System Requirements Paper

Project Title: Online Course Management System (OCMS)

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**1. Customer Problem Statement**

Current systems utilized by colleges and universities to manage courses and academics are outdated, clunky, and lack integration between departments. It is difficult for students to enroll, keep track of assignments, and communicate with instructors, and it is difficult for instructors to organize course materials and track student progress.

**2. System Requirements**

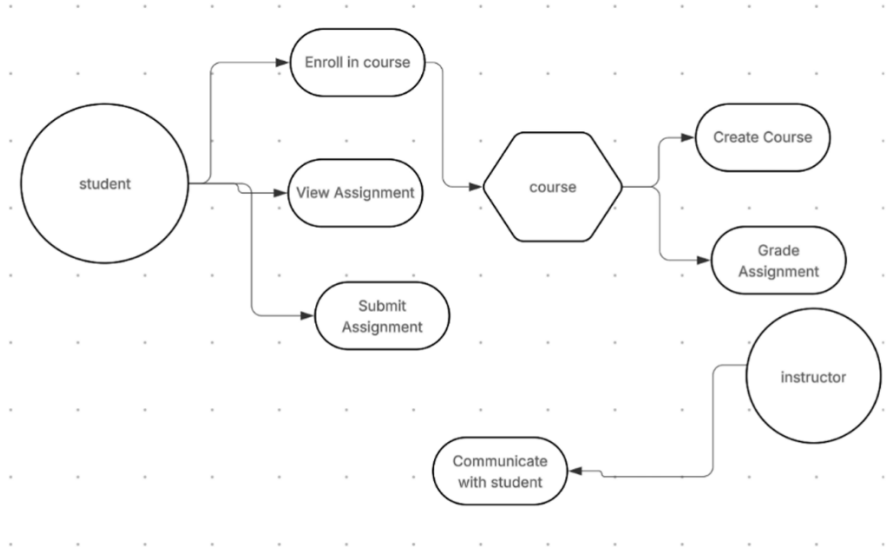
- Web-based accessibility
- Role-based user access (admin, instructor, student)
- Course management (create/edit/delete courses)
- Monitoring assignments and grades
- Message and announcement sections
- Secure login and data protection

**3. Functional Requirements Specification**

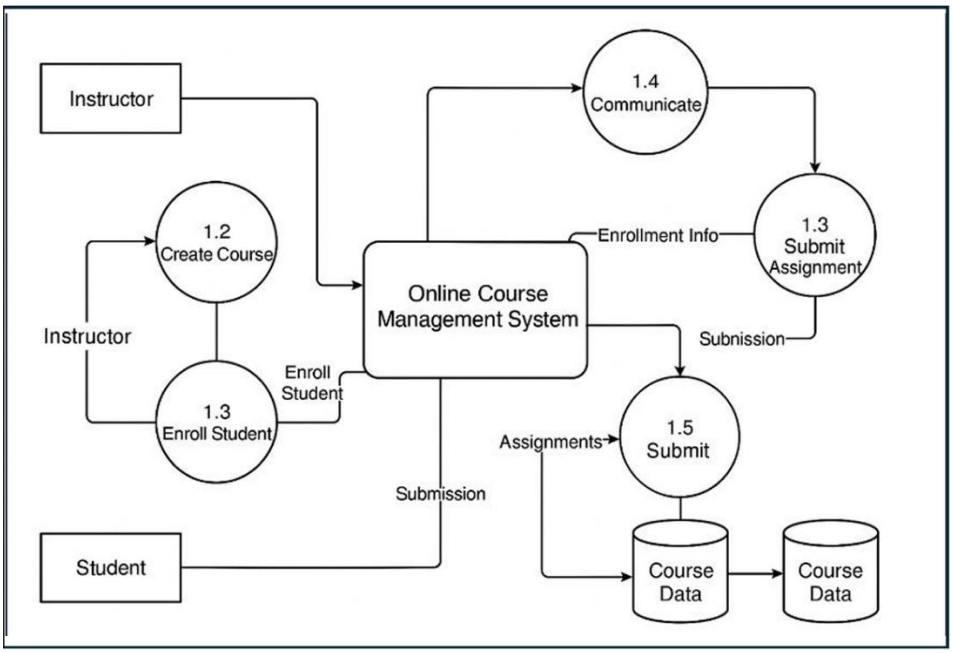
- FR1: The system should allow students to enroll in available courses.
- FR2: The instructors will have the ability to post assignments and grades.
- FR3: The admin will manage user accounts and course choices.
- FR4: The system should allow users to receive and send messages.

- FR5: The system will display user-specific dashboards.

**4. System Sequence Diagram**




5. Activity Diagram




**6. User Interface Details**

- Login Page
- Student Page
- Teacher Dashboard
- Course Page

- Assignment Page
- Message Box

7. Traceability Matrix

| **Requirement ID** | **Description** | **Status** |
|---|---|---|
| FR1 | Student course Enrollment | Implemented |
| FR2 | Instructor grade posting | Implemented |
| FR3 | Admin user management | Implemented |
| FR4 | Massaging system | Implemented |
| FR5 | Dashboard Display | Implemented |

8. System Architecture and Design

- Client: ReactJS Website Application
- Backend: Flask REST API
- Database: MySQL
- Deployment: From AWS EC2 in the cloud with secure HTTPS

9. Algorithms and Data Structures

- Scheduling of courses follows a time-slot sorting approach.
- Grading analysis uses simple math functions like average and middle value.
- User authentication uses a token-based system with JWT.

10. Designing and Building the User Interface

- Responsive design
- Role-based access navigation bar
- UI libraries: TailwindCSS, Bootstrap

11. Design of Tests

- Login, enrollment, and grading of unit tests by the user
- Integration tests for entire workflows (student assignment submission through grading)
- UI consistency manual testing

12. Project Plan

- Weeks 1–2: Requirements gathering and UI prototyping
- Week 3–4: Setting up Backend and DB
- Week 5–6: Frontend building
- Week 7: Integration and testing
- Week 8: Documenting and preparing demo

**References**

Schwalbe, K. (2022). Information Technology Project Management.