Movie Ticket Booking System

A CLI-based system in Python for booking movie tickets.

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INTRODUCTION

- The Movie Ticket Booking System is a Python-based command-line application designed to simplify the process of browsing, booking, and managing movie tickets.
- It supports both regular users and administrators, allowing users to view available movies, check showtimes, select seats, and manage their bookings, while admins can add or remove movies and showtimes.
- The system uses a JSON file for data storage, ensuring portability and ease of use without external dependencies.
- With features like seat maps, loyalty points, and fun Easter eggs, this project demonstrates practical object-oriented programming and user-friendly CLI design.

System Architecture

Login / Register

User authentication

Browse Movies

View available films

View Showtimes

Check schedules

Book / Cancel

Manage tickets

Save to JSON

Persistent storage

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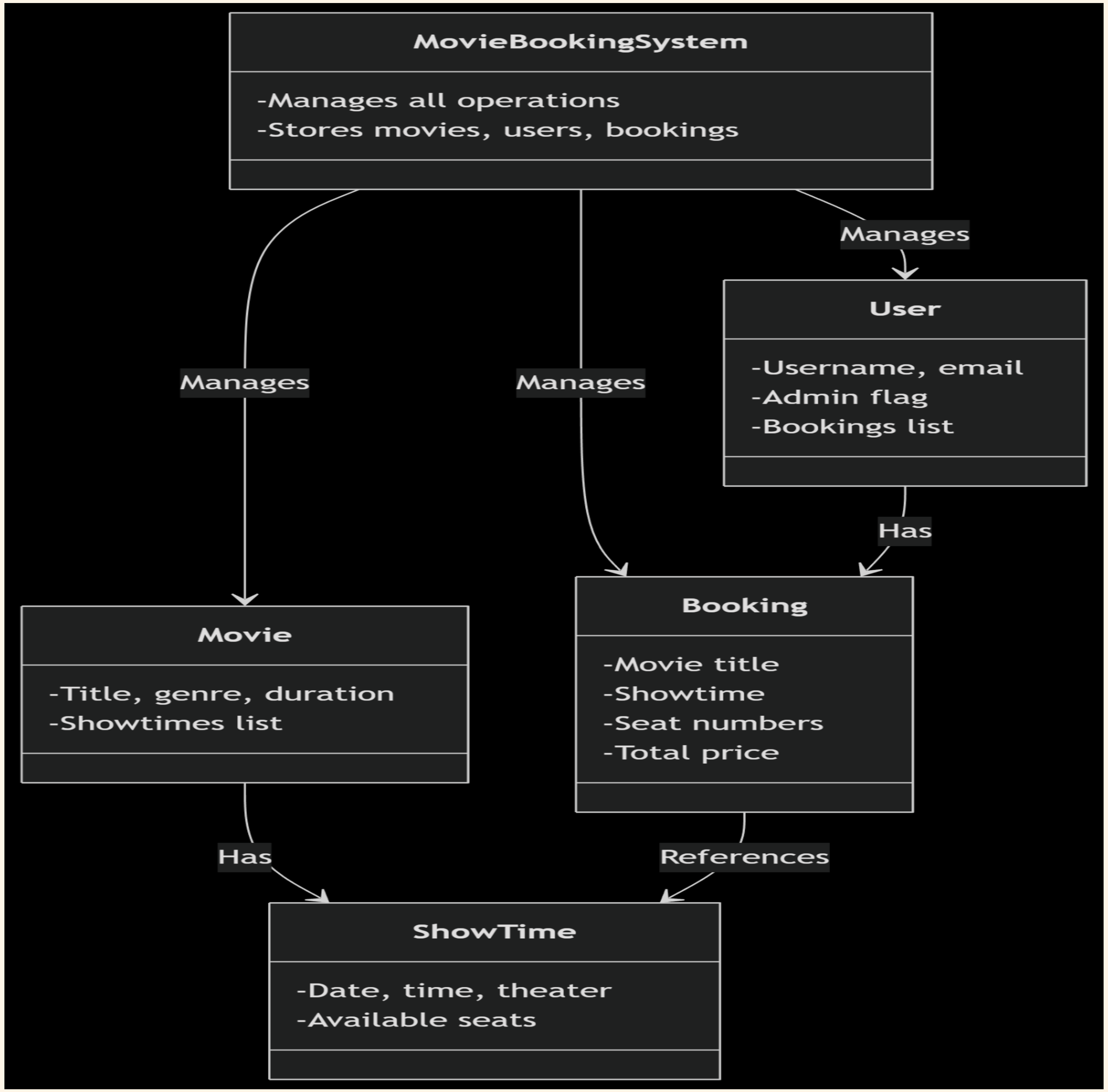

Fig: System Architecture

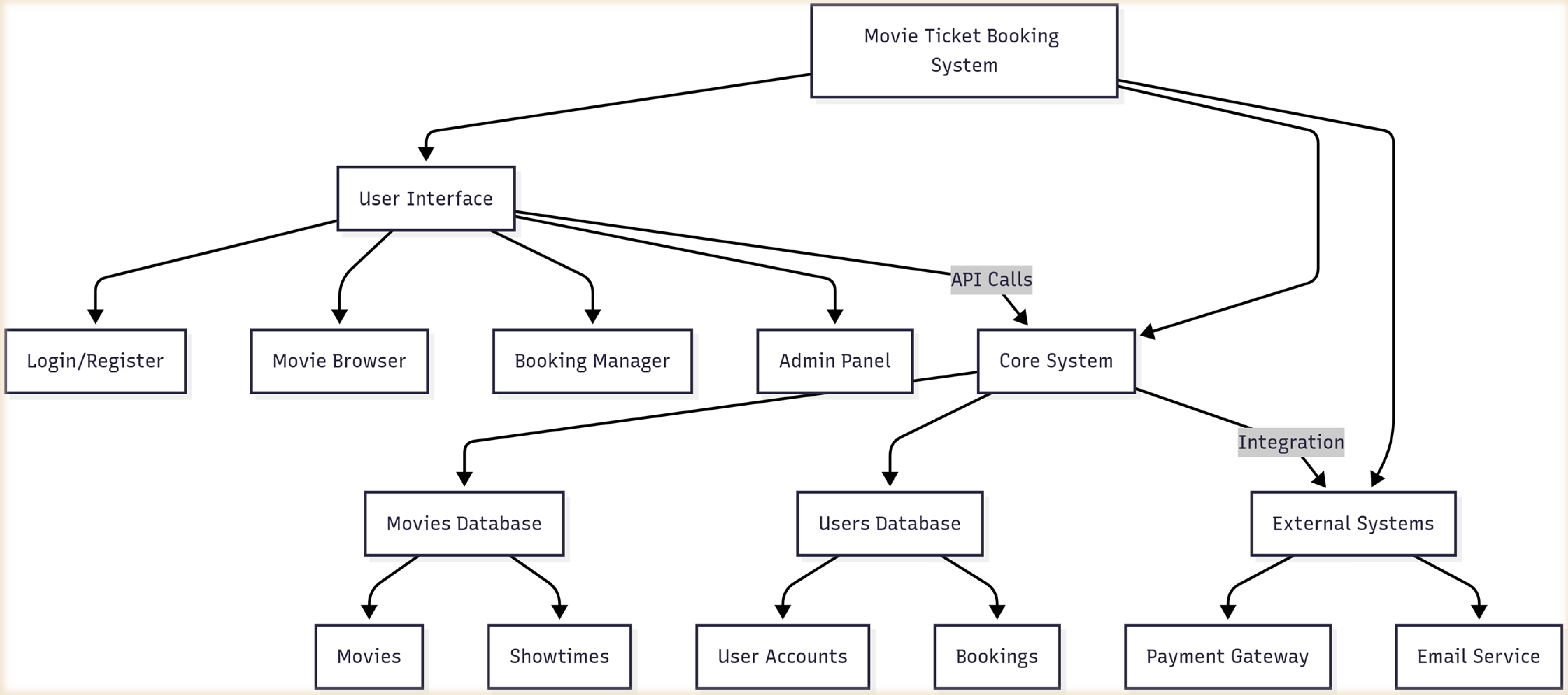

Fig: System Block Diagram

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SYSTEM ARCHITECTURE

Modules:

- Movie: Movie details (title, genre, price, etc.)
- ShowTime: Showtimes and seat management
- Booking: User bookings and status
- User: User/admin accounts and bookings
- MovieBookingSystem: Main controller (data loading, user actions)

Data Flow:

- User/Admin interacts via CLI
- System loads/saves data from a JSON file (movie_system_data.json)
- All actions (browse, book, cancel, admin ops) update in-memory objects and persist to file

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Key Features

User Features

Browse Movies

Explore available films 🎬

View Showtimes

Check movie schedules 🕒

Book/Cancel Tickets

Manage reservations 🎫

Booking History & Loyalty

Review past bookings and points 🏆

Admin Features

Add/Remove Movies

Manage film catalog ➕➖

Add/Remove Showtimes

Control screening times 🕐🗑

View All Bookings

Access user reservation data 📊

User Workflows

User Login

Simple username-based login.

Admin users require a password.

Sample Credentials: Admin: admin / 12345 User: sudip (no password)

Booking Flow

Select Movie

Choose desired film.

Choose Showtime

Pick a convenient slot.

View Seat Map

Available (🎟️) vs. Booked (❌).

Enter Seats

e.g., A,1;B,2.

Confirm & Get ID

Finalize booking.

Design Decisions

Why JSON Files?

- Simplicity & Portability
- No external dependencies
- Easy manual inspection

Why Class Structure?

- Object-Oriented Design
- Modularity & Reusability

CLI Focus

- Platform-Independent
- Easy Demo & Testing
- Ideal for Learning

IMPLEMENTATION DETAILS

1. Data Persistence (JSON File)
   - All movies, users, and bookings are stored in 'movie_system_data.json'.
   - Data is loaded at startup and saved after every change (add, book, cancel, etc.).
   - Example:
     ```python
     with open(self.data_file, 'w') as f:
         json.dump(data, f, indent=2)
     ```

2. Booking Logic
   - User selects a showtime and seats.
   - System checks seat availability and books if possible.
   - Each booking is assigned a unique ID and saved.
   - Example:
     ```python
     if showtime.book_seats(seat_numbers):
         booking_id = str(uuid.uuid4())[:8]
         booking = Booking(...)
         self.bookings[booking_id] = booking
         self.current_user.bookings.append(booking_id)
         self.save_data()
     ```

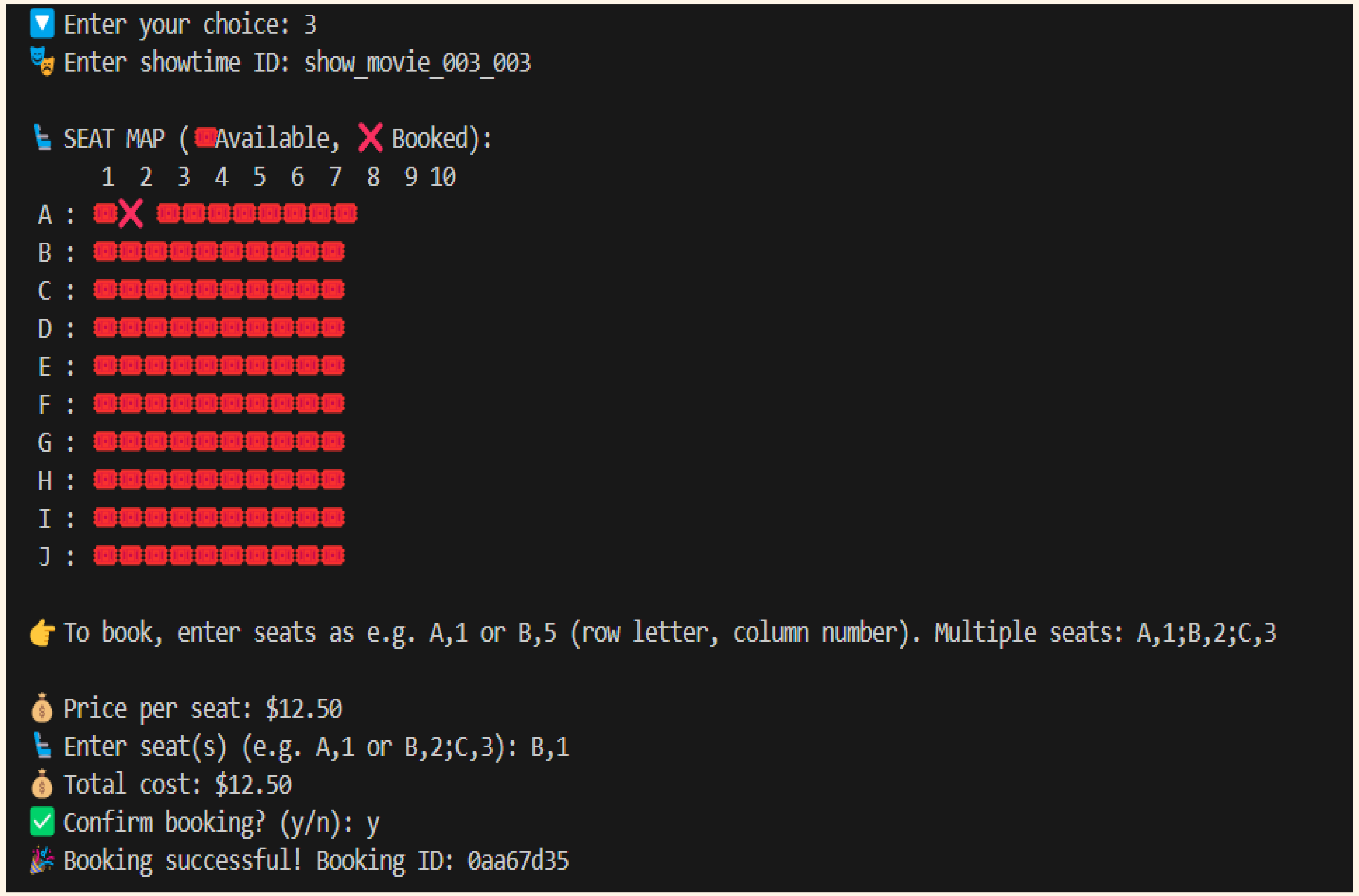
3. Seat Map Display
   - Visual seat map with emojis for available/booked seats.
   - Example:
     ```python
     if seat_num in showtime.booked_seats:
         display += "❌ "
     else:
         display += "🎟️ “
     ```

4. Random Surprise (Popcorn Coupon)
   - After booking, a random number is generated.
   - If the number matches, a coupon message is shown:
     ```python
     if random.randint(1, 5) == 3:
         print("🎲 Lucky Draw! You won a free popcorn coupon! 🍿 Use code: POPCORN2025")
     ```

5. Loyalty Points
   - Users earn 1 point per seat booked.
   - Points are displayed in the booking summary:
     ```python
     points = len(booking.seat_numbers)
     print(f"🏆 Loyalty Points Earned: {points}")
     ```

Screenshots

Visual examples of the CLI interface:

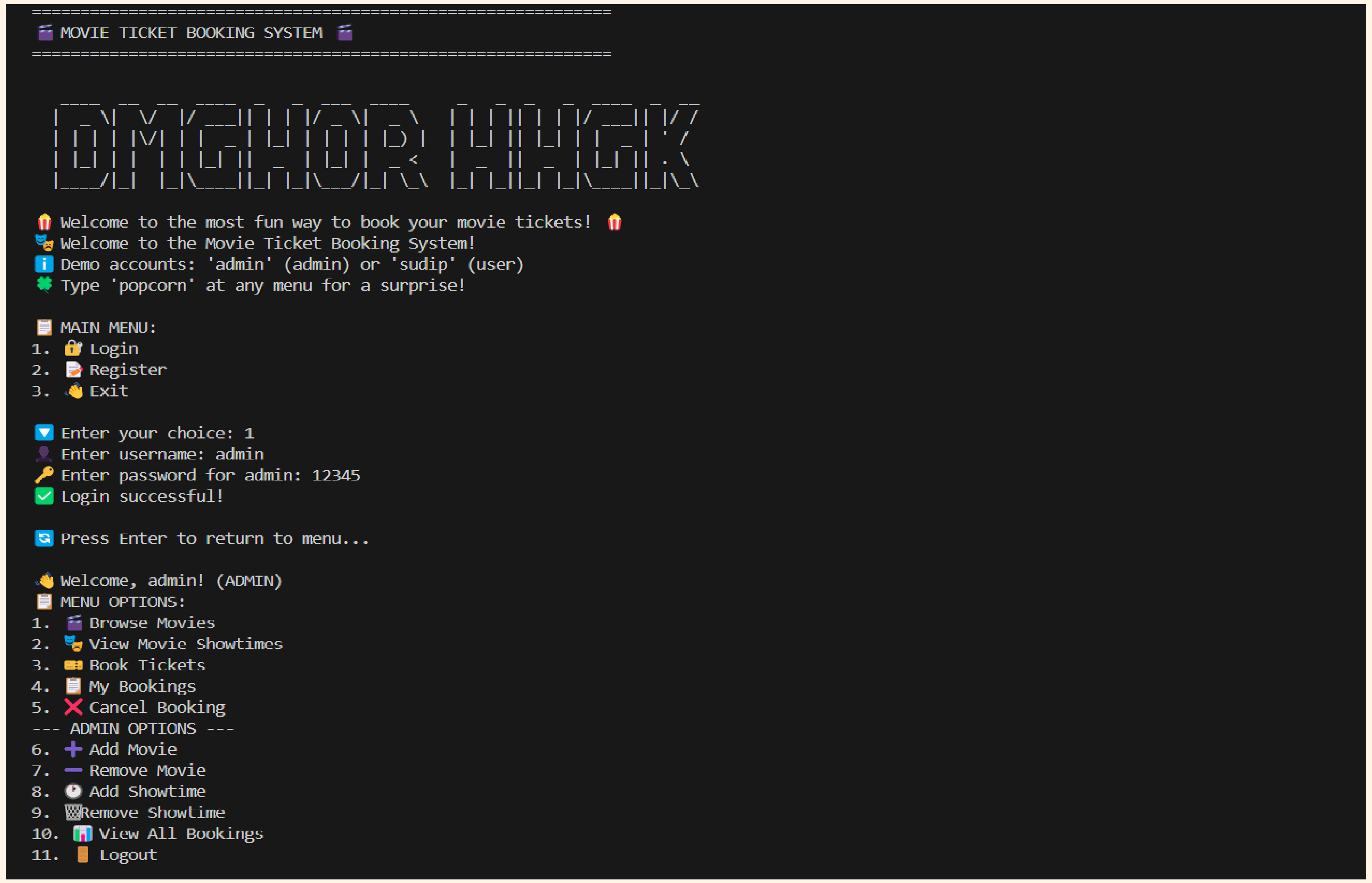


```
🔽 Enter your choice: 3
🎭 Enter showtime ID: show_movie_003_003

💺 SEAT MAP (🟥Available, ❌ Booked):
     1  2  3  4  5  6  7  8  9 10
A : 🟥❌🟥🟥🟥🟥🟥🟥🟥🟥
B : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
C : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
D : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
E : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
F : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
G : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
H : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
I : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥
J : 🟥🟥🟥🟥🟥🟥🟥🟥🟥🟥

👉 To book, enter seats as e.g. A,1 or B,5 (row letter, column number). Multiple seats: A,1;B,2;C,3

💰 Price per seat: $12.50
💺 Enter seat(s) (e.g. A,1 or B,2;C,3): B,1
💰 Total cost: $12.50
✅ Confirm booking? (y/n): y
🎉 Booking successful! Booking ID: 0aa67d35
```



```
============================================================
🎬 MOVIE TICKET BOOKING SYSTEM 🎬
============================================================

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🍿 Welcome to the most fun way to book your movie tickets! 🍿
🎭 Welcome to the Movie Ticket Booking System!
ℹ️ Demo accounts: 'admin' (admin) or 'sudip' (user)
🍀 Type 'popcorn' at any menu for a surprise!

📋 MAIN MENU:
1. 🔐 Login
2. 📝 Register
3. 👋 Exit

🔽 Enter your choice: 1
👤 Enter username: admin
🔑 Enter password for admin: 12345
✅ Login successful!

🔄 Press Enter to return to menu...

👋 Welcome, admin! (ADMIN)
📋 MENU OPTIONS:
1.  🎬 Browse Movies
2.  🎭 View Movie Showtimes
3.  🎫 Book Tickets
4.  📋 My Bookings
5.  ❌ Cancel Booking
--- ADMIN OPTIONS ---
6.  ➕ Add Movie
7.  ➖ Remove Movie
8.  🕐 Add Showtime
9.  🗑Remove Showtime
10.  📊 View All Bookings
11.  🚪 Logout
```
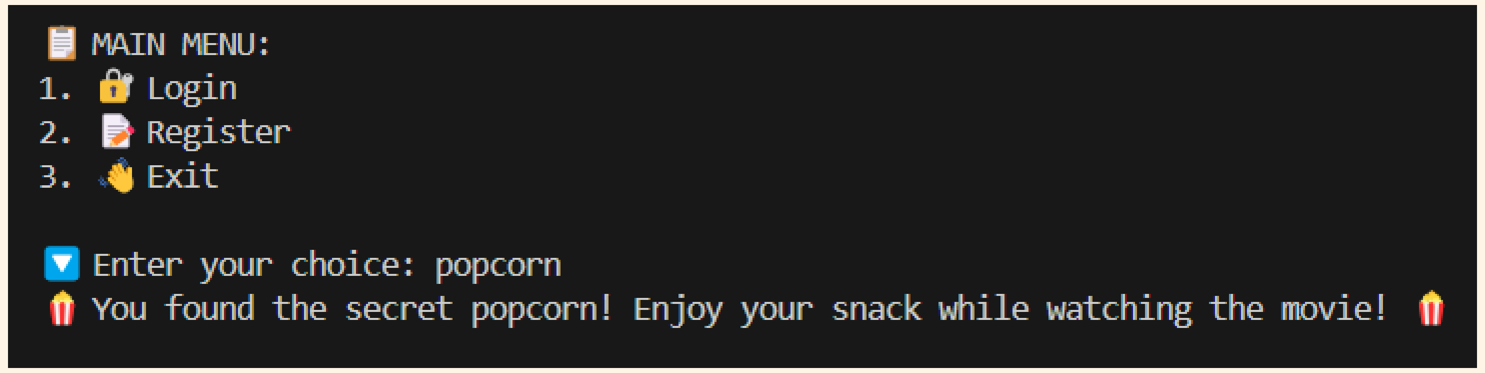

Fun Extras

Loyalty Points

Earn points per seat booked. Users earn loyalty points every time they complete a booking.. This is shown in the "My Bookings" section, where each booking displays the number of seats (and thus points) earned.

Easter Egg

Type "popcorn" for a surprise!



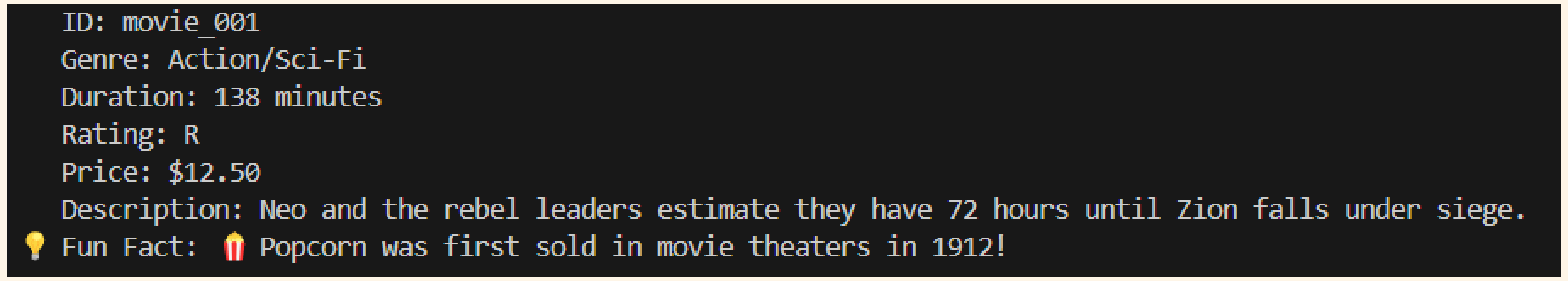
```
📋 MAIN MENU:
1. 🔐 Login
2. 📝 Register
3. 👋 Exit

🔽 Enter your choice: popcorn
🍿 You found the secret popcorn! Enjoy your snack while watching the movie! 🍿
```

Lucky Draw

Random surprise on booking completion. After a successful booking, there is a mini-game: a random number is generated, and if the result matches a certain value (e.g., 3 out of 1–5), the user receives a surprise message:

Fun Facts

Discover trivia while browsing.



```
   ID: movie_001
   Genre: Action/Sci-Fi
   Duration: 138 minutes
   Rating: R
   Price: $12.50
   Description: Neo and the rebel leaders estimate they have 72 hours until Zion falls under siege.
💡 Fun Fact: 🍿 Popcorn was first sold in movie theaters in 1912!
```

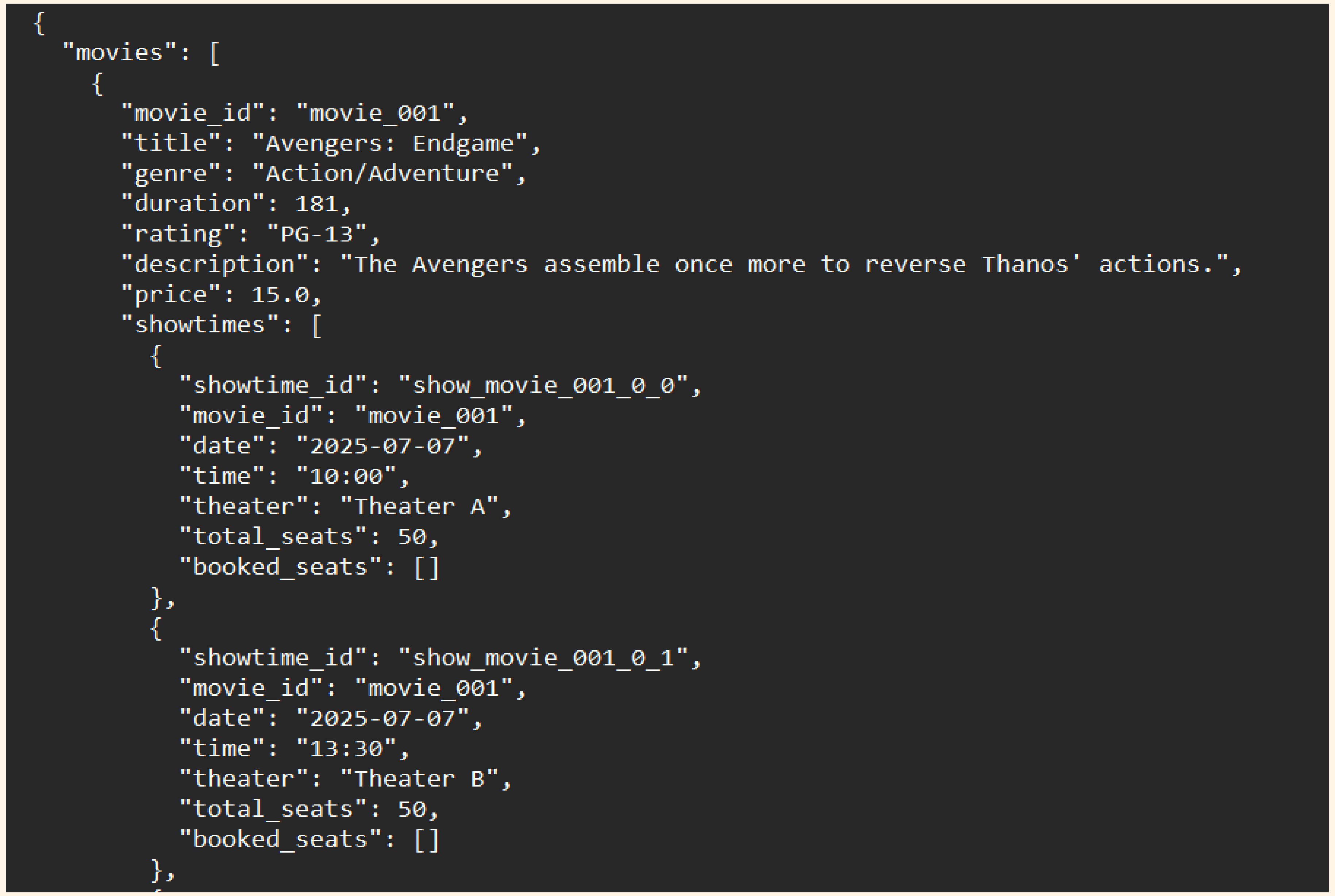
Data & File Handling

movie_system_data.json

Centralized storage for:

- Movies
- Users
- Bookings

Auto-initializes with sample data on first run.



```
{
  "movies": [
    {
      "movie_id": "movie_001",
      "title": "Avengers: Endgame",
      "genre": "Action/Adventure",
      "duration": 181,
      "rating": "PG-13",
      "description": "The Avengers assemble once more to reverse Thanos' actions.",
      "price": 15.0,
      "showtimes": [
        {
          "showtime_id": "show_movie_001_0_0",
          "movie_id": "movie_001",
          "date": "2025-07-07",
          "time": "10:00",
          "theater": "Theater A",
          "total_seats": 50,
          "booked_seats": []
        },
        {
          "showtime_id": "show_movie_001_0_1",
          "movie_id": "movie_001",
          "date": "2025-07-07",
          "time": "13:30",
          "theater": "Theater B",
          "total_seats": 50,
          "booked_seats": []
        },
```

I/O Operations

All input/output handled using Python's built-in json module.

Ensures data persistence between sessions.

```
import jsondef load_data(): with open('movie_system_data.json',
'r') as f: return json.load(f)def save_data(data): with
open('movie_system_data.json', 'w') as f: json.dump(data, f,
indent=4)
```

Requirements & Setup

3.7+ Python Version Required

No External Libraries

Run Instructions:

```
python "Movie_Ticket_Booking_system.py"
```

Thank You!

Your feedback is welcome!