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INTRODUCTION TO SOFTWARE ENGINEERING

ASSIGNMENT #2

GROUP MEMBERS:

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ASSIGMNET# 2

DATA FLOW DIAGRAMS

USE CASE DIAGRAMS

TASKS:

Develop the following artifacts for your project:

1. Use Case Diagram identifying important actors, use cases and system boundaries for your project.

2. Develop Context level and Level 1 DFD of your project showing all the external entities along with all the data flows.

DATA FLOW DIAGRAMS

DFD CONTEXT LEVEL:

External Entities:

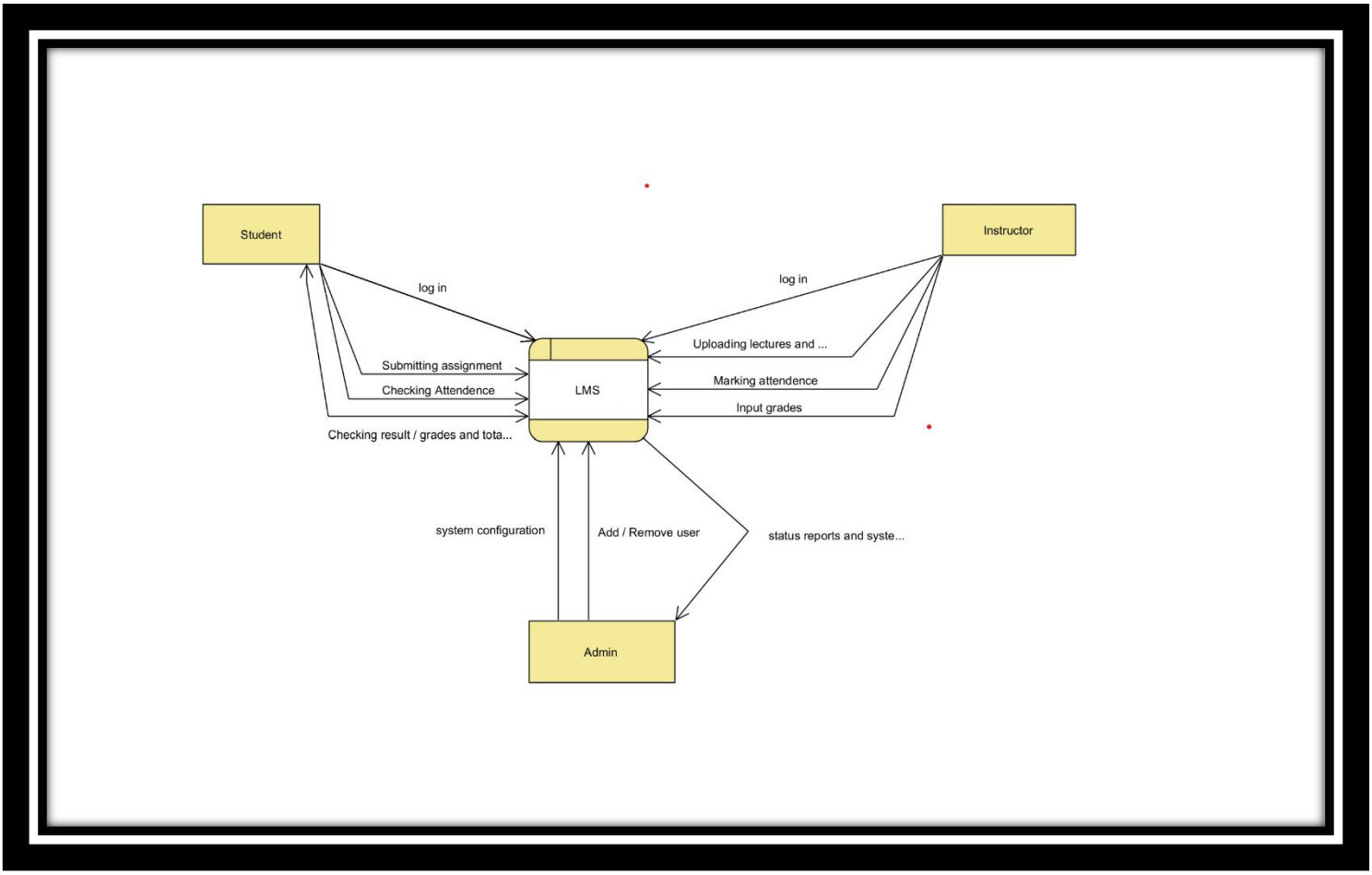
1. **Students**
    - ❖ Interact with the LMS to access learning materials, submit assignments, view attendance records, and check their grades or provisional results.
2. **Instructors**
    - ❖ Upload learning materials, grade assignments, mark attendance, and provide feedback on student submissions.
3. **Admins**

- ❖ Oversee and monitor system processes such as attendance and result management.

PROCESS:

Learning Management System (LMS)
The LMS serves as the core system that facilitates the interactions between students, instructors, and admins by managing all data flows, materials, and information.

DFD CONTEXT LEVEL



DFD LEVEL 1:

EXTERNAL ENTITIES:

1 **Students**

2 **Instructors**

3 **Admins**

PROCESS:

Processes:

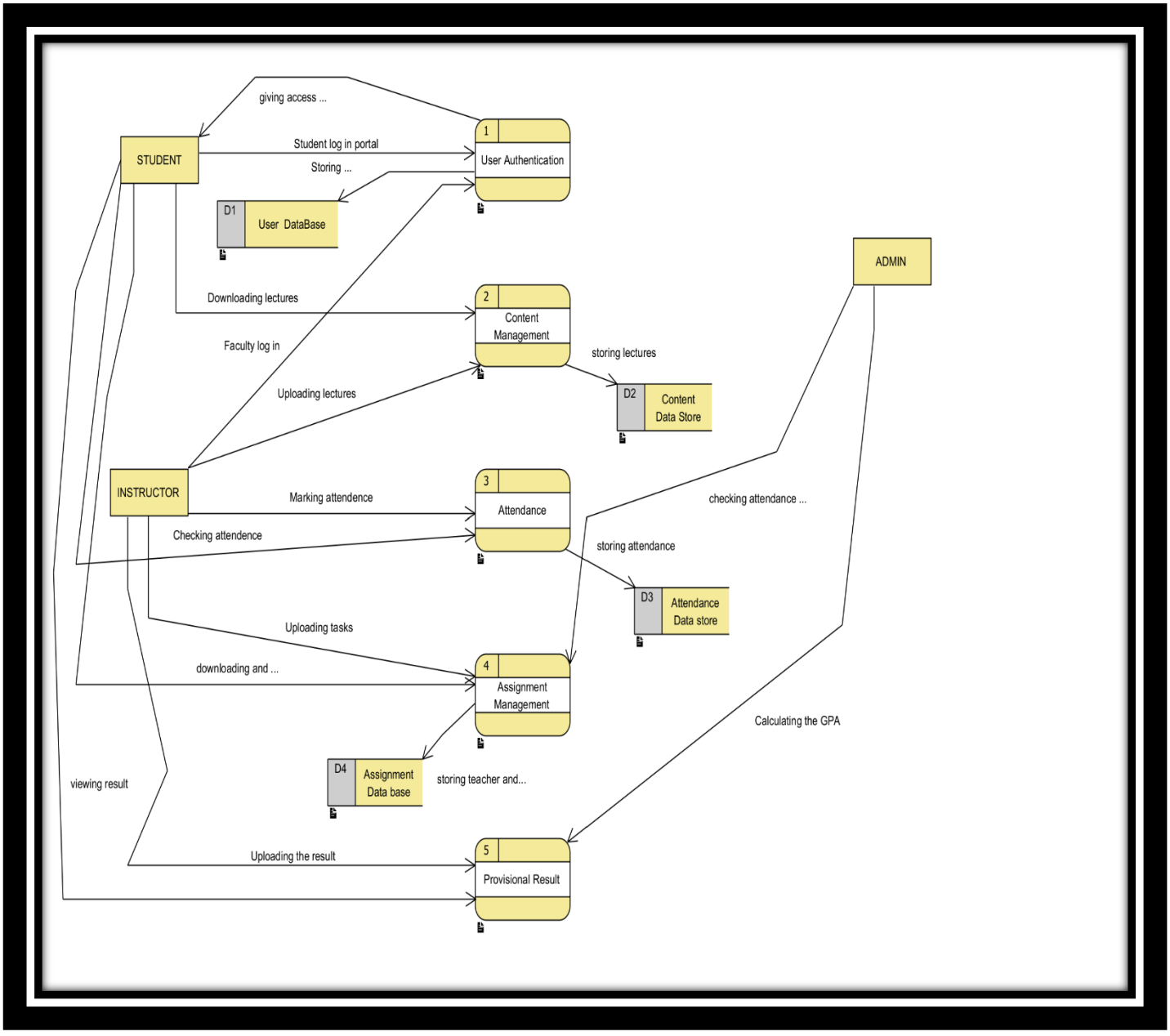
1. **User Authentication**
    - ❖ Validates login credentials for Students, Instructors, and Admins.
    - ❖ Provides access to other processes upon successful authentication.
2. **Content Management**
    - ❖ Instructors upload learning materials.
    - ❖ Students access/download learning materials.
3. **Assignment Management**
    - ❖ Students submit assignments.
    - ❖ Instructors view and grade assignments.
4. Provisinol Result
    - ❖ Instructors input grades and provide feedback.
    - ❖ Students retrieve grades and feedback.
5. **Attendance Management**
    - ❖ Instructors mark student attendance.

- ❖ Students view their attendance records.
- ❖ Admins oversee attendance records for monitoring.

Data Stores:

1. **User Accounts Database**
    - ❖ Stores login credentials and user details (students, instructors, admins).
2. **Content Management**
    - ❖ Stores course materials uploaded by instructors.
3. **Assignments Database**
    - ❖ Stores assignments submitted by students.
4. **Grades Database**
    - ❖ Stores grades and feedback provided by instructors.
5. **Attendance Records Database**
    - ❖ Stores attendance records for students.

DFD LEVEL 1 LMS



USE CASE DIAGRAM OF LMS

Actors:

1. Student
2. Instructor
3. Admin
4. Authentication Service
5. Payment Gateway

Use Cases (Grouped by Actor):

1. Student Use Cases:

- Login (Interacts with Authentication Service)
- Sign Up / Register (Interacts with Authentication Service)
- Enroll in Course
- Drop Course
- Upload Assignment
- View Grades
- View Attendance
- Profile Customization
- Give Feedback to Course/Instructor
- Make Payment (Interacts with Payment Gateway)

- View Payment History
- Request Refund

2. Instructor Use Cases:

- Create Course
- Edit/Delete Course
- Upload Learning Materials
- Create Assignment
- Upload Grades
- Mark Attendance
- Edit Attendance
- Track Student Progress
- Manage Roles and Permissions
- Add/Remove Student or Instructor

3. Admin Use Cases:

- Manage System Settings
- Manage Security
    - Set Password Policies
    - Enable/Disable 2FA
    - Monitor Login Activity

    - Deactivate/Reactivate Account
- Course Management
    - Create Course
    - Remove Course
    - Generate Reports
- Manage Payments
    - View Payment Transactions
    - Manage Refunds
    - Set Course Prices

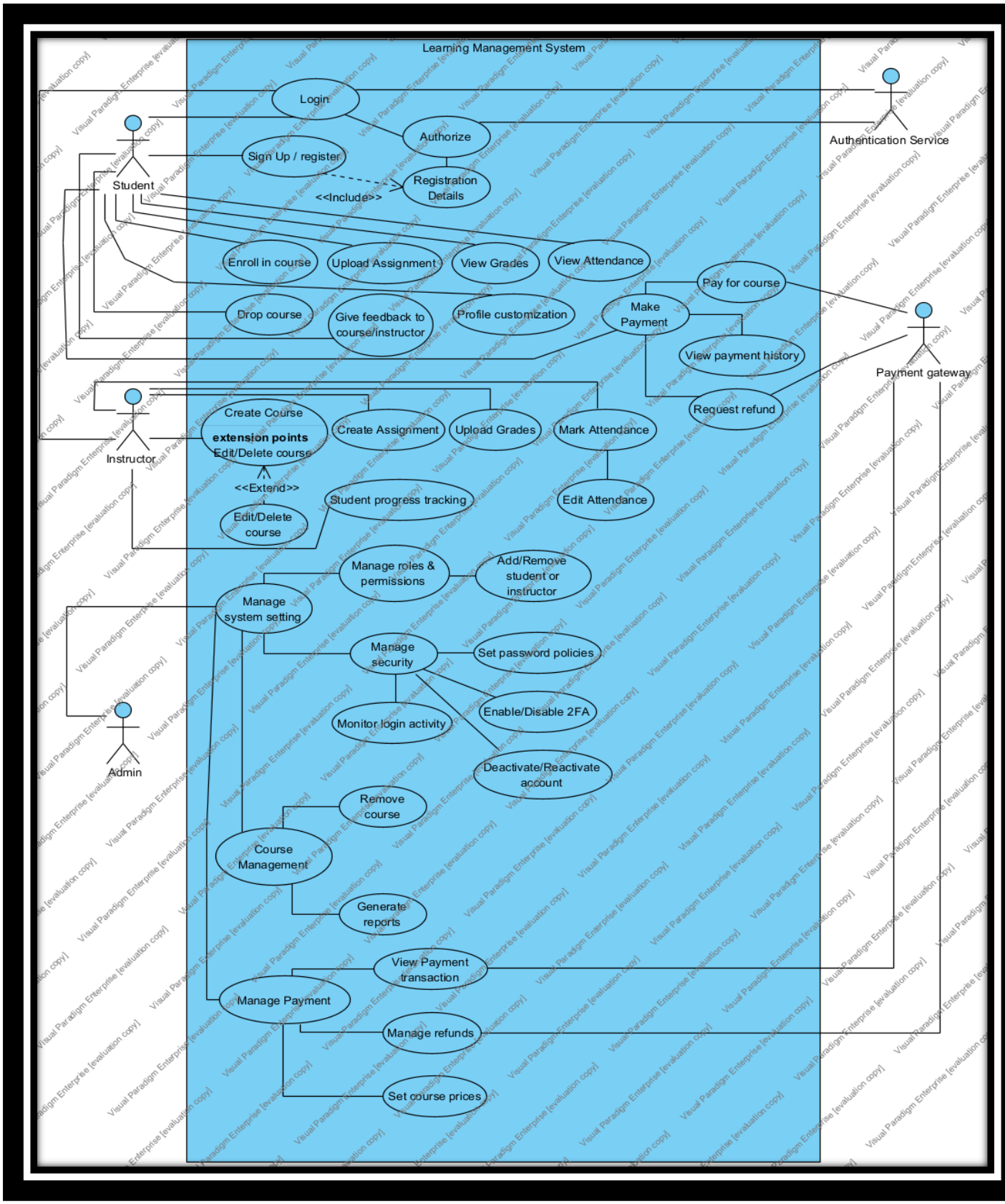
4. Authentication Service:

- Authorize Users for Login and Registration.

5. Payment Gateway:

- Pay for Course
- Request Refund

USE CASE DIAGRAM LMS


Learning Management System
Login
Authorize
Authentication Service
Sign Up / register
Registration Details
<<Include>>
Student
Enroll in course
Upload Assignment
View Grades
View Attendance
Pay for course
Drop course
Give feedback to course/instructor
Profile customization
Make Payment
View payment history
Payment gateway
Request refund
Instructor
Create Course
extension points
Edit/Delete course
Create Assignment
Upload Grades
Mark Attendance
<<Extend>>
Edit/Delete course
Student progress tracking
Edit Attendance
Manage roles & permissions
Add/Remove student or instructor
Manage system setting
Manage security
Set password policies
Admin
Monitor login activity
Enable/Disable 2FA
Deactivate/Reactivate account
Remove course
Course Management
Generate reports
View Payment transaction
Manage Payment
Manage refunds
Set course prices