BITP1113 PROGRAMMING TECHNIQUE

Movie Ticket Booking System

BY GROUP “HELLO WORLD”

MUHAMMAD ALIF AMZAR BIN ROMAINOR (B152510210)
MUHAMMAD NABIL RAYYAN BIN ABD SHUKOR (B152510245)
MUHAMMAD SYAFIK ADAM BIN ANUAR (B152510303)
MUHAMMAD HARIZ AZHAD BIN HAIRUL ANUAR (B152510368)

Introduction

Our project addresses the need for a simplified cinema management tool. We identified three main objectives:

- a visual layout for the user
- a secure booking process that prevents double-booking
- a pricing engine that handles discounts.
- and automated revenue tracking for generating session reports.

By automating these processes, we eliminate human error in seat assignments and price calculations.

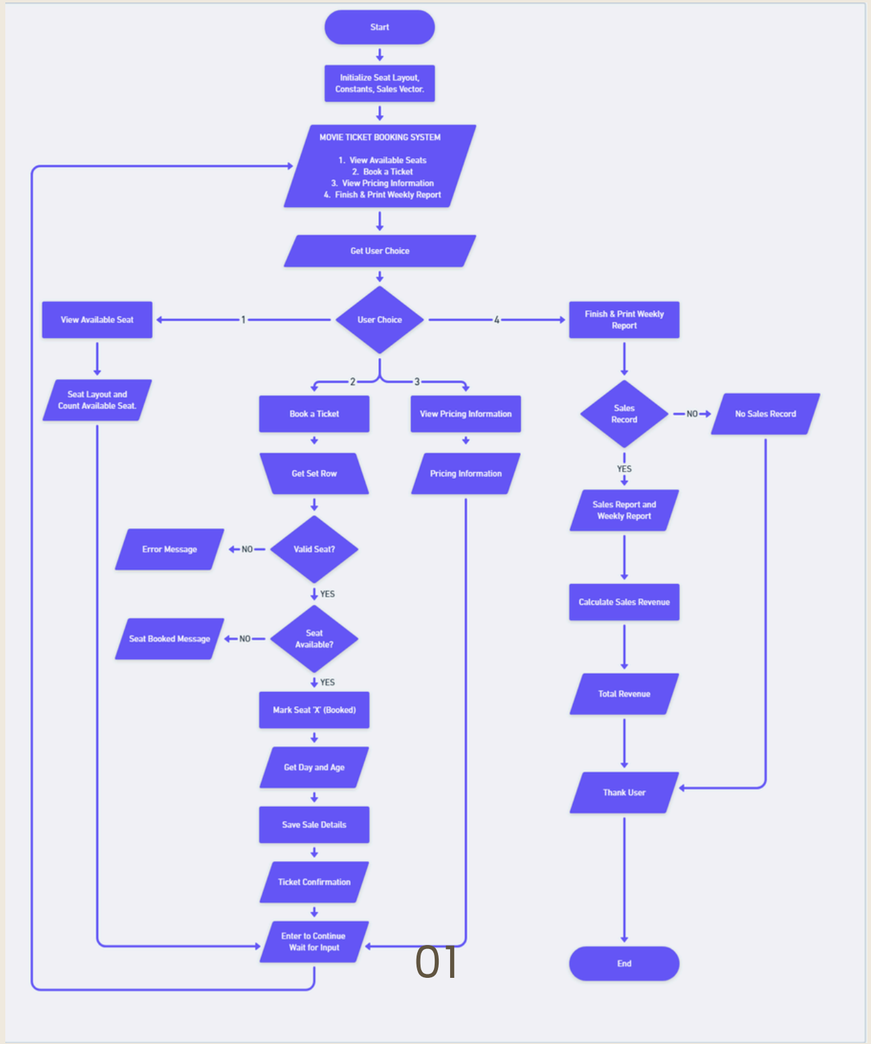
Problem statement

- **Operational Inefficiency:** Manual seat selection and ticket issuing create long queues and slow down customer service.
- **Data Management Risks:** Physical paper records are difficult to organize, easy to lose, and do not allow for instant sales analysis or reporting.
- **Financial Inaccuracy:** Manual price calculations, especially with stackable age and day discounts, are prone to human error, leading to lost revenue.

Objective statement

- **Digital Transformation:** To create a digital system that improves time efficiency in managing movie ticket bookings.
- **Centralized Data Management:** To store all booking and sales data in a database, enabling a paperless and organized process.
- **Algorithmic Accuracy:** To reduce human errors by helping customers and workers avoid miscalculations during ticket pricing and transactions.

Flowchart


Start
Initialize Seat Layout, Constants, Sales Vector.
MOVIE TICKET BOOKING SYSTEM
1. View Available Seats
2. Book a Ticket
3. View Pricing Information
4. Finish & Print Weekly Report
Get User Choice
User Choice
1
2
3
4
View Available Seat
Seat Layout and Count Available Seat.
Book a Ticket
Get Set Row
Valid Seat?
NO
Error Message
YES
Seat Available?
NO
Seat Booked Message
YES
Mark Seat 'X' (Booked)
Get Day and Age
Save Sale Details
Ticket Confirmation
Enter to Continue Wait for Input
View Pricing Information
Pricing Information
Finish & Print Weekly Report
Sales Record
NO
No Sales Record
YES
Sales Report and Weekly Report
Calculate Sales Revenue
Total Revenue
Thank User
End

User Guide

Phase 1: Main Menu (Entry Point)

- Use the Main Menu (Options 1–4) to view seats, book tickets, or check pricing.
- Option 1 provides a real-time availability count and visual map .

Phase 2: Booking Process

- Seat Selection: Enter row/seat (1–5). The system automatically validates availability and range .
- Dynamic Pricing: Input Day Type ('D'/'E') and Age (0–120) to trigger automated discount logic .
- Confirmation: System displays a formatted receipt and stores the sale record in the session vector .

Phase 3: Weekly Report and Exit

- Option 4 terminates the session and generates a Weekly Sales Summary.
- Displays individual transaction details and calculates Total Revenue .

Input, Process, and Output

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

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

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

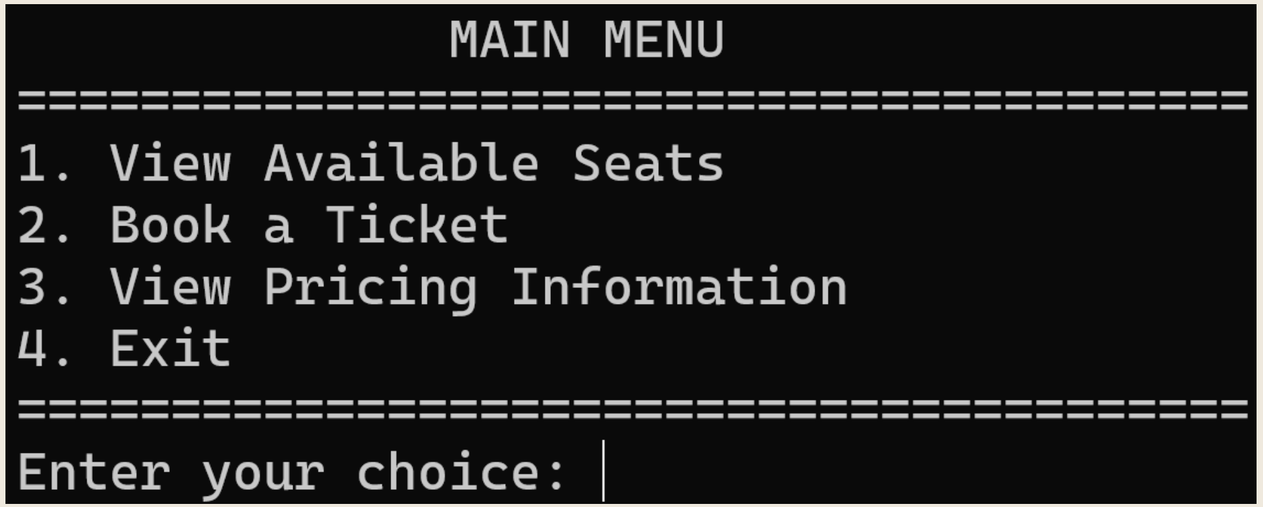
- Day type
- Seat label
- Ticket price
- Total revenue

8. Exit Message

- Thank-you message

System Features

- Interactive Menu System:
  A simple 1-4 numbering system to navigate through all features.



- Real-time Seating Map:
  A 5x5 visual grid that updates instantly when a seat is booked.

```
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]
```

```
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][X][O][O]
 4  [O][O][O][O][O]
 5  [O][O][O][O][O]
```

- Coordinate Validation:
  Prevents the system from crashing by checking if the user entered a row/column outside the 1–5 range.

```
Enter row number (1-5): 6
Enter seat number (1-5): 7

Invalid seat selection!
```

- Conflict Prevention:
  Includes a logic check to ensure a user cannot book a seat that is already marked as 'X'.

```
      1  2  3  4  5
 1  [O][O][O][O][O]
 2  [O][O][O][O][O]
 3  [O][O][O][X][O]
 4  [O][O][O][O][O]
 5  [O][O][O][O][O]

Legend: O = Available, X = Booked

Enter row number (1-5): 3
Enter seat number (1-5): 4

Seat already booked! Please choose another.
```

- Automated Discounting:
  Applies a 15% price reduction automatically if the user identifies the day as a "Weekday".

```
Is this a weekday? (W/E for Weekend): w

========================================
          TICKET CONFIRMATION
========================================
Movie: AVATAR 3
Row: 3
Seat: 4
Price: RM 10.62
========================================
   Booking Successful! Enjoy the show!
========================================
```

- Automated Discounting:
  Applies a 15% price reduction if the user identifies the day as a "Weekday".
  Applies a 50% price reduction if the user is 13 y/o or younger.
  Applies a 30% price reduction if the user is 60 y/ or older.

Age: 10

```
Is this a Weekday or Weekend? (Enter 'D' for Weekday, 'E' for Weekend): D
Enter the customer's age (0-120): 10

========================================
          TICKET CONFIRMATION
========================================
Movie: AVATAR 3
Row: 2
Seat: 3
Price: RM 5.31
========================================
   Booking Successful! Enjoy the show!
========================================
```

Age: 70

```
Is this a Weekday or Weekend? (Enter 'D' for Weekday, 'E' for Weekend): D
Enter the customer's age (0-120): 70

========================================
          TICKET CONFIRMATION
========================================
Movie: AVATAR 3
Row: 3
Seat: 3
Price: RM 7.44
========================================
   Booking Successful! Enjoy the show!
========================================
```

- Automated Weekly Reporting:
  Generates a detailed revenue summary upon exit, calculating total earnings and listing individual sale records.

```
Enter your choice: 4

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

--- WEEKLY SALES SUMMARY ---
Day Type  Seat       Price (RM)
----------------------------------------
Weekday   R2:S3              5.31
Weekday   R3:S3              7.44
----------------------------------------
TOTAL REVENUE:              12.75
```

Conclusion

- This project **successfully** achieves objective of developing a digital movie ticket booking system
  - improves efficiency, accuracy, and reliability
- **Features:** input validation, automatic discount calculation, and prevention of double booking further enhance the reliability and usability of the system.
- The system provides a practical and effective solution for managing movie ticket bookings in a systematic and organized way.