

Decorator Design Pattern:

In this lab, you will implement the **Decorator Pattern** to design a **flexible booking system** for **Amanullah Convention Hall**. The system can book different events and dynamically add extra services.

Problem Statement:

Amanullah Convention Hall provides a **basic hall booking service**. However, customers can book the hall for different events such as:

1. **Wedding Ceremony**
2. **Birthday Party**
3. **IELTS Exam**
4. **Tech Workshop**

Each type of event requires **different setups**, and customers can choose **additional services** such as:

- **Catering Service** (Food & Drinks)
- **Audio-Visual Setup** (Speakers, Microphones, Projector)
- **Extra Seating** (More chairs & tables)

You need to design a **flexible booking system** where the hall can be dynamically decorated with these services.

Tasks:

Define the Component Interface

Create an interface HallBooking with the following methods:

- `getDescription()`: Returns the description of the hall booking.
 - `getCost()`: Returns the total cost of the booking.
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Implement the Concrete Component (Base Hall Booking)

Create a class BasicHallBooking that implements HallBooking. This represents a simple hall booking without any special event setup.

Create Concrete Decorators for Different Events

Implement four decorators that extend HallBooking:

- WeddingDecorator: Adds **wedding-specific** decorations and services.
- BirthdayPartyDecorator: Adds **birthday-specific** decorations.
- IELTSExamDecorator: Adds **exam-related** arrangements.
- TechWorkshopDecorator: Adds **workshop-specific** equipment.

Each decorator should modify the **description** and **cost** accordingly.

Create Additional Service Decorators

Create decorators for **extra services**:

- CateringServiceDecorator: Adds **food & drinks**.
- AudioVisualDecorator: Adds **speakers, microphones, and projector**.
- ExtraSeatingDecorator: Adds **more chairs & tables**.

Each service should **increase the cost** and update the **description**.

Implement a Test Program

- Allow a user to **book the hall for an event**.
- Allow them to **add extra services** dynamically.
- Print the **final booking details** with **total cost**.

Example Output

Case 1: Booking a Wedding with Catering and Audio-Visual Setup

Booking Details: Basic Hall, Wedding Setup, Catering Service, Audio-Visual Setup

Total Cost: BDT 1,20,000

Case 2: Booking an IELTS Exam with Extra Seating

Booking Details: Basic Hall, IELTS Exam Setup, Extra Seating

Total Cost: BDT 1,00,000