**SDLC Case Study Worksheet**

Project Title:  **E-Learning Platfrom**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Team Name: **Team Orbit**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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# **1. Requirements Phase**

Write 5 functional and 2 non-functional requirements for your project.

Functional Requirements:

1. Course Catalog Management\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Video Lecture Access \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Quiz Functionality\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Auto Quiz Grading\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Certification Generation\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Non-Functional Requirements:

1. Performance Requirement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Usability Requirement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# **2. Design Phase**

Draw a simple WBS (3 levels) and one UML diagram (use case/class diagram).  
Work Breakdown Structure (WBS): (Write as list or sketch tree diagram)

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| --- |
| **WBS:**  **1. Project Management**  1.1 Project Planning 1.2 Requirement Gathering & Analysis 1.3 Progress Tracking & Reporting  **2. System Design**  2.1 Database Design   2.1.1 User Database (students, instructors, admins)   2.1.2 Course & Quiz Database   2.1.3 Certification Records 2.2 UI/UX Design   2.2.1 Wireframes   2.2.2 Responsive Design  **3. Development**  3.1 User Management Module   3.1.1 User Registration & Login   3.1.2 Profile Management  3.2 Course Management Module   3.2.1 Course Catalog (Browse/Search/Filter)   3.2.2 Video Upload & Streaming  3.3 Quiz Management Module   3.3.1 Quiz Creation (Instructor Side)   3.3.2 Quiz Attempt (Student Side)   3.3.3 Auto Grading & Feedback  3.4 Certification Module   3.4.1 Certification Rules (pass criteria)   3.4.2 Digital Certificate Generation  **4. Testing**  4.1 Unit Testing 4.2 Integration Testing 4.3 Performance Testing (concurrent users) 4.4 Usability Testing (desktop & mobile)  **5. Deployment**  5.1 Hosting Setup (Server/Cloud) 5.2 Database Migration 5.3 Final Deployment  **6. Maintenance & Support**  6.1 Bug Fixes 6.2 Performance Optimization 6.3 Feature Updates |

UML Sketch (Use Case / Class Diagram/sequence Diagram): (Draw below)

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| --- |
| **Role Based Access**    **Quiz Attempt**    **Quiz Submission**    **Certificate Generation**    Watch Video    Video Playback    Quiz Result Flow    Auto-Graded Result |

# **3. Backend Design**

Attach you design file. And mention the tool that you used.

**4. Development Phase**

Write pseudo-code/code for one key function in your system.  
Pseudo-code Example:  
  
FUNCTION name: autoGradeQuiz(submittedAnswers,correctAnswers)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 INPUT(s): \_\_submittedAnswers, correctAnswers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 PROCESS (steps): \_ 1. Initialize score = 0

2. FOR each question i in submittedAnswers:

IF submittedAnswers[i] == correctAnswers[i]:

score = score + 1\_

3. Calculate percentage = (score / totalQuestions) \* 100

4. IF percentage >= 50:

status = "Pass"

ELSE:

status = "Fail"

5. Store result in database (studentId, quizId, score, status)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 OUTPUT: Return score,percentage,status\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
END FUNCTION

# **5. Testing Phase**

Write 3 test cases.

|  |  |
| --- | --- |
| **Test Case ID** | **Description** |
| Case 1 - All Correct Answers | Verify full marks scenario. |
| Case 2 - All Wrong Answers | Verify failing case. |
| Case 1 – Partial Correct Answers | Verify system correctly calculates partial score and applies pass/fail rule. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Case ID** | **Input(s)** | **Expected Output** | **Result (Pass/Fail)** |
| Case 1 | Submitted=[A,B,C]  correct=[A,B,C] | Score=3,  Percentage=100,  Status=”Pass” | Function returns the expected output without any errors |
| Case 2 | Submitted=[C,B,A]  correct=[A,C,B] | Score=0,  Percentage=0,  Status=”Fail” | Function returns the expected output without any errors |
| Case 3 | Submitted=[A,C,B,D]  correct=[A,B,B,D] | Score=3,  Percentage=75,  Status=”Pass” | Function returns the expected output without any errors |

# **6. Reflection**

1. Which SDLC phase was the most challenging? Why?  
 The Implementation Phase was the most challenging because it required writing actual code to bring the design to life. Implementing features like auto quiz grading, video lectures, and certificate generation demanded technical knowledge, integration between frontend and backend, and handling various edge cases. Unlike the earlier phases (requirements and design), this phase involved real problem-solving and debugging, which made it the most difficult.\_

2. Which SDLC model (Waterfall, Agile) best fits this project? Why?  
 Agile Model is the best fit for this project because there can be proper changes ,scope can evolve according to the standards and best practices to give the best experience to the users, that’s why Agile Model is the best fit , Waterfall can be a best fit if we have the complete requirements at once without any changes or improvement with respect to time.\_

3. How you determine functional and non-functional requirements?  
 Through proper surveys and by taking inspiration from multiple sites, we have gathered the functional and non-functional requirements.

# **7. Attachments**

Along with this filled worksheet, provide supported document of design methodologies/diagrams and document of types of testing techniques.