Design Patterns Projects 2025

E-Learning Platform

The E-Learning Platform is an application that enables students and instructors to interact through virtual classrooms. It supports features such as course management, student registration and content delivery. Role-based access allows instructors to create and manage courses, while students can enroll and access materials.

Modules and Features

User Registration and Login

- **Description:** Instructors, students, and admins can sign up / sign in using unique credentials.
- **Functionality:** role-based access control (student / instructor / admin).

Course Creation & Management

- **Description:** Instructors create and manage courses, modules, lessons, and associated resources (videos, PDFs, links).
- **Functionality:** Add/edit/remove courses, organize content into modules/lessons, upload files, set visibility (draft/published).

Enrollments & Access Control

- **Description:** Students enroll in courses, and instructors control who can access course content.
- **Functionality:** Allows manual student enrollments and provides instructors with the ability to approve enrollment requests.

Assignments & Submissions

- **Description:** Instructors assign homework and students submit responses online.
- **Functionality:** Create assignment with due date and submission type (file upload, text, link).

Search & Course Catalog

- **Description:** Browse and search available courses by title, category, instructor.
- **Functionality:** Full-text search, filters (category, level, price), recommended courses, pagination.

Deliverables

- **System with GUI:** A functional application using any programming language and any platform with a user-friendly interface implementing the modules above.
- **Design Patterns:** Implement **at least 4 appropriate** software design patterns.
- **UML Class Diagram:** Provide a UML class diagram illustrating system architecture and showing where the design patterns are used.

Bonus Opportunities

- **Extra Design Patterns:** (use more than four useful patterns, clearly document where and why).

Grading Rubric

Requirement	Mark
User Registration and Login	10
Course Creation & Management	10
Enrollments & Access Control	10
Content Delivery (Lessons & Media)	10
Assignments & Submissions	10
Apply 4 Software Design Patterns	40
GUI Design and Usability	10
Bonus (e.g., Extra Patterns, Enhanced GUI, …etc)	

Online Food Ordering System

- The Online Food Ordering System is a web/desktop application that connects customers with restaurants for ordering meals online. Customers can browse menus, place orders, and track delivery status, while restaurants manage menu items, process orders, and update availability. The system also integrates payment options.

Modules and Features

User Registration and Login

- **Description:** Customers, restaurant owners, and delivery staff can sign up / log in using unique credentials.
- **Functionality:** role-based access (customer / restaurant / delivery).

Restaurant & Menu Management

- **Description:** Restaurants manage their profiles, menus, and food items.
- **Functionality:** Add/edit/remove food items, categorize menus, update availability, set prices, upload images.

Search & Browse Restaurants/Food

- **Description:** Customers browse available restaurants and dishes.
- **Functionality:** Filters such as location, rating and delivery time. Search by food item or restaurant.

Cart & Ordering

- **Description:** Customers add food items to a virtual cart and place orders.
- **Functionality:** Manage item quantities, choose payment methods (cash/card), confirm order.

Order Tracking

- **Description:** Customers can track the status of their orders.
- **Functionality:** Order updates such as (order placed, confirmed, being prepared, out for delivery, delivered).

Ratings & Reviews

- **Description:** Customers provide feedback on food and service.
- **Functionality:** Such as star ratings, text reviews, photo reviews.

Deliverables

- **System with GUI:** A functional application using any programming language and any platform with a user-friendly interface implementing the modules above.
- **Design Patterns:** Implement at least **4 appropriate software design patterns**.
- **UML Class Diagram:** Provide a UML class diagram showing the architecture and applied patterns.

Bonus Opportunities

- **Extra Design Patterns:** (use more than four useful patterns, clearly document where and why).

Grading Rubric

Requirement	Mark
User Registration and Login	10
Restaurant & Menu Management	10
Search & Browse Restaurants/Food	10
Cart & Ordering & Order Tracking	10
Ratings & Reviews	10
Apply 4 Software Design Patterns	40
GUI Design and Usability	10
Bonus (e.g., Extra Patterns, Enhanced GUI, …etc)	

Cinema Ticket Booking System

The Cinema Ticket Booking System is a desktop or web application designed to automate the process of booking movie tickets. Users can browse movie schedules, select seats, and make payments online, while administrators manage movie listings, show timings, and seat availability. The system provides seat allocation and booking confirmation.

Modules and Features

User Registration and Login

- **Description:** Customers and admins can register and log in with unique credentials.
- **Functionality:** role-based access (customer - admin).

Movie & Show Management

- **Description:** Admins add and manage movies, showtimes, halls, and ticket availability.
- **Functionality:** Add/edit/remove movies, assign showtimes, set hall capacity, update status (active/inactive).

Browse Movies & Showtimes

- **Description:** Customers can browse upcoming and currently running movies.
- **Functionality:** Search/filter by genre, language, showtime, date, hall, ratings.

Seat Selection & Booking

- **Description:** Customers select seats from the available hall layout and book tickets.
- **Functionality:** multiple seat selection, booking confirmation.

Cart & Payment

- **Description:** Customers proceed to checkout with selected tickets.
- **Functionality:** Select payment method.

Ratings & Reviews

- **Description:** Customers provide feedback on movies.
- **Functionality:** Post reviews and ratings.

Deliverables

- **System with GUI:** A functional application using any programming language and any platform with a user-friendly interface implementing the modules above.
- **Design Patterns:** Implement at least **4 appropriate software design patterns**.
- **UML Class Diagram:** Provide a UML class diagram showing the architecture and applied patterns.

Bonus Opportunities

- **Extra Design Patterns:** (use more than four useful patterns, clearly document where and why).

Grading Rubric

Requirement	Mark
User Registration and Login	10
Movie & Show Management	10
Browse Movies & Showtimes Seat Selection	10
Cart & Payment	10
Ratings & Reviews	10
Apply 4 Software Design Patterns	40
GUI Design and Usability	10
Bonus (e.g., Extra Patterns, Enhanced GUI, …etc)	

Clinic Appointment System (CAS)

The Clinic Appointment System is an application that allows patients to schedule medical appointments with doctors. Patients can register, book appointments, and receive reminders, while doctors manage their schedules. Administrators oversee clinic operations, including doctor availability and patient data.

Modules and Features

User Registration and Login

- **Description:** Patients, doctors, and admins can sign up / log in with unique credentials.
- **Functionality:** role-based access (patient / doctor / admin).

Doctor & Specialty Management

- **Description:** Admins and doctors manage doctor profiles, specialties, consultation hours, and availability.
- **Functionality:** Add/edit/remove doctors, set working hours, associate doctors with specialties.

Appointment Booking

- **Description:** Patients book appointments with doctors based on availability.
- **Functionality:** appointment scheduling, select date/time, prevent double bookings, booking confirmation.

Appointment Management (Doctors/Admins)

- **Description:** Doctors and admins manage appointment requests and schedules.
- **Functionality:** View daily/weekly schedules, approve/cancel/reschedule appointments, block slots for leave.

Billing & Payments

- **Description:** Handle consultation fees and payments.
- **Functionality:** Select payment method.

Deliverables

- **System with GUI:** A functional application using any programming language and any platform with a user-friendly interface implementing the modules above.
- **Design Patterns:** Implement at least **4 appropriate software design patterns**.

- **UML Class Diagram:** Provide a UML class diagram showing the architecture and applied patterns.

Bonus Opportunities

- **Extra Design Patterns:** (use more than four useful patterns, clearly document where and why).

Grading Rubric

Requirement	Mark
User Registration and Login	10
Doctor & Specialty Management	10
Appointment Booking	10
Appointment Management	10
Billing & Payments	10
Apply 4 Software Design Patterns	40
GUI Design and Usability	10
Bonus (e.g., Extra Patterns, Enhanced GUI, …etc)	

Job Sphere

The JobSphere is a platform that connects job seekers with employers. It allows job seekers to search for job openings, create profiles, and apply for jobs, while employers can post job listings, search for candidates, and manage their hiring process. The system supports two main user roles (Applicants and Companies) each with its own set of features.

Modules and Features

User Registration and Login

- **Description:** Both applicants and companies can register and log in using secure credentials.
- **Functionality:** role-based access (Applicant / Company).

Job Search & Listings (Applicants)

- **Description:** Applicants can browse and search for job opportunities based on preferred criteria.
- **Functionality:** Search using keywords and filters, View a list of matching jobs.

Job Details & Applications (Applicants)

- **Description:** Applicants can view detailed job information and apply directly through the platform.
- **Functionality:** View job responsibilities and requirements, Apply with a resume upload, Save jobs for later, Manage applicant profile.

Job Posting & Management (Companies)

- **Description:** Companies can create and manage job listings.
- **Functionality:** Post new job openings. Edit, pause, or remove listings.

Application Management (Companies)

- **Description:** Companies can review and manage applications submitted by applicants.
- **Functionality:** View applicant profiles and resumes, Track application status.

Candidate Search (Companies)

- **Description:** Companies can search for potential candidates who applied to their job openings.
- **Functionality:** Search and view applicant details.

Deliverables

- **System with GUI:** A functional application using any programming language and any platform with a user-friendly interface implementing the modules above.
- **Design Patterns:** Implement at least **4 appropriate software design patterns**.
- **UML Class Diagram:** Provide a UML class diagram showing the architecture and applied patterns.

Bonus Opportunities

- **Extra Design Patterns:** (use more than four useful patterns, clearly document where and why).

Grading Rubric

Requirement	Mark
User Registration and Login	10
Job Search & Listings	10
Job Details & Applying	10
Job Posting & Management	10
Application Management (Companies)	10
Apply 4 Software Design Patterns	40
GUI Design and Usability	10
Bonus (e.g., Extra Patterns, Enhanced GUI, …etc)	