



DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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| Course          | <b>SE LAB</b>   |
| Class and batch | TE Computer Science and Engineering - Batch _A4   |
| Aim             | To design and analyze the <b>Data Flow Diagrams (DFDs)</b> for a Learning Management System (LMS), illustrating the flow of data between users, processes, and data stores, and understanding the system's functional behavior.   |
| objective       | <p>To understand the concept and purpose of <b>Data Flow Diagrams</b> in system analysis.</p> <p>To create a <b>Level 0 DFD</b> showing high-level interactions between external entities and the LMS.</p> <p>To create a <b>Level 1 DFD</b> breaking down the LMS into core processes and identifying data flows and data stores.</p> <p>To visualize how <b>students, teachers, and admins interact with the system</b> and how information moves internally.</p> <p>To provide a clear blueprint for <b>system design and implementation</b> based on data flow understanding.</p> |

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| Data Flow Diagram: – High-Level Overview |                       |
| Data Flow Diagram:                       | – High-Level Overview |

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|--------------------|--|
|                    | <pre> graph TD     Student[Student] -- "Login / Enrollment / Assignment Submission" --&gt; LMS[LMS System]     Student -- "Course Materials, Grades, Notifications" --&gt; LMS     Teacher[Teacher] -- "Assignment Submissions, Enrollment Updates" --&gt; LMS     Teacher -- "Login / Upload Materials / Grade Assignments" --&gt; LMS     Admin[Admin] -- "System Status Reports" --&gt; LMS     Admin -- "Login / Manage Users &amp; Courses" --&gt; LMS     </pre> <p><b>Decomposed Processes</b></p> <pre> graph TD     Admin[Admin] -- "Invalid Login" --&gt; UserAuth[User Authentication]     Admin -- "Login" --&gt; UserAuth     Student[Student] -- "Login" --&gt; UserAuth     Teacher[Teacher] -- "Login" --&gt; UserAuth     UserAuth -- "Valid Login" --&gt; UserRecords[User Records]     UserAuth -- "Valid Login" --&gt; StudentDashboard[Student Dashboard]     UserAuth -- "Valid Login" --&gt; AdminDashboard[Admin Dashboard]     UserAuth -- "Valid Login" --&gt; TeacherDashboard[Teacher Dashboard]     UserAuth -- "Valid Login" --&gt; CourseManagement[Course Management]     UserRecords --&gt; StudentDashboard     UserRecords --&gt; AdminDashboard     UserRecords --&gt; TeacherDashboard     UserRecords --&gt; CourseManagement     StudentDashboard -- "Submit Assignment" --&gt; AssignmentManagement[Assignment Management]     AssignmentManagement -- "Grade Assignments" --&gt; TeacherDashboard     AssignmentManagement -- "View Materials / Grades" --&gt; ContentGrading[Content &amp; Grading]     AssignmentManagement -- "Valid Login" --&gt; StudentDashboard     AssignmentManagement -- "Valid Login" --&gt; TeacherDashboard     AssignmentManagement -- "Valid Login" --&gt; ContentGrading     AssignmentManagement -- "Grade Assignments" --&gt; TeacherDashboard     AssignmentManagement -- "View Materials / Grades" --&gt; ContentGrading     AssignmentManagement -- "Upload Materials" --&gt; ContentGrading     AssignmentManagement -- "Create/Manage Courses" --&gt; CourseManagement     AssignmentManagement -- "Enroll in Course" --&gt; StudentDashboard     AssignmentManagement -- "View Materials / Grades" --&gt; ContentGrading     AssignmentManagement -- "Upload Materials" --&gt; ContentGrading     AdminDashboard -- "Manage Users &amp; Courses" --&gt; CourseManagement     AdminDashboard -- "Create/Manage Courses" --&gt; CourseManagement     AdminDashboard -- "View Materials / Grades" --&gt; ContentGrading     AdminDashboard -- "Upload Materials" --&gt; ContentGrading     AdminDashboard -- "Grade Assignments" --&gt; TeacherDashboard     AdminDashboard -- "View Materials / Grades" --&gt; ContentGrading     AdminDashboard -- "Upload Materials" --&gt; ContentGrading     TeacherDashboard -- "View Materials / Grades" --&gt; ContentGrading     TeacherDashboard -- "Upload Materials" --&gt; ContentGrading     TeacherDashboard -- "Grade Assignments" --&gt; AssignmentManagement     TeacherDashboard -- "View Materials / Grades" --&gt; ContentGrading     TeacherDashboard -- "Upload Materials" --&gt; ContentGrading     ContentGrading -- "Grades &amp; Feedback" --&gt; TeacherDashboard     ContentGrading -- "Grades &amp; Feedback" --&gt; AssignmentManagement     </pre> |
| <b>References:</b> | <p><a href="https://plantuml.com/">https://plantuml.com/</a></p> <p>Moodle doc</p> <p><a href="https://www.geeksforgeeks.org/software-engineering/what-is-dfddata-flow-diagram/">https://www.geeksforgeeks.org/software-engineering/what-is-dfddata-flow-diagram/</a></p>  |
| <b>CONCLUSION:</b> | In this experiment, we designed <b>Level 0 and Level 1 Data Flow Diagrams</b>  |



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(DFDs) for the Learning Management System (LMS).

- The **Level 0 DFD** provided a high-level overview of the system, showing interactions between external entities (**students, teachers, and admin**) and the LMS as a single process.
- The **Level 1 DFD** decomposed the system into core processes such as **User Authentication, Course Management, Assignment Management, and Content & Grading**, and illustrated how data flows between processes, data stores, and users.

From this exercise, we conclude that **DFDs are effective for understanding system functionality and data movement**. They help in identifying system boundaries, internal processes, and storage requirements, which is essential for **system analysis, design, and documentation**. This provides a clear blueprint for developers and stakeholders to implement and manage the LMS efficiently.