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UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**BITP1113 PROGRAMMING TECHNIQUE
SEMESTER 1 2024/2025**

PROJECT PROPOSAL

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PROJECT TITLE	MOVIE TICKET BOOKING SYSTEM
SECTION/GROUP	S1/G2
PROGRAM	BAXZ

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Title

MOVIE TICKET BOOKING SYSTEM

Project Introduction

In many movie tickets booking processes, manual work is still commonly used. This manual approach requires more time to complete tasks such as seat selection, ticket calculation, and record keeping. In addition, paper-based records are difficult to store, manage, and retrieve, which may lead to lost or damaged data. Manual calculations also increase the risk of human error, resulting in inaccurate ticket prices and transaction mistakes.

To overcome these problems, this project focuses on developing a digital movie ticket booking system. The system is designed to improve time efficiency by automating seat management, ticket booking, and price calculation. By storing all booking and sales data in a digital database, the process becomes paperless, more organized, and easier to manage. Furthermore, the system helps reduce miscalculations by automatically calculating ticket prices based on predefined rules, ensuring accuracy for both customers and workers.

Overall, this project aims to provide a more efficient, reliable, and user-friendly solution for managing movie ticket bookings compared to traditional manual methods.

Problem Statement

The development of this project addresses several key issues commonly found in manual movie ticket booking systems:

1. Time-Consuming Manual Operations

Manual ticket booking requires staff to check seat availability, record bookings, and calculate ticket prices by hand. This process becomes slow and inefficient, especially during peak hours, leading to long queues and reduced customer satisfaction.

2. Poor Record Management

Paper-based booking and sales records are difficult to organize, store, and retrieve. Records may be lost, damaged, or duplicated, making it challenging to track past transactions or generate accurate sales reports.

3. High Risk of Human Error

Manual calculations for ticket pricing, discounts, and seat allocation are prone to human error. Mistakes such as incorrect pricing, double-booked seats, or missed discounts can cause financial loss and customer dissatisfaction.

4. Inefficient Sales Reporting

Generating daily or weekly sales summaries manually requires repetitive calculations and record checking. This process is time-consuming and increases the likelihood of inaccurate revenue reporting.

Objective

The main goal of this project is to develop a C++ program that **systematizes the movie ticket booking process**. The system aims to streamline ticket sales and seat management to ensure high efficiency, while simultaneously automating financial calculations and record-keeping to eliminate manual processing errors. The specific objectives are:

1. To **design an interactive seat allocation mechanism** that provides real-time updates on seat availability (Available vs. Booked), preventing double-booking and reducing the time spent on manual checks.
2. To **implement a dynamic pricing algorithm** that automatically calculates ticket costs based on specific variables—such as row position, day of the week (weekday vs. weekend), and customer age—to ensure pricing accuracy and logical consistency.
3. To **establish a structured record management system** that organizes customer booking data into a digital format, ensuring that all transaction details are stored securely and can be retrieved without the risk of physical loss or duplication.
4. To **automate the generation of sales reports** by calculating total revenue and summarizing weekly transaction history, providing an efficient and error-free method for tracking business performance.

Input, Process and Output (IPO)

Input

1. Menu Selection

- Values: 1 – 4
- Purpose: Choose system operation
(View Seats, Book Ticket, View Pricing, Exit & Report)

2. Seat Selection

- Row number: 1 – 5
- Seat number: 1 – 5

3. Day Type

- 'D' → Weekday
- 'E' → Weekend

4. Customer Age

- Range: 0 – 120

Process

The system performs the following processing steps:

1. Initialize System

- Set all seats to 'O' (available)
- Define constants (base price, discounts, seat size)
- Initialize vector to store weekly sales

2. Display Main Menu

- Show menu options and validate user choice

3. View Available Seats (Option 1)

- Display current seat layout
- Count and display number of available seats

4. **Book a Ticket (Option 2)**

- Display seat layout
- Validate row and seat number
- Check seat availability
- Mark seat as 'X' if available
- Get day type and customer age
- Calculate ticket price:
 - Apply age discount first
 - Apply weekday discount if applicable
- Store booking details in sales vector
- Display ticket confirmation

5. **View Pricing Information (Option 3)**

- Display base price
- Display age discounts
- Display weekday discount
- Show price examples

6. **Finish & Print Weekly Report (Option 4)**

- Check if any sales exist
- Display weekly sales summary table
- Calculate total revenue
- Display thank-you message
- Exit program

7. **Loop Control**

- Prompt user to press Enter to continue
- Repeat menu until exit option is chosen

Output

The system produces the following outputs:

1. **System Header**
 - Movie name and system title
2. **Seat Layout Display**
 - Shows available (O) and booked (X) seats
3. **Available Seat Count**
4. **Error Messages**
 - Invalid input
 - Seat already booked
5. **Ticket Confirmation**
 - Movie name
 - Row and seat number
 - Final ticket price
6. **Pricing Information**
 - Base price
 - Discounts
 - Example prices
7. **Weekly Sales Report**
 - Day type
 - Seat label
 - Ticket price
 - Total revenue
8. **Exit Message**
 - Thank-you message

Input, Process and Output Summary

Input	Process	Output
Menu choice, seat, day, age	Validate input, book seat, calculate price, store sales	Seat layout, ticket confirmation, pricing info, sales report

Flowchart



User Guide: Movie Ticket Booking System

1. System Overview

This system allows users to:

- View available seats in the cinema hall.
- Book movie tickets with dynamic pricing based on age and day type (Weekday/Weekend).
- View pricing information and discounts.
- Generate a weekly sales report upon exiting.

Movie Example: AVATAR 3

Seats are arranged in a 5x5 grid:

- 'O' = Available seat
- 'X' = Booked seat

2. Main Menu Options

When the program starts, you will see the **Main Menu**:

Option	Description
1	View Available Seats
2	Book a Ticket
3	View Pricing Information
4	Finish & Print Weekly Report

3. Viewing Seats

1. Select **Option 1** from the main menu.
2. The system will display the **seat layout**:

```
Enter your choice: 1

=====
                        SEAT LAYOUT
=====
                        SCREEN
=====
      1  2  3  4  5
1  [O][O][O][O][O]
2  [O][O][O][O][O]
3  [O][O][O][O][O]
4  [O][O][O][O][O]
5  [O][O][O][O][O]

Legend: O = Available, X = Booked

Available seats: 25/25

Press Enter to continue...
```

3. Available seats are marked as 'O'. Booked seats are marked as 'X'.
4. You can also see the total number of available seats at the bottom.

4. Booking a Ticket

1. Select **Option 2** from the main menu.
2. The system will display the **current seat layout**.
3. Enter the **row number** and **seat number** you wish to book:
 - Row: 1 – 5
 - Seat: 1 – 5
4. Choose **Day Type**:
 - D = Weekday
 - E = Weekend
5. Enter the **customer's age** (0 – 120).
6. The system will calculate the ticket price based on:
 - Age discounts:
 - Children $\leq 12 \rightarrow 50\%$ off
 - Seniors $\geq 60 \rightarrow 30\%$ off
 - Weekday discount: 15% off (stackable with age discounts)
7. If the seat is available, the system will **confirm your booking** and display a **ticket**:

```
=====
                        TICKET CONFIRMATION
=====
Movie: AVATAR 3
Row: 5
Seat: 5
Price: RM 12.50
=====
      Booking Successful! Enjoy the show!
=====
Press Enter to continue...|
```

8. If the seat is already booked, you will be asked to choose another seat

5. Viewing Pricing Information

1. Select **Option 3** from the main menu.
2. The system will show all **pricing details and discounts**, including examples:

```
Enter your choice: 3

=====
                PRICING INFORMATION
=====
Base Price: RM 12.50
- Weekend: Standard Price

Age Discounts:
- Children (12 and below): 50% off
- Seniors (60 and above): 30% off

Day Discounts:
- Weekday: 15.00% off (Stackable!)

--- Price Examples ---
Child on Weekday: RM 5.31
Senior on Weekend: RM 8.75
=====

Press Enter to continue...
```

6. Exiting & Printing Weekly Report

1. Select **Option 4** from the main menu.
2. The system will print the **weekly sales summary**, showing:
 - Day Type (Weekday/Weekend)
 - Seat booked
 - Ticket price
3. Total revenue for the session will also be displayed:

```
Enter your choice: 4

=====
    CLOSING SYSTEM & GENERATING REPORT
=====

--- WEEKLY SALES SUMMARY ---
Day Type  Seat      Price (RM)
-----
Weekend    R5:S5         12.50
-----
TOTAL REVENUE:         12.50
```

4. Thank you, message will appear, and the program exits.

Conclusion

In conclusion, this project successfully achieves its objective of developing a digital movie ticket booking system that improves efficiency, accuracy, and reliability compared to traditional manual booking methods. By automating seat management, ticket booking, and pricing calculations, the system significantly reduces the time required to handle customer transactions and minimizes the risk of human error.

The implementation of a paperless data management approach allows booking and sales records to be stored in a structured manner, making it easier to retrieve information and generate weekly sales reports. Features such as input validation, automatic discount calculation, and prevention of double booking further enhance the reliability and usability of the system.

Overall, the system provides a practical and effective solution for managing movie ticket bookings in a systematic and organized way. It demonstrates how simple programming techniques can be applied to solve real-world problems and improve operational efficiency. With further enhancements such as graphical user interfaces, online payment integration, or larger seat capacities, the system has the potential to be expanded for real-world commercial use.