

A  
Mini Project Report on  
**Quiz Game**  
Submitted in partial fulfillment of the requirements for the degree of  
**BACHELOR OF ENGINEERING**  
IN  
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Artificial Intelligence & Machine Learning

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## CERTIFICATE

This is to certify that the project entitled “**Quiz Game**” is a bonafide work of Varun Panchal(23106050), Raj Mourya(23106104), Rushikesh Shinde(23106061), submitted to the University of Mumbai in partial fulfillment of the requirement for the award of **Bachelor of Engineering in Computer Science & Engineering (Artificial Intelligence & Machine Learning)**.

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## Project Report Approval

This Mini project report entitled “**Quiz Game**” by **Varun Panchal, Raj Mourya, and Rushikesh Shinde** is approved for the degree of *Bachelor of Engineering in Computer Science & Engineering, (AI&ML) 2024-25*.

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We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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## ABSTRACT

A quiz website is a comprehensive online platform that enables users to create, participate in, and share quizzes on a wide range of topics. These websites cater to different audiences, including educators, trainers, and casual users, providing a versatile tool for learning, assessment, and entertainment.

One of the main features of a quiz website is user registration, which allows individuals to create personalized accounts. This personalization is essential because it enables the platform to track users' activity, such as quiz history and performance, offering a more customized experience. Once registered, users can browse through a vast library of pre-existing quizzes, ranging from educational subjects like science, history, or math to more casual topics like pop culture, hobbies, and entertainment. The wide variety of topics ensures that the platform appeals to diverse interests and purposes.

A standout feature of many quiz websites is the quiz builder. This tool allows users to create their own quizzes, giving them full control over the type and difficulty of questions. Users can include different question formats, such as multiple-choice questions, true/false statements, fill-in-the-blank answers, and even short answer responses. This flexibility makes the platform highly engaging and versatile, whether the quizzes are for educational purposes or entertainment.

The instant feedback mechanism on quiz websites is another crucial element. Once a user completes a quiz, they can immediately see their results along with the correct answers. This feature is particularly valuable in learning contexts because it allows users to quickly identify areas where they need improvement. Educators can also leverage this feature by creating quizzes that provide explanations for each answer, thus reinforcing knowledge and enhancing learning outcomes.

For teachers, trainers, and educational institutions, quiz websites offer powerful tools for assessment and progress monitoring. Educators can create quizzes aligned with their curriculum, assign quizzes to their students, and track their performance through detailed analytics. These analytics provide insights into each student's strengths and weaknesses, enabling more personalized instruction. Some advanced platforms even incorporate adaptive learning algorithms that adjust the quiz's difficulty based on the user's performance. This ensures that the user remains both challenged and motivated, as the quizzes evolve with their ability. Beyond education, quiz websites serve as an entertaining platform for social interaction. Users can share quizzes with friends, challenge others to beat their scores, and engage in friendly competitions. This social aspect enhances the fun and interactive nature of quizzes, making them more than just tools for learning—they become a form of entertainment and engagement.

In summary, quiz websites combine learning, assessment, and entertainment in one dynamic platform. They cater to both serious educational purposes and casual fun, with features like customizable quizzes, instant feedback, adaptive learning, and detailed progress tracking. These websites are user-friendly.

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# **CHAPTER 1**

## **INTRODUCTION**

# 1. INTRODUCTION

A quiz website is a dynamic online platform designed to engage users in quizzes that serve educational, recreational, and assessment purposes. These platforms have gained significant popularity due to their ability to offer an interactive and flexible approach to testing knowledge, learning new information, and even simply having fun. They cater to a wide range of users, including students, teachers, businesses, and individuals who seek to either assess their knowledge or entertain themselves with trivia and quizzes on various subjects.

At the heart of most quiz websites is their versatility. Users are typically presented with two main options: either to participate in pre-existing quizzes from a vast library or to create their own quizzes using the platform's intuitive quiz-building tools. This functionality is what sets quiz websites apart from other learning tools. Whether it's a teacher creating a quiz tailored to a specific lesson plan, or an individual creating a quiz for friends on a favorite topic, the ability to craft custom quizzes allows for a highly personalized experience. This makes these websites adaptable to different contexts, from classrooms and corporate training sessions to casual quizzes shared among friends.

The types of quizzes available on these platforms are also varied. Quiz websites typically support several question formats, including multiple-choice questions, true/false, fill-in-the-blank, and short answer questions. These diverse formats make it possible to create quizzes that suit different learning or testing styles. For example, in an educational setting, multiple-choice questions can test factual recall, while fill-in-the-blank or short answer questions can encourage deeper understanding and critical thinking. The ability to mix and match question types within the same quiz adds to the richness of the experience.

One of the standout features of quiz websites is the instant feedback they provide to users. Upon completing a quiz, users are immediately shown their results, often with detailed explanations of the correct answers. This immediate response is particularly valuable in educational and training environments, as it allows learners to quickly identify areas where they need improvement. Instant feedback accelerates the learning process by enabling users to self-assess and adjust their focus without delay. Moreover, this feature is also highly engaging in recreational quizzes, as it allows users to compare their scores with others and receive real-time updates on how well they performed.

Quiz websites are not only beneficial for individuals looking to assess or expand their knowledge but also for educators and trainers who need reliable tools for assessment and knowledge reinforcement. Teachers, for instance, can use quiz websites to create quizzes that align directly with their curriculum. These quizzes can be assigned to students either as homework or as part of in-class activities, providing a more interactive and engaging way for students to engage with the material. Furthermore, many quiz websites offer analytics that track a student's performance over time, giving educators valuable insights into each student's progress and areas of weakness. This feature allows teachers to tailor their instruction to the needs of individual students or groups, creating a more personalized learning experience.

For corporate environments, quiz websites are increasingly used in training and development programs. Businesses can use these platforms to create training quizzes that help employees learn new skills or review important information. Through the use of detailed analytics,

others, and trainers can monitor how well employees are grasping the material and where additional training may be needed. The adaptability of quiz websites makes them ideal for companies

looking to provide engaging and efficient training, especially in remote or hybrid work settings where face-to-face instruction may not be feasible.

Aside from their educational and professional uses, quiz websites are also popular for entertainment purposes. Many individuals and groups use these platforms to create quizzes that test knowledge on popular culture, trivia, or niche topics like specific TV shows, books, or hobbies. The social aspect of quiz websites also plays a significant role in their appeal. Many platforms allow users to share their quiz results with friends, challenge even engage in group quizzes or tournaments. This blend of social interaction and



As technology continues to evolve, the potential of quiz websites to offer even more advanced features is increasing. Some platforms are already incorporating adaptive learning algorithms that adjust the difficulty of quizzes based on the user's performance. This type of personalized learning keeps users challenged at just the right level, ensuring they remain motivated without becoming frustrated. In addition, there is potential for the integration of artificial intelligence (AI) to create smarter quizzes that can better analyze user responses and suggest personalized learning paths.

In conclusion, quiz websites represent a powerful and versatile tool that blends education, entertainment, and assessment into a seamless online experience. They offer users an engaging way to test and improve their knowledge while providing instant feedback and analytics that enhance learning and performance. Whether used in schools, businesses, or casual settings, quiz websites are a dynamic platform that makes learning both effective and enjoyable. Their continuing evolution promises to bring even more exciting possibilities in the future, further expanding the ways in which users can engage with quizzes and interactive learning.

# **CHAPTER 2**

## **LITERATURE SURVEY**

## **2. LITERATURE SURVEY**

### **2.1-HISTORY**

In the 19th and early 20th centuries, quizzes began to take on a more formal role, particularly in educational settings. Schools and universities started using quizzes as a tool for assessing student knowledge and retention of course material. These early quizzes were often written or oral tests administered by teachers to gauge students' understanding.

The format was simple, typically consisting of a series of questions that required short, factual answers. This approach to testing was effective in ensuring that students had learned the basic content of their studies, paving the way for more sophisticated forms of examination.

The digital age revolutionized the quiz format by making it more accessible and interactive. The advent of personal computers and the internet in the late 20th century paved the way for the development of online quizzes. Websites dedicated to quizzes began to emerge, offering a variety of topics and formats. Online quizzes became a popular pastime, allowing users to test their knowledge on subjects ranging from pop culture to history.

The ability to instantly receive feedback and compare results with others added a new dimension to the quiz experience. Educational institutions also began adopting online quizzes as part of their teaching and assessment methods, leveraging technology to create dynamic and interactive learning experiences.

In recent years, the rise of mobile technology has further transformed the landscape of quizzes. Mobile apps dedicated to quizzes, such as QuizUp and Kahoot!, have gained immense popularity, offering users the ability to take quizzes on the go.

Looking forward, the future of quizzes is likely to be shaped by advancements in artificial intelligence and machine learning. These technologies have the potential to create more personalized and adaptive quiz experiences, where the difficulty and type of questions can dynamically adjust based on the user's responses and learning progress.

AI-driven analytics could provide deeper insights into users' knowledge gaps and learning patterns, allowing educators and trainers to tailor content to individual needs more effectively.

## 2.2-LITERATURE REVIEW

A literature review on quiz-based learning and assessment explores various studies and theoretical frameworks that examine the use, effectiveness, and evolution of quizzes in different educational and training contexts. This review covers academic and practical insights into how quizzes function as educational tools, their impact on learning outcomes, and their integration into modern educational and training environments.

### 1. Historical and Theoretical Foundations

The use of quizzes as a pedagogical tool has a long history, deeply rooted in educational practices. Ancient educational systems, such as those in Greece, employed questioning techniques similar to modern quizzes to stimulate critical thinking and dialogue.

The Socratic method, for example, involved asking probing questions to engage students and encourage deeper understanding. This method laid the foundation for structured forms of questioning that would later evolve into modern quiz formats.

The formalization of quizzes in education is closely tied to behaviorist theories, particularly the work of B.F. Skinner (1954) on operant conditioning. Skinner's research highlighted the role of reinforcement in learning, suggesting that immediate feedback on performance can strengthen learning behaviors. Quizzes, by providing instant feedback, serve as a form of reinforcement, helping learners to quickly identify and correct mistakes.

### 2. The Testing Effect and Memory Retention

The effectiveness of quizzes in enhancing learning outcomes is supported by a body of research that highlights the "testing effect." Roediger and Butler (2011) have shown that the act of retrieval through testing, such as taking quizzes, enhances long-term memory retention more effectively than passive study methods.

Their research suggests that the process of recalling information during a quiz helps consolidate memory, making it more resistant to forgetting. This phenomenon is attributed to the cognitive effort involved in retrieval, which strengthens memory traces and aids in the transfer of knowledge to long-term memory.

### 3. Digital Transformation and Online Quizzes

The advent of digital technology has transformed the landscape of quizzes, making them more accessible, interactive, and engaging. Online quizzes have become a common feature in educational and training settings, providing a flexible and efficient way to assess knowledge. Digital quizzes also align with constructivist learning theories, which emphasize the importance of active engagement and personalized learning. The interactivity of online quizzes supports constructivist approaches by allowing learners to engage with content actively and receive tailored feedback based on their responses.

### 4. Gamification and Engagement

One of the significant developments in quiz-based learning is the integration of gamification elements, which has been shown to enhance motivation and engagement. Gamification involves applying game design elements, such as points, badges, and leaderboards, to non-game contexts, making learning more engaging and fun.

Platforms like Kahoot! and Quizizz have popularized the use of gamified quizzes in classrooms and training environments. These platforms allow educators to create interactive quizzes that include real-time feedback, competitive scoring, and multimedia elements, making the learning experience more engaging.

### 5. Quizzes in Corporate Training and Professional Development

Beyond traditional educational settings, quizzes have also become a valuable tool in corporate training and professional development. Businesses use quizzes to assess employee knowledge, reinforce training material, and ensure compliance with regulations.

Quizzes allow adult learners to take control of their learning, receive feedback, and apply what they have

learned in real-world scenarios. This approach aligns with the needs of adult learners, who often seek practical, relevant, and immediately applicable learning experiences.

#### 6. Future Directions and Innovations

The future of quiz-based learning and assessment is likely to be shaped by advancements in artificial intelligence (AI) and machine learning. AI-driven adaptive learning technologies have the potential to create personalized quiz experiences that adjust in real-time to the learner's knowledge level and learning pace. Research by Chen et al. (2020) highlights how AI can be used to analyze quiz data and provide tailored feedback, ensuring that quizzes remain challenging yet attainable for each learner.

# **CHAPTER 3**

## **Problem Statement**

### **3. PROBLEM STATEMENT**

Despite the proven effectiveness of quizzes as educational tools for enhancing memory retention, promoting active learning, and providing immediate feedback, several challenges hinder their optimal use in educational and training contexts.

Traditional quiz formats often lack engagement and fail to motivate learners, resulting in limited participation and suboptimal learning outcomes. While gamification and digital platforms have introduced new dimensions to quiz-based learning, there is still a significant gap in fully leveraging these technologies to create personalized, adaptive, and immersive learning experiences.

Many existing quiz systems do not effectively cater to the diverse learning needs and preferences of individual learners, nor do they provide comprehensive analytics to inform educators about students' progress and knowledge gaps.

Additionally, the integration of advanced technologies, such as artificial intelligence and virtual reality, into quiz-based learning remains underexplored, limiting the potential to transform quizzes into more interactive and contextually relevant learning tools.

Addressing these issues is crucial for maximizing the educational impact of quizzes, making learning more engaging, and meeting the evolving demands of modern learners and educators.

Therefore, there is a need for innovative solutions that enhance the design, implementation, and analysis of quiz-based assessments, ensuring they are more effective, engaging, and adaptive to individual learning needs.

# **CHAPTER 4**

## **Experimental Setup**



## 4.Experimental Setup

### 4.1 Hardware Setup

To set up the hardware for a quiz game website, you need a reliable server infrastructure, networking, and security solutions to handle user traffic and ensure fast performance. Here's a concise breakdown:

1. Server Infrastructure:
  - Web Server: Hosts the website and processes quiz interactions (CPU: multi-core, RAM: 16GB+, SSD storage).
  - Database Server: Stores quiz questions, user data, and results (SSD for fast access, 16GB+ RAM).
  - Load Balancer: Distributes traffic across servers for better performance and high availability.
  - CDN: Delivers static content quickly from distributed servers (e.g., Cloudflare).
2. Network and Connectivity:
  - High-bandwidth internet connection and internal networking for smooth user experience.
  - Redundant ISP connections for backup.
3. Security Hardware:
  - Firewall and SSL/TLS encryption for secure data transmission.
  - Intrusion Detection Systems (IDPS) to monitor for cyber threats.
4. Backup and Redundancy:
  - Automated backups with separate storage (cloud or on-premise) and UPS for power protection.
5. Cloud Hosting (Alternative):
  - Cloud solutions like AWS, Azure for flexibility, auto-scaling, and easy management.
6. Development & Monitoring:
  - Separate development and staging environments, monitoring tools to ensure performance.

This setup ensures a scalable, secure, and efficient quiz game platform, capable of handling both small and large user bases effectively.

## 4.2 Software Setup

Central to this setup is the quiz platform software, which encompasses the design, administration, and user interaction elements of quizzes. The core technologies used in developing such systems include HTML, JavaScript, and CSS, each playing a crucial role in the functionality and presentation of the platform.

1. **HTML (HyperText Markup Language):** HTML is the backbone of the quiz platform, providing the structure and framework for the web-based interface. It is used to create the layout of quiz pages, including the arrangement of questions, answer options, and navigation controls. HTML elements such as forms, buttons, and input fields are employed to facilitate user interaction and data submission.

2. **CSS (Cascading Style Sheets):** CSS is utilized to style and enhance the visual presentation of the quiz platform. It allows developers to apply design elements such as colors, fonts, spacing, and layouts, ensuring that the quiz interface is visually appealing and user-friendly. Responsive design principles can be implemented through CSS to ensure that the quiz adapts to different screen sizes and devices, providing a consistent user experience across desktops, tablets, and smartphones.

3. **JavaScript:** JavaScript is essential for adding interactivity and dynamic functionality to the quiz platform. It handles client-side scripting, enabling features such as real-time feedback, automatic grading, and interactive elements. JavaScript can be used to validate user input, calculate scores, and provide immediate feedback based on user responses. Additionally, JavaScript frameworks like React or Vue.js may be employed to build more complex and responsive interfaces.

### 4. Quiz Platform Software Features:

**Quiz Creation and Administration:** The software should offer an intuitive interface for designing and managing quizzes, allowing users to create various question types, incorporate multimedia elements, and set parameters such as time limits and scoring rules.

**Real-Time Feedback and Grading:** JavaScript is used to provide instant feedback on quiz responses and automatically grade answers, enhancing the learning experience by helping users identify and correct mistakes immediately.

**Analytics and Reporting:** The platform should include tools for generating detailed reports and visualizations of user performance, helping educators or trainers assess the effectiveness of the quizzes and track progress.

# **CHAPTER 5**

## **Proposed System & Implementation**

## 5. Proposed system & Implementation

The quiz website will allow users to create, take, and manage quizzes. It supports multiple quiz formats, real-time feedback, user accounts, and progress tracking. Designed for both education and entertainment, it will feature a user-friendly interface, scalable infrastructure, and secure data handling.

Key Features:

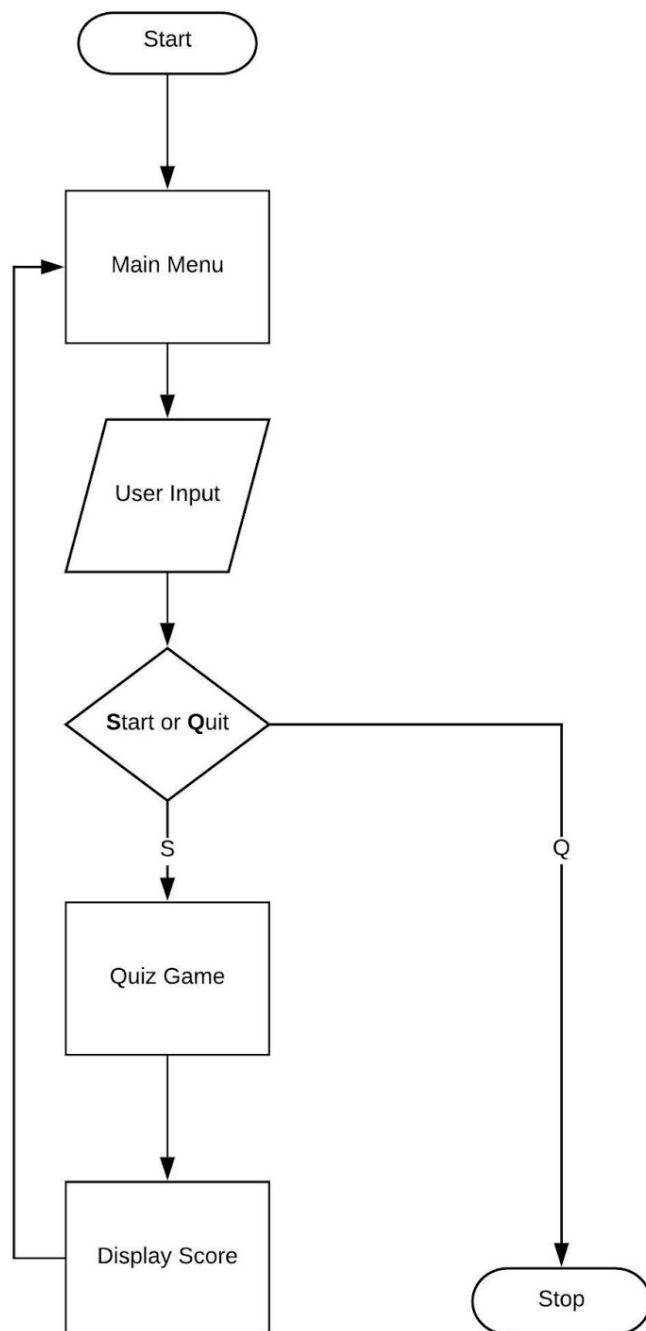
1. User Accounts: Registration, login, and role-based access (admin and user).
2. Quiz Management: Users and admins can create quizzes with multiple question types (e.g., multiple choice).
3. Real-Time Feedback: Instant scoring and correct answer display after quiz submission.
4. Leaderboards: Track user progress and compare scores.
5. Analytics: Admins can monitor quiz participation and performance.
6. Security: HTTPS, password encryption, and session management.

Implementation:


1. Front-End: HTML, CSS (Bootstrap), and JavaScript for UI.
2. Back-End: Java (Spring Boot, JSP/Servlets), with RESTful APIs for quiz logic.
3. Database: MySQL/PostgreSQL for storing quizzes, user data, and results.
4. Server: Apache Tomcat for hosting the application.
5. Real-Time: WebSockets for live quiz updates, AJAX for dynamic responses.
6. Security: Spring Security for authentication, HTTPS for secure connections.
7. Deployment: Hosted on VPS or cloud (e.g., AWS), with monitoring and backups.

This system offers a scalable, interactive, and secure platform for educational and entertainment purposes.

## 5.1 Block diagram of proposed system



## Implementation Screenshot



- Dashboard
- Home
- About Us
- Portfolio
- Contact
- Manual
- Developers

[Logout](#)

### Welcome : 123

Teachers	Guide	Subject
15	5	6
<h4>Create Subject</h4> <a href="#">Create Subject</a>	<h4>Create Subject Related Questions</h4> <a href="#">Create Question</a>	
<h4>Show Subject</h4> <a href="#">Update And Delete All Subject</a>	<h4>Update &amp; Delete Subject Related Questions</h4> <a href="#">Update &amp; Delete Question</a>	
<h4>Student Registration</h4> <a href="#">Registration form</a>		
<h4>Student Data</h4> <a href="#">All Type Of User Data</a>		
<h4>Search Result</h4> <a href="#">Enter ID Number No</a>	<h4>Search Subject Related Result</h4> <a href="#">Search Subject Result</a>	

### Login page

ID Number

Username

Password

[Student Login](#)

Sign In

Sign up



Q-1 : what is base 16

- ☐ hex
- ☐ bin
- ☐ octal
- ☐ dec

Next

## 5.2 Description of block diagram

The block diagram illustrates the architecture of a quiz website that utilizes HTML, CSS, JavaScript, and local storage for data management. Below is a detailed breakdown of each component and their interactions:

### 1. User Device

- **Functionality:** Represents the end-user's computer, tablet, or mobile device where the web application is accessed through a web browser.
- **Interaction:** Users interact with the quiz website via this device, inputting data (like answers) and receiving feedback.

### 2. Web Browser

- **Functionality:** The platform that renders the quiz website. It interprets HTML, CSS, and JavaScript code to present the user interface.
- **Role:** Acts as the environment where the entire quiz application runs, managing all user interactions and displaying results.

### 3. HTML/CSS

- **HTML (HyperText Markup Language):**
  - **Role:** Provides the structural framework of the quiz website, defining elements like headers, questions, answer options, buttons, and other content.
  - **Functionality:** Ensures that the content is organized in a way that is both readable and navigable.
- **CSS (Cascading Style Sheets):**
  - **Role:** Styles the visual aspects of the quiz, such as colors, fonts, spacing, and layout.
  - **Functionality:** Enhances user experience by making the interface attractive and responsive across different devices.

### 4. JavaScript

- **Functionality:** Enables interactivity and dynamic content on the quiz website. It handles user actions, such as clicking buttons, selecting answers, and navigating between quiz pages.
- **Role:**
  - **Quiz Logic:** Implements the logic for quiz creation and management, including timing, scoring, and immediate feedback upon quiz completion.
  - **Data Handling:** Fetches data from local storage, processes user inputs, and displays results.

### 5. Local Storage

- **Functionality:** Acts as a lightweight database within the user's browser, allowing for the storage of quiz-related data, such as:
  - **Quiz Questions:** Questions created by users that are saved for later access.
  - **User Responses:** Answers submitted by users during quizzes, enabling the system to track performance.
  - **Scores and Results:** Stores user scores and feedback for completed quizzes.
- **Role:** Facilitates a persistent storage solution that doesn't require server-side database interactions, making it suitable for small-scale applications and improving loading times.

### 6. Quiz Functionality

- **Components:**
  - **Quiz Creation:** Users can create new quizzes, inputting questions and answer choices, which are then saved to local storage.
  - **Quiz Taking:** Users select answers to quiz questions, with JavaScript managing the process of recording their inputs.
  - **Feedback Display:** After submitting answers, users receive immediate feedback, including.

### 5.3 Implementation

The implementation of a quiz website is grounded in several key theoretical concepts from web development and educational psychology:

1. Web Technologies:
  - HTML provides the structure for the quiz, defining elements like questions and options.
  - CSS styles the interface, enhancing user experience with attractive layouts and colors.
  - JavaScript adds interactivity, handling user inputs, quiz logic, and real-time feedback.
2. Client-Side Scripting:
  - Event-Driven Programming allows JavaScript to respond to user actions (e.g., button clicks) without page refresh.
  - DOM Manipulation enables dynamic changes to the webpage, such as displaying questions or results.
3. Data Storage:
  - Local Storage offers a way to save quiz-related data (like scores and questions) directly in the user's browser, allowing for persistent storage without a server.
4. User Experience Design:
  - User-Centered Design focuses on creating intuitive interfaces that are easy to navigate, improving engagement and satisfaction.
  - Feedback and Engagement are essential for learning; immediate feedback helps users understand their performance and correct mistakes.
5. Educational Theories:
  - Constructivism emphasizes active learning through experiences, allowing users to engage with content and learn from mistakes.
  - Formative Assessment supports ongoing evaluations of understanding, helping users identify areas for improvement.



# **CHAPTER 6**

# **CONCLUSION**

## **5.CONCLUSION**

The implementation of a quiz website effectively integrates various web technologies and educational principles to create a robust learning platform. By utilizing HTML for structure, CSS for styling, and JavaScript for interactivity, the website provides users with an engaging and user-friendly interface. The use of local storage allows for efficient data management, enabling the storage of quiz questions, user responses, and scores directly in the browser without the need for a backend server.

Moreover, the design emphasizes user-centered principles, ensuring intuitive navigation and immediate feedback, which are essential for enhancing the learning experience. Drawing from educational theories such as constructivism and formative assessment, the quiz platform encourages active participation, allowing users to assess their knowledge and identify areas for improvement.

In summary, the combination of these technologies and educational strategies not only fosters a dynamic learning environment but also promotes knowledge retention and engagement. As technology continues to evolve, the potential for quiz websites to offer innovative features and personalized learning experiences will only expand, making them valuable tools for education and self-assessment.

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## URL

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