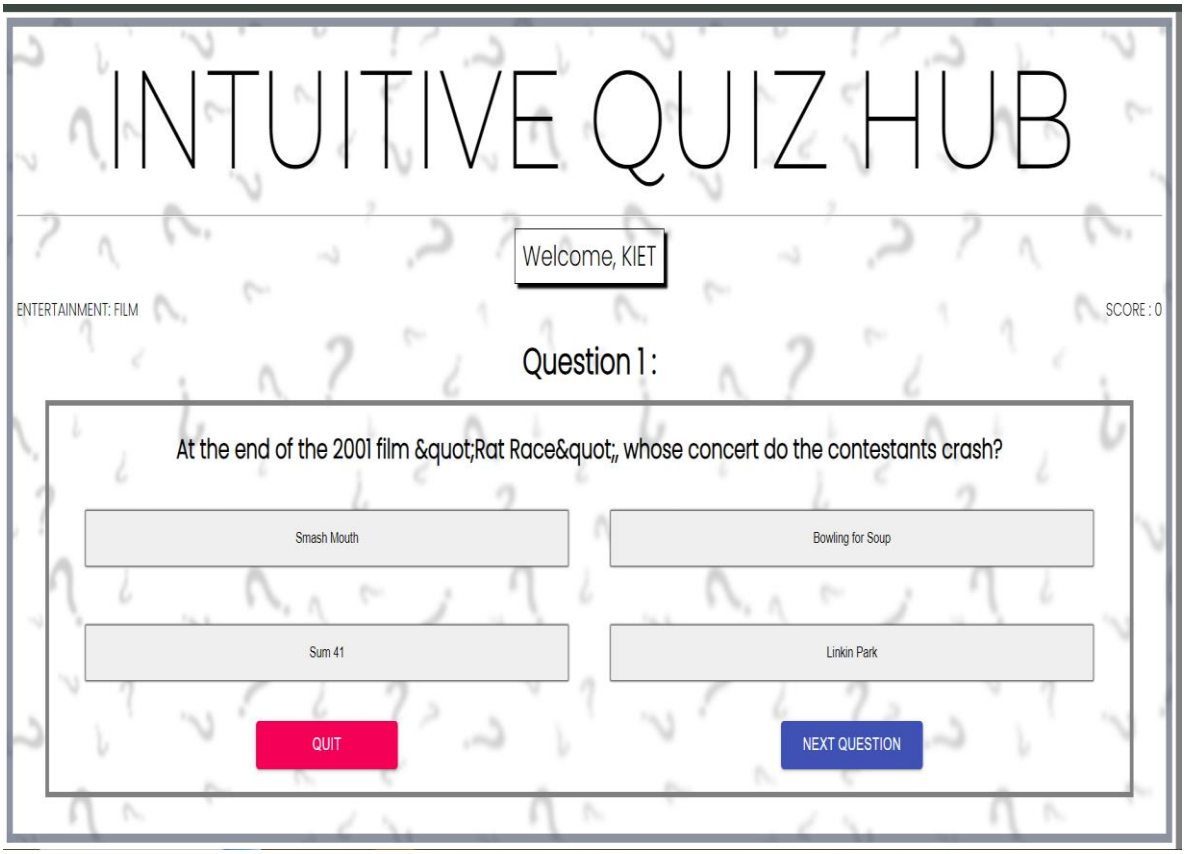

Fig 6.4 Question Page

6.5 RIGHT ANSWER

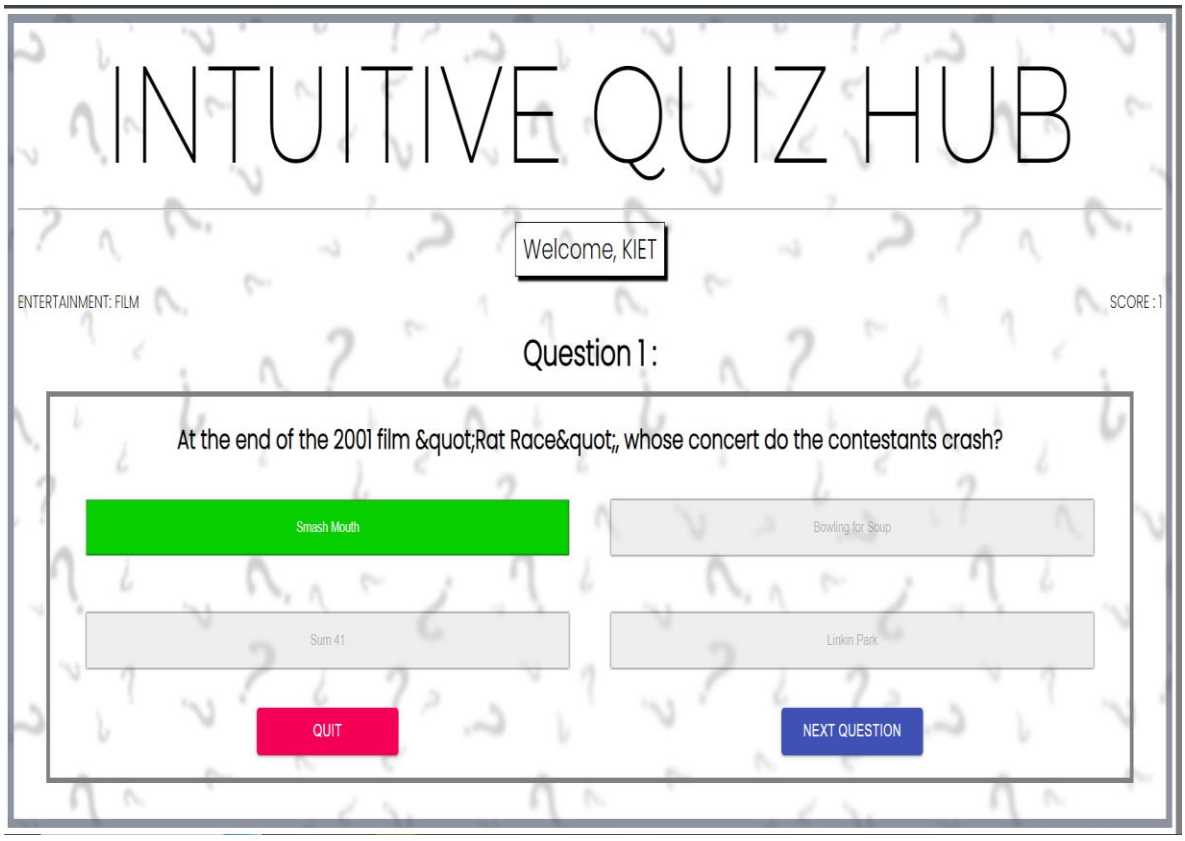

Fig 6.5 Showing Right Answer

6.6 WRONG ANSWER

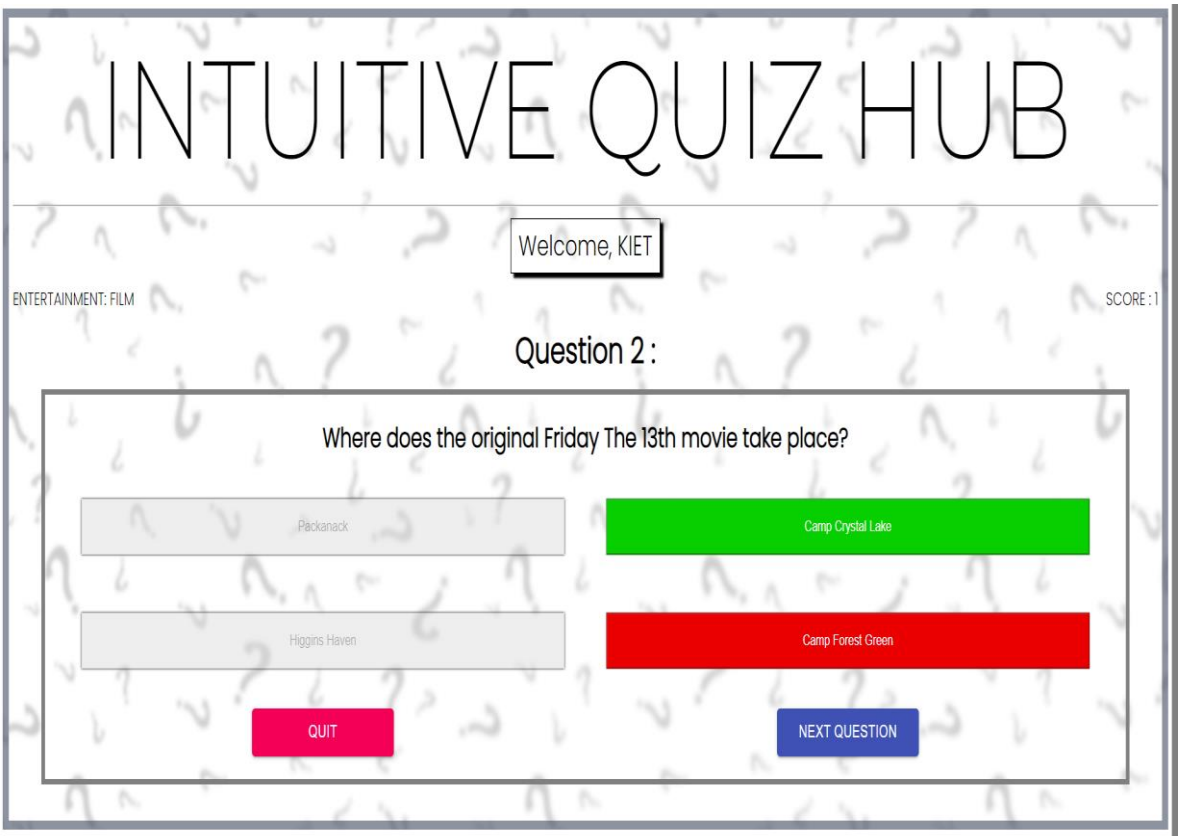

Fig 6.6 Showing Wrong Answer

6.7 RESULT PAGE

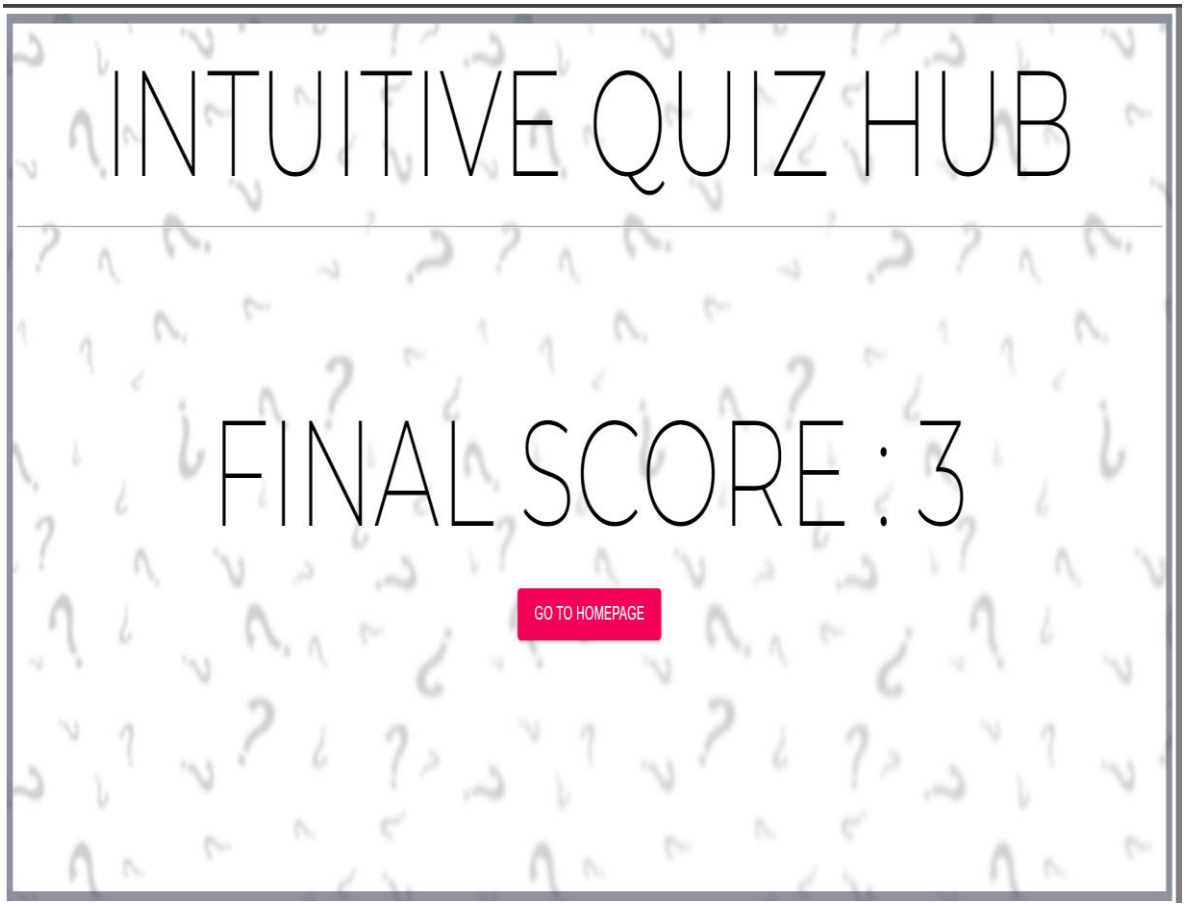

Fig 6.7 Showing Result

Chapter 7

CONCLUSION

After completion of this project we have concluded that this web application works as per the need and requirement of the client and is user friendly. Also, this mini project helped me to understand the design, code and implementation processes which are performed while making any project. Many concepts were revised and many of them were very new which were learnt in making of this web application.

The online quiz application project has been a comprehensive endeavor aimed at providing users with an engaging and interactive platform for testing their knowledge. Throughout the development process, several key objectives have been achieved, resulting in a functional and user-friendly application.

Firstly, the project successfully identified the need for an online quiz platform and addressed it by designing a robust application capable of catering to various user preferences and quiz topics.

Secondly, the application's user interface was meticulously crafted to ensure ease of navigation and an enjoyable user experience. Through thoughtful design considerations and user feedback, the interface evolved to be intuitive and visually appealing.

Thirdly, the backend infrastructure of the application was developed with scalability and reliability in mind. Utilizing modern technologies and best practices, the application is capable of handling a large number of concurrent users while maintaining optimal performance.

Additionally, the project prioritized security measures to safeguard user data and maintain the integrity of the quizzes. Implementing encryption protocols and access controls, the application provides users with a secure environment to engage in quiz activities.

Furthermore, the inclusion of features such as leaderboards, customizable quizzes, and social sharing options enhances user engagement and encourages continued usage of the application.

In conclusion, the online quiz application project has successfully met its objectives of creating a user-friendly, secure, and engaging platform for users to test their knowledge. Moving forward, ongoing updates and improvements will be made to further enhance the application's functionality and ensure continued user satisfaction.

7.1 FUTURE SCOPE

This project has a vast scope as many other functionalities can be added to it. In first place a timer cab added to each quiz. Due to no limited time for the test students can find answerers to the questions anywhere else which ultimately will not be an honest evaluation of their result. Also, to prevent this many other functionalities can be added to the user side especially to the student like restricting any kind of switching of tabs in the browser and introduction of webcam for more honest evaluation of the students. More creative way of showing result and deletion of test by adding an administrative part to the system can be done. In the administrative part addition and deletion of user can be done.

The future scope for an online quiz application can be quite extensive, with opportunities for expansion and improvement in various aspects. Here are some potential directions for future development:

- **Enhanced User Experience**: Continuously improving the user interface and experience to make it more intuitive, engaging, and accessible across different devices (desktops, tablets, smartphones).
- **Advanced Question Types**: Introducing a wider variety of question types such as multiple-choice, true/false, fill-in-the-blank, matching, short answer, essay questions, etc., to diversify the quiz content and make it more interactive.
- **Personalization and Adaptive Learning**: Implementing algorithms that analyze user performance and preferences to personalize quiz content and difficulty level, thus providing a tailored learning experience for each user.
- **Gamification Features**: Adding gamification elements like leaderboards, badges, rewards, and levels to increase user motivation, engagement, and retention.
- **Integration with Learning Management Systems (LMS)**: Integrating the quiz application with popular learning management systems used in

educational institutions and corporate training environments to facilitate seamless usage within existing educational frameworks.

- **Social Features**: Incorporating social sharing options, allowing users to share their quiz results, achievements, and scores on social media platforms, fostering a sense of community and competition among users.
- **Multimedia Integration**: Supporting multimedia elements such as images, videos, audio clips, and interactive animations to enhance the richness of quiz content and cater to different learning styles.
- **Accessibility Features**: Ensuring compliance with accessibility standards (e.g., WCAG) to make the application usable by individuals with disabilities, thus expanding the user base and promoting inclusivity.
- **Data Analytics and Reporting**: Implementing robust analytics tools to track user engagement, performance metrics, and feedback, providing valuable insights for content optimization and decision-making.
- **Monetization Opportunities**: Exploring monetization options such as premium content, subscription models, ad placements, sponsored quizzes, or partnerships with educational institutions and businesses.
- **Internationalization and Localization**: Supporting multiple languages and cultural adaptations to cater to a global audience and facilitate learning in diverse contexts.
- **Mobile App Development**: Developing dedicated mobile applications (iOS, Android) for the quiz platform to offer a seamless mobile experience and leverage device-specific features.
- **Integration with External APIs and Services**: Integrating with external APIs and services (e.g., content repositories, learning tools, assessment platforms) to enrich the quiz content and functionality.
- **Continuous Content Updates**: Regularly updating and expanding the quiz content library with new topics, questions, and quizzes to keep the platform fresh and relevant.

By focusing on these areas, an online quiz application can evolve into a comprehensive learning platform that caters to a wide range of users across different educational and training domains.

CHAPTER 8

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