



ONLINE LEARNING PLATFORM WITH GRADING AND CERTIFICATION

- OOPS PROJECT

From-

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NOV2023

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ABOUT US

GET TO KNOW US BETTER



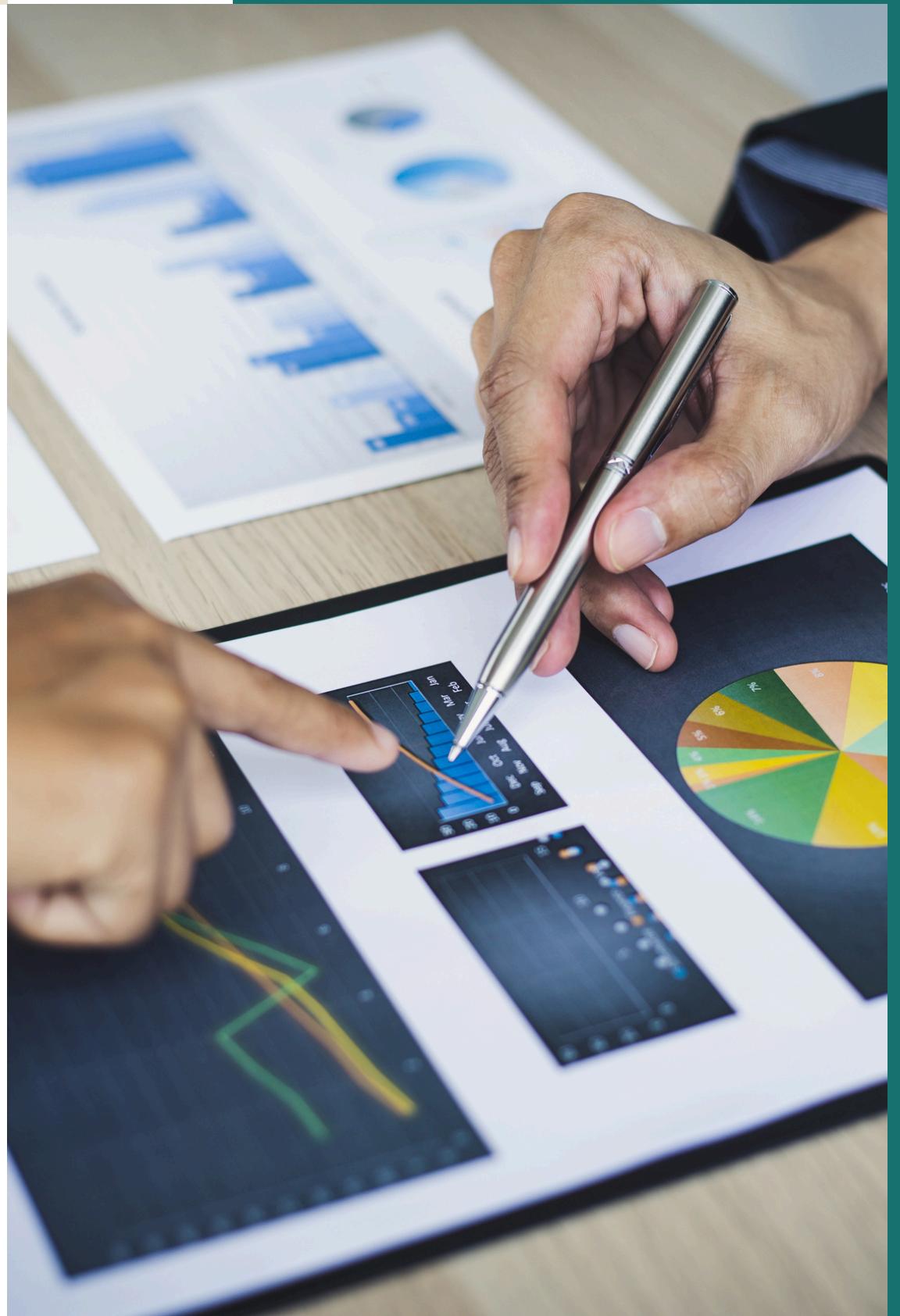
We are Computer Science and Engineering students from SRM University, AP, focused on creating impactful tech solutions. Our "Online Learning Platform with Grading and Certification" project showcases our C++ skills and object-oriented programming knowledge.

This project demonstrates core concepts like inheritance, polymorphism, and exception handling in a modular design. It highlights C++'s adaptability for scalable applications and reflects our dedication to innovative software development.



ABSTRACT

This C++ project implements an LMS using OOP principles for course and quiz management. Administrators can add courses, create MCQs, and display courses. Students can register, log in, enroll in courses, attempt quizzes, and view scores (50% is passing). It uses STL components like vector and map for efficient data handling. The modular design ensures scalability and maintainability for real-world LMS applications.



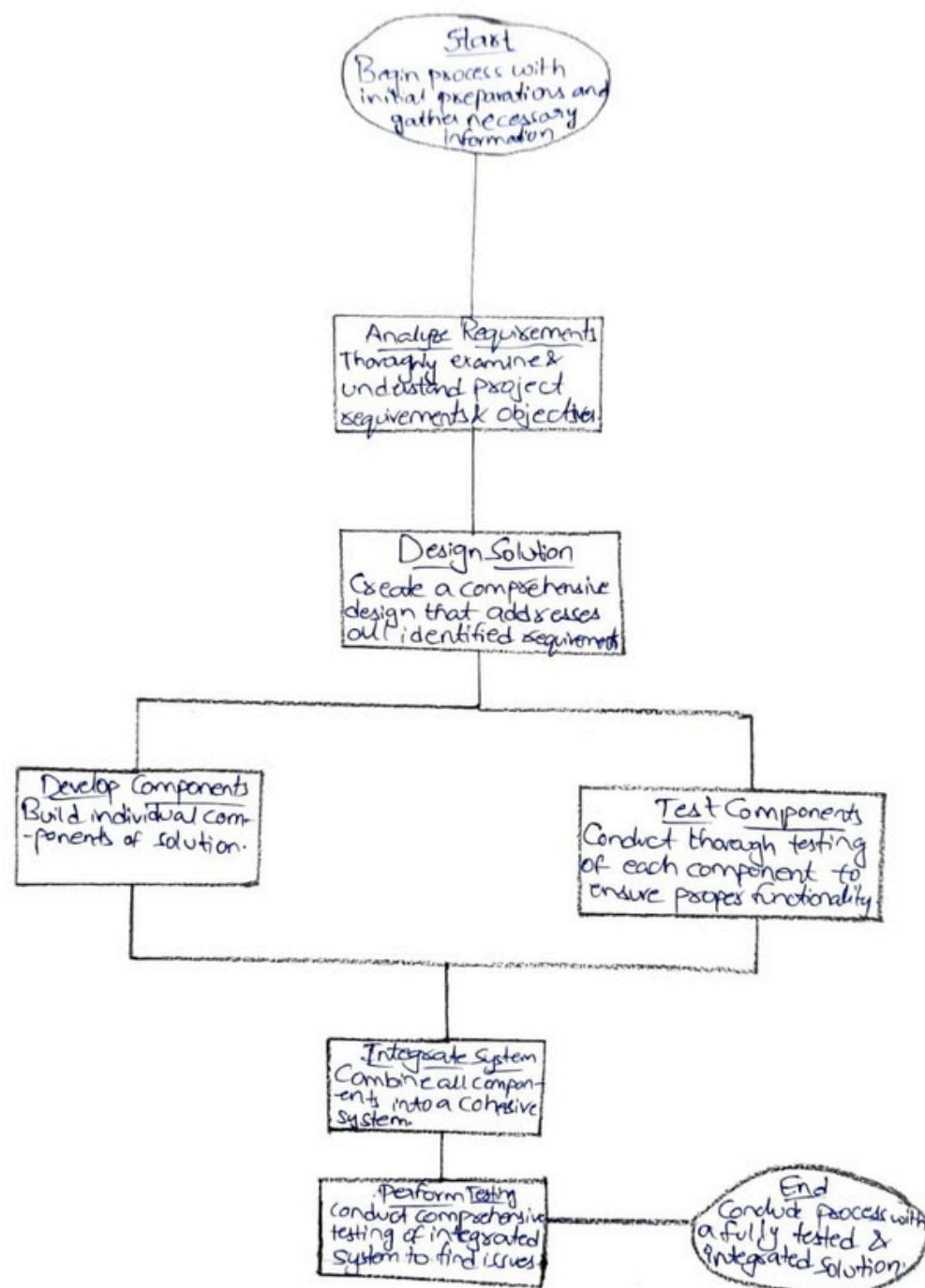
INTRODUCTION



This C++ project is a Learning Management System (LMS) that allows students and administrators to manage courses and quizzes interactively. Admins can add courses, create multiple-choice questions (MCQs) with options and answers, and display available courses. Students can register, log in, enroll in courses, and attempt MCQs, with scores determining if they pass (50% or more). The system leverages Object-Oriented Programming (OOP) principles and uses C++ STL components like vector and map for efficient data handling. It is a modular and scalable foundation for building a real-world LMS.

FLOW CHART

Flow Chart:-



OUTPUT Topic Wise

Inheritance

- 1. Enroll
- 2. Show Courses
- 3. Attempt MCQs
- 4. Logout

Choice: 2

Enrolled courses:

- Data Structures
- Algorithms

cont...

OUTPUT Topic Wise

Polymorphism

- 1. Add Course
- 2. Show Courses
- 3. Add MCQs
- 4. Logout

Choice: 1

Course Name: Operating Systems

Course Code: CS103

cont...

OUTPUT Topic Wise

Exception Handling

```
1. Enroll
```

```
Enter course code to enroll: INVALID_CODE
```

```
Error: Invalid course code.
```

cont...

OUTPUT Topic Wise

STL

2. Show Courses

Available courses:

- Data Structures (CS101)
- Algorithms (CS102)

cont...

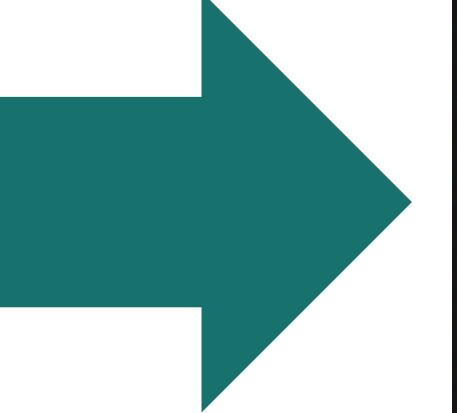
OUTPUT

```
Menu:  
1. Student Login  
2. Admin Login  
3. Exit  
Choice: 1  
Username: Ram  
New user. Registering...  
Roll: 1  
Name: RAM.M  
Password: Ram@45  
Registration successful!
```

```
Menu:  
1. Student Login  
2. Admin Login  
3. Exit  
Choice: 2  
Admin ID: admin  
Password: admin123
```

```
1. Add Course  
2. Show Courses  
3. Add MCQs  
4. Logout  
Choice: 1  
Course Name: DSA  
Course Code: 123
```

```
1. Add Course  
2. Show Courses  
3. Add MCQs  
4. Logout  
Choice: 2  
Available courses:  
- DSA (123)  
- Data Structures (CS101)  
- Algorithms (CS102)
```



```
1. Add Course  
2. Show Courses  
3. Add MCQs  
4. Logout  
Choice: 3  
Course Code: 123  
Number of MCQs: 5  
Question: which of the following data structures uses LIFO (last in, first out) principle?  
Option A: Queue  
Option B: Stack  
Option C: Deque  
Option D: Priority Queue  
Answer (A/B/C/D): B  
Question: What is the time complexity of searching for an element in a balanced binary search tree(BST)?  
Option A: O(n)  
Option B: O(logn)  
Option C: O(nlogn)  
Option D: O(1)  
Answer (A/B/C/D): B  
Question: What sorting algorithm is not stable by nature?  
Option A: Bubble sort  
Option B: Merge sort  
Option C: Quick sort  
Option D: Insertion sort  
Answer (A/B/C/D): C  
Question: What is the auxiliary space complexity of merge sort?  
Option A: O(1)  
Option B: O(logn)  
Option C: O(n)  
Option D: O(nlogn)  
Answer (A/B/C/D): C  
Question: In a graph, the shortest path from a source to all vertices can be found using:  
Option A: DFS  
Option B: BFS  
Option C: Dijkstra's Algorithm  
Option D: Kruskal's Algorithm  
Answer (A/B/C/D): C
```

cont...

OUTPUT

```
1. Add Course
2. Show Courses
3. Add MCQs
4. Logout
Choice: 4

Menu:
1. Student Login
2. Admin Login
3. Exit
Choice: 1
Username: Ram
Password: Ram@45

1. Enroll
2. Show Courses
3. Attempt MCQs
4. Logout
Choice: 1
Available courses:
- DSA (123)
- Data Structures (CS101)
- Algorithms (CS102)
Enter course code to enroll: 123
Enrolled in DSA successfully.

1. Enroll
2. Show Courses
3. Attempt MCQs
4. Logout
Choice: 3
```

cont...

OUTPUT

Answer questions for DSA:

1. Which of the following data structures uses LIFO (last in, first out) principle?

- A) Queue
- B) Stack
- C) Deque
- D) Priority Queue

B

2. What is the time complexity of searching for an element in a balanced binary search tree(BST)?

- A) $O(n)$
- B) $O(\log n)$
- C) $O(n \log n)$
- D) $O(1)$

D

3. What sorting algorithm is not stable by nature?

- A) Bubble sort
- B) Merge sort
- C) Quick sort
- D) Insertion sort

A

4. What is the auxiliary space complexity of merge sort?

- A) $O(1)$
- B) $O(\log n)$
- C) $O(n)$
- D) $O(n \log n)$

C

5. In a graph, the shortest path from a source to all vertices can be found using:

- A) DFS
- B) BFS
- C) Dijkstra's Algorithm
- D) Kruskal's Algorithm

C

Score: 60%

Passed DSA!

cont...

OUTPUT

- ```
1. Enroll
2. Show Courses
3. Attempt MCQs
4. Logout
```

```
Choice: 4
```

```
Menu:
```

- ```
1. Student Login  
2. Admin Login  
3. Exit
```

```
Choice: 3
```

```
PS C:\Users\mamid\OneDrive\Documents\vscode> █
```

cont...

Conclusion



The program implements a role-based Learning Management System (LMS) using object-oriented principles, enabling Admins to manage courses and create MCQs while allowing Students to enroll, view courses, and attempt quizzes with automated scoring. Key features include secure user authentication, dynamic course management, and flexible quiz evaluation. Its modular, scalable design supports future enhancements like progress tracking and advanced reporting, ensuring an efficient and user-friendly system.

References

- Alakad, Zaid. "Integration of ProFormA Grappa into Virtual Programming Lab." PhD diss., Hochschule Hannover, 2024.
- Markoska, Ramona. "Managing ICT solutions for training and evaluation of C++ programming skills in e-learning ecosystem." *New Trends and Issues Proceedings on Humanities and Social Sciences* 6, no. 7 (2019): 33-41.
- Markoska, R., 2019. Managing ICT solutions for training and evaluation of C++ programming skills in e-learning ecosystem. *New Trends and Issues Proceedings on Humanities and Social Sciences*, 6(7), pp.33-41.



THANK YOU

● FOR YOUR NICE ATTENTION