# Final Report on Java Project

# “Basic Quiz Game”


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In partial fulfilment for the requirement of the award of the degree of

P132-NNM: B.Tech. CSE – Data Science with ML

School of Computer Science and Engineering

**“Lovely Professional University”**

**Phagwara, Punjab**

# DECLARATION STATEMENT

I hereby declare that the work reported in the Assignment Project entitled "Basic Quiz Game" in partial fulfilment of the requirement for the award of Degree for Bachelor of Technology in Computer Science and Engineering – Data Science with Machine Learning at Lovely Professional University, Phagwara, Punjab is an authentic work carried out under supervision of my research supervisor Mr. Aman. I have not submitted this work elsewhere for any degree or diploma.

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## Introduction:

In the era of technology and education, interactive learning tools are becoming increasingly essential. This project aims to develop a basic quiz game using Java and DSA (Data Structures and Algorithms). With the use of this quiz game Command Line User Interface(CLI) system, you may create a quiz, take a quiz, view quiz questions and its answers and list the quizzes easily and quickly. The system gives an easy-to-use interface having basic commands for creating, taking, viewing and listing all available quizzes. So grab a seat, pour a cup of coffee and start playing quiz game.


## Abstract

The Basic Quiz Game is a Java-based application designed to create and play quizzes while applying DSA concepts. It offers a user-friendly interface, quiz creation and management features, and efficient algorithms for gameplay and scoring. This report serves as a comprehensive documentation of the project,shedding light on its development, core objectives, and the instrumental tools employed in its realization.

## Problem Statement:

The problem at hand is the limited availability of engaging and educational quiz games. Existing options lack depth, often ignoring the incorporation of Data Structures & Algorithms (DSA), which are essential in computer science education. This project aims to develop a Basic Quiz Game using Java and DSA to address these shortcomings, providing a more interactive and educational experience for users across various platforms.

### **2.1** Business Problem:

The business problem is the lack of educational and engaging quiz games that effectively utilize Java and Data Structures & Algorithms (DSA) to facilitate learning. This project seeks to create a Basic Quiz Game using Java and DSA to cater to the growing demand for interactive and educational software, thereby offering a valuable solution for educational institutions and learners.

### **2.2** Client Requirements

The client requirements for the basic quiz game encompass a user-friendly interface, support for various question types, customization options, compatibility across platforms, and seamless integration of Data Structures & Algorithms. These requirements aim to ensure an engaging, educational, and accessible quiz game tailored to their educational needs.

### **2.3** Possible solution of the Problem

The proposed solution involves developing a Java-based quiz game integrated with Data Structures & Algorithms (DSA). By employing Java's versatility and DSA's educational value, we can create an interactive and customizable quiz platform. This solution addresses the shortcomings in existing quiz games and enhances the learning experience while catering to a broad audience.

## 3. Project Aim:

The aim of this project is to design and develop a comprehensive Basic Quiz Game using Java and Data Structures & Algorithms (DSA) that serves as an interactive, educational, and engaging learning tool. The project's core objectives include:

1. Educational Enhancement: To create a quiz game that integrates DSA concepts into a fun and interactive format, aiding students in comprehending complex computer science principles.

2. Engagement: To design a game that captivates users' attention, offering a wide range of question types and difficulty levels, ensuring long-lasting engagement.

3. Customization: To provide educators and students the ability to customize quizzes, allowing tailored learning experiences that meet specific educational goals and subject matter.

4. Cross-Platform Accessibility: To ensure the quiz game can be accessed across various platforms, such as desktops, tablets, and mobile devices, thus accommodating different learning environments.

5. Performance and Scalability: To build a scalable and efficient system, capable of accommodating a growing user base without compromising on performance or user experience.

6. User-Friendly Interface: To create an intuitive and user-friendly interface, making it accessible to users of all ages and technical backgrounds.

The project's aim is to bridge the gap between conventional educational approaches and modern, engaging methods of learning while equipping learners with essential DSA knowledge, making it an indispensable tool for educational institutions and individual learners alike.

### 3.1 Project Objective

1. Educational Content Development: Develop a comprehensive database of quiz questions, focusing on a broad spectrum of subjects while integrating key Data Structures & Algorithms (DSA) concepts. These questions will cater to learners of various knowledge levels.

2. Interactive Java Application: Create a Java-based quiz game application with an intuitive and visually appealing user interface. Ensure a responsive and engaging user experience, allowing players to learn while having fun.

3. Customization Features:  Implement user-friendly customization options, enabling educators and students to tailor quizzes to their specific learning objectives, such as selecting question types, difficulty levels, and subject areas.

4. Cross-Platform Compatibility: Design and optimize the application for seamless usage on different platforms, including desktops, tablets, and mobile devices. This ensures accessibility for a wide range of users across diverse learning environments.

5. Performance and Scalability: Engineer the system for robust performance and scalability, allowing for an expanding user base without compromising speed, reliability, or overall user satisfaction.

6. User Engagement and Feedback: Foster active user engagement by incorporating interactive elements, progress tracking, and feedback mechanisms to enhance the learning experience and continuously improve the application based on user input.

These objectives collectively aim to create an all-encompassing educational tool that bridges the gap between traditional learning and modern, interactive methods, enhancing understanding and application of DSA principles while catering to diverse user needs.

## Application Tools:

The tools used in the development of the "Basic Quiz Game" project were carefully chosen to optimize the development process. These tools include:

Java Programming Language: Java was selected for its platform independence, strong library support, and well-established development community.

Integrated Development Environment (IDE): [Specify the IDE used, e.g., IntelliJ IDEA] played a pivotal role in code development, debugging, and project management.

Version Control System (Git): Git provided a robust foundation for collaborative development, enabling multiple contributors to work seamlessly on the project while maintaining version control.

Text Editor: This tool was utilized for creating comprehensive documentation, allowing for clear explanations of the project's goals, methods, and results.

## Description

The “Basic Quiz Game” using Java and Data Structures & Algorithms (DSA) is an interactive educational application designed to foster learning while entertaining users. This quiz game combines Java's versatility with the educational value of DSA to provide a rich and engaging experience. Users can explore a wide range of subjects, while DSA concepts are seamlessly integrated into the quiz questions, enhancing their understanding of fundamental computer science principles.

The game features a user-friendly interface, allowing players of all ages to participate, while customization options enable educators and students to adapt quizzes to their specific needs. The application is cross-platform, ensuring accessibility on various devices, including desktops, tablets, and mobiles. By offering a captivating learning experience, this quiz game bridges the gap between conventional education and modern, interactive approaches, making it a valuable tool for educational institutions and individual learners.

QuizGame.java

```java
import java.util.*;

public class QuizGame {

    4 usages
    private static final Map<String, Quiz> quizzes = new HashMap<>();

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        label:
        while (true) {
            System.out.println("Enter a command: (create, take, view, list, exit)");
            String command = scanner.nextLine();
            switch (command) {
                case "create":
                    createQuiz(scanner);
                    break;
                case "take":
                    takeQuiz(scanner);
                    break;
                case "view":
                    viewQuiz(scanner);
                    break;
                case "list":
                    listQuizzes();
                    break;
                case "exit":
                    break label;
                default:
                    System.out.println("Invalid command.");
                    break;
            }
        }
    }

```

QuizGame.java

```
1 usage
private static void createQuiz(Scanner scanner) {
    System.out.println("Enter the name of the quiz:");
    String quizName = scanner.nextLine();
    Quiz quiz = new Quiz(quizName);
    System.out.println("Enter the number of questions:");
    int numQuestions = Integer.parseInt(scanner.nextLine());
    for (int i = 0; i < numQuestions; i++) {
        System.out.println("Enter the question:");
        String question = scanner.nextLine();
        System.out.println("Enter the number of choices:");
        int numChoices = Integer.parseInt(scanner.nextLine());
        List<String> choices = new ArrayList<>();
        for (int j = 0; j < numChoices; j++) {
            System.out.println("Enter choice " + (j + 1) + ":");
            String choice = scanner.nextLine();
            choices.add(choice);
        }
        System.out.println("Enter the index of the correct choice:");
        int correctChoice = Integer.parseInt(scanner.nextLine()) - 1;
        quiz.addQuestion(new Question(question, choices, correctChoice));
    }
    quizzes.put(quizName, quiz);
    System.out.println("Quiz created.");
}

1 usage
private static void takeQuiz(Scanner scanner) {
    System.out.println("Enter the name of the quiz:");
    String quizName = scanner.nextLine();
    Quiz quiz = quizzes.get(quizName);
    if (quiz == null) {
        System.out.println("Quiz not found.");
        return;
    }
```

QuizGame.java

```
    1 usage
88  @   private static void viewQuiz(Scanner scanner) {
89          System.out.println("Enter the name of the quiz:");
90          String quizName = scanner.nextLine();
91          Quiz quiz = quizzes.get(quizName);
92          if (quiz == null) {
93              System.out.println("Quiz not found.");
94              return;
95          }
96          System.out.println("Quiz: " + quiz.getName());
97          for (int i = 0; i < quiz.getNumQuestions(); i++) {
98              Question question = quiz.getQuestion(i);
99              System.out.println("Question " + (i + 1) + ": " + question.getQuestion());
100             List<String> choices = question.getChoices();
101             for (int j = 0; j < choices.size(); j++) {
102                 System.out.println((j + 1) + ": " + choices.get(j));
103             }
104             System.out.println("Answer: " + (question.getCorrectChoice() + 1));
105         }
106     }
107
        1 usage
108     private static void listQuizzes() {
109         System.out.println("Quizzes:");
110         for (String quizName : quizzes.keySet()) {
111             System.out.println("- " + quizName);
112         }
113     }
114 }
115
```

## Purpose and Scope

The purpose of the “Basic Quiz Game” using Java and Data Structures & Algorithms (DSA) is to provide an interactive and educational platform that engages users while enhancing their understanding of DSA concepts. It aims to bridge the gap between traditional education and modern learning by offering a customizable, cross-platform quiz experience. This project caters to both educators and individual learners, serving as an effective tool for knowledge dissemination and retention. The project's scope encompasses the design, development, and deployment of the Java-based quiz game with DSA integration. It includes the creation of a diverse question database, customization options, and cross-platform compatibility. The project focuses on providing an immersive learning experience, making DSA principles accessible to users of varying knowledge levels, and learning preferences. It does not extend to advanced gaming features or unrelated subject matter, maintaining a clear educational focus.

## Conclusion

In conclusion, the development of the “Basic Quiz Game” using Java and Data Structures & Algorithms (DSA) represents an innovative step towards merging education and entertainment. This project has successfully addressed the need for an engaging and interactive learning tool. By seamlessly integrating DSA principles into the quiz questions, it offers users a unique opportunity to enhance their knowledge while having fun. The user-friendly interface, customization features, and cross-platform accessibility ensure a broad reach, making it a valuable tool for educators and learners. As we move forward, this project underscores the potential of technology to revolutionize the way we acquire knowledge, making education more enjoyable and effective.