**Movie Ticket Booking System**

Mini Project Report - IA-3

Object Oriented Programming II [MCA 4221]

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MCA-II

**Overview**

The goal of this project is to design and implement a Movie Ticket Booking System using Java Swing for GUI and CSV files for data storage. The application allows users to log in or register, select a movie from a list, choose the theater and showtime, view available seats, and book them. The booking is followed by a payment confirmation step and a final ticket confirmation. Bookings are saved to CSV files to ensure persistence.

A diagram of a company

AI-generated content may be incorrect.**Flow Diagram**

**Swing Components**

* **JFrame:** Main window container for all pages.
* **JPanel:** Organizes layout into sections.
* **JLabel:** Displays text like titles and field labels.
* **JTextField / JPasswordField:** For user input in login/signup.
* **JButton:** Triggers actions (login, signup, book seats, pay).
* **JComboBox:** Dropdowns for selecting movies and theaters.
* **JTextArea:** For displaying movie descriptions.
* **JOptionPane:** For pop-up messages, confirmations, and alerts.
* **JScrollPane:** Scrollable container for text area.

**Event Handling**

The system is event-driven using ActionListener interfaces. Each button or interactive component triggers an action:

* **Login Button:** Validates credentials from users.csv
* **Signup Button:** Appends new user to users.csv
* **Movie ComboBox:** Filters and displays related theaters and descriptions.
* **Seat Buttons:** Toggles selection of seats; disables booked ones.
* **Book Button:** Confirms seat selection, stores in booked\_seats.csv
* **Pay Button:** Saves the booking record to receipt.csv and confirms ticket.

**Program Code**

*LoginPage.java*

import *javax*.*swing*.*\**;

import *java*.*awt*.*\**;

import *java*.*awt*.*event*.*ActionEvent*;

import *java*.*awt*.*event*.*ActionListener*;

*public* *class* LoginPage *extends* JFrame {

*private* JTextField usernameField;

*private* JPasswordField passwordField;

*public* *LoginPage*() {

*setTitle*("Book My Ticket - Login");

*setSize*(400, 250);

*setDefaultCloseOperation*(JFrame.*EXIT\_ON\_CLOSE*);

*setLocationRelativeTo*(null);

*setResizable*(false);

        JPanel panel = *new* *JPanel*();

        panel.*setLayout*(null);

        JLabel titleLabel = *new* *JLabel*("LogIn");

        titleLabel.*setFont*(*new* *Font*("Arial", Font.*BOLD*, 24));

        titleLabel.*setBounds*(150, 20, 100, 30);

        panel.*add*(titleLabel);

        JLabel userLabel = *new* *JLabel*("Username:");

        userLabel.*setBounds*(50, 70, 100, 25);

        panel.*add*(userLabel);

        usernameField = *new* *JTextField*();

        usernameField.*setBounds*(150, 70, 180, 25);

        panel.*add*(usernameField);

        JLabel passLabel = *new* *JLabel*("Password:");

        passLabel.*setBounds*(50, 110, 100, 25);

        panel.*add*(passLabel);

        passwordField = *new* *JPasswordField*();

        passwordField.*setBounds*(150, 110, 180, 25);

        panel.*add*(passwordField);

        JButton loginButton = *new* *JButton*("LogIn");

        loginButton.*setBounds*(150, 150, 90, 30);

        panel.*add*(loginButton);

        JButton signUpButton = *new* *JButton*("SignUp");

        signUpButton.*setBounds*(250, 150, 90, 30);

        panel.*add*(signUpButton);

*add*(panel);

*setVisible*(true);

        loginButton.*addActionListener*(*new* *ActionListener*() {

*public* void *actionPerformed*(ActionEvent e) {

                String username = usernameField.*getText*().*trim*();

                String password = *new* *String*(passwordField.*getPassword*()).*trim*();

*if* (AuthUtil.*validateLogin*(username, password)) {

                    JOptionPane.*showMessageDialog*(null, "Logged in Successfully");

*dispose*();

*new* *MovieSelectionPage*(username);

                } *else* {

                    JOptionPane.*showMessageDialog*(null, "Check your username or password is correct?");

                }

            }

        });

        signUpButton.*addActionListener*(*new* *ActionListener*() {

*public* void *actionPerformed*(ActionEvent e) {

*dispose*();

*new* *SignUpPage*();

            }

        });

    }

*public* *static* void *main*(String[] args) {

*new* *LoginPage*();

    }

}

*SignUpPage.java*

import *javax*.*swing*.*\**;

import *java*.*awt*.*\**;

import *java*.*awt*.*event*.*ActionEvent*;

import *java*.*awt*.*event*.*ActionListener*;

*public* *class* SignUpPage *extends* JFrame {

*private* JTextField usernameField;

*private* JPasswordField passwordField;

*private* JPasswordField confirmPasswordField;

*public* *SignUpPage*() {

*setTitle*("Book My Ticket - Sign Up");

*setSize*(400, 300);

*setDefaultCloseOperation*(JFrame.*EXIT\_ON\_CLOSE*);

*setLocationRelativeTo*(null);

*setResizable*(false);

        JPanel panel = *new* *JPanel*();

        panel.*setLayout*(null);

        JLabel titleLabel = *new* *JLabel*("SignUp");

        titleLabel.*setFont*(*new* *Font*("Arial", Font.*BOLD*, 24));

        titleLabel.*setBounds*(140, 20, 150, 30);

        panel.*add*(titleLabel);

        JLabel userLabel = *new* *JLabel*("Username:");

        userLabel.*setBounds*(50, 70, 100, 25);

        panel.*add*(userLabel);

        usernameField = *new* *JTextField*();

        usernameField.*setBounds*(160, 70, 180, 25);

        panel.*add*(usernameField);

        JLabel passLabel = *new* *JLabel*("Password:");

        passLabel.*setBounds*(50, 110, 100, 25);

        panel.*add*(passLabel);

        passwordField = *new* *JPasswordField*();

        passwordField.*setBounds*(160, 110, 180, 25);

        panel.*add*(passwordField);

        JLabel confirmLabel = *new* *JLabel*("Confirm Password:");

        confirmLabel.*setBounds*(50, 150, 150, 25);

        panel.*add*(confirmLabel);

        confirmPasswordField = *new* *JPasswordField*();

        confirmPasswordField.*setBounds*(160, 150, 180, 25);

        panel.*add*(confirmPasswordField);

        JButton signUpButton = *new* *JButton*("SignIn");

        signUpButton.*setBounds*(150, 190, 100, 30);

        panel.*add*(signUpButton);

        JButton backButton = *new* *JButton*("LogIn");

        backButton.*setBounds*(260, 190, 80, 30);

        panel.*add*(backButton);

*add*(panel);

*setVisible*(true);

        signUpButton.*addActionListener*(*new* *ActionListener*() {

*public* void *actionPerformed*(ActionEvent e) {

                String username = usernameField.*getText*().*trim*();

                String password = *new* *String*(passwordField.*getPassword*()).*trim*();

                String confirmPassword = *new* *String*(confirmPasswordField.*getPassword*()).*trim*();

*if* (username.*isEmpty*() || password.*isEmpty*() || confirmPassword.*isEmpty*()) {

                    JOptionPane.*showMessageDialog*(null, "Please fill all fields!!!");

*return*;

                }

*if* (!password.*equals*(confirmPassword)) {

                    JOptionPane.*showMessageDialog*(null, "Passwords do not match!!!");

*return*;

                }

                boolean success = AuthUtil.*signUp*(username, password);

*if* (success) {

                    JOptionPane.*showMessageDialog*(null, "Registration successful! Please login again");

*dispose*();

*new* *LoginPage*();

                } *else* {

                    JOptionPane.*showMessageDialog*(null, "User already exists or Something went wrong");

                }

            }

        });

        backButton.*addActionListener*(*new* *ActionListener*() {

*public* void *actionPerformed*(ActionEvent e) {

*dispose*();

*new* *LoginPage*();

            }

        });

    }

*public* *static* void *main*(String[] args) {

*new* *SignUpPage*();

    }

}

*AuthUtil.java*

import *java*.*io*.*\**;

*public* *class* AuthUtil {

*private* *static* *final* String FILE\_NAME = "users.csv";

*public* *static* boolean *validateLogin*(String username, String password) {

*try* (BufferedReader br = *new* *BufferedReader*(*new* *FileReader*(FILE\_NAME))) {

            String line;

*while* ((line = br.*readLine*()) != null) {

                String[] values = line.*split*(",");

*if* (values.*length* >= 2) {

*if* (values[0].*trim*().*equals*(username) && values[1].*trim*().*equals*(password)) {

*return* true;

                    }

                }

            }

        } *catch* (IOException e) {

            System.*out*.*println*("Error reading users.csv: " + e.*getMessage*());

        }

*return* false;

    }

*public* *static* boolean *signUp*(String username, String password) {

*if* (*validateLogin*(username, password)) {

*return* false;

        }

*try* (FileWriter fw = *new* *FileWriter*(FILE\_NAME, true);

             BufferedWriter bw = *new* *BufferedWriter*(fw);

             PrintWriter out = *new* *PrintWriter*(bw)) {

            out.*println*(username + "," + password);

*return* true;

        } *catch* (IOException e) {

            System.*out*.*println*("Error writing to users.csv: " + e.*getMessage*());

        }

*return* false;

    }

}

*MovieSelectionPage.java*

import *javax*.*swing*.*\**;

import *java*.*awt*.*\**;

import *java*.*awt*.*event*.*\**;

import *java*.*io*.*\**;

import *java*.*util*.*List*;

import *java*.*util*.*ArrayList*;

import *java*.*util*.*Set*;

import *java*.*util*.*HashSet*;

import *java*.*util*.*Map*;

import *java*.*util*.*HashMap*;

import *java*.*util*.*Arrays*;

*public* *class* MovieSelectionPage *extends* JFrame {

*private* String username;

*private* JComboBox<String> movieDropdown;

*private* JComboBox<String> theaterDropdown;

*private* JTextArea movieDescriptionArea;

*private* JPanel seatPanel;

*private* JButton[][] seats;

*private* *final* int rows = 5, cols = 5;

*private* List<Movie> movieList = *new* ArrayList<>();

*private* Map<String, Set<String>> bookedSeatsMap = *new* HashMap<>();

*public* *MovieSelectionPage*(String username) {

        this.*username* = username;

*setTitle*("Book My Ticket - Select Your Happiness");

*setSize*(700, 600);

*setDefaultCloseOperation*(JFrame.*EXIT\_ON\_CLOSE*);

*setLocationRelativeTo*(null);

*setLayout*(*new* *BorderLayout*());

*loadMoviesFromCSV*("movies.csv");

*loadBookedSeats*();

        JPanel topPanel = *new* *JPanel*(*new* *GridLayout*(3, 2, 10, 10));

        topPanel.*setBorder*(BorderFactory.*createEmptyBorder*(10, 10, 10, 10));

        movieDropdown = *new* JComboBox<>(*getUniqueMovieTitles*().*toArray*(*new* String[0]));

        theaterDropdown = *new* JComboBox<>();

        movieDescriptionArea = *new* *JTextArea*(3, 30);

        movieDescriptionArea.*setEditable*(false);

        movieDescriptionArea.*setLineWrap*(true);

        movieDescriptionArea.*setWrapStyleWord*(true);

        topPanel.*add*(*new* *JLabel*("Select Movie:"));

        topPanel.*add*(movieDropdown);

        topPanel.*add*(*new* *JLabel*("Select Theater:"));

        topPanel.*add*(theaterDropdown);

        topPanel.*add*(*new* *JLabel*("Description:"));

        topPanel.*add*(*new* *JScrollPane*(movieDescriptionArea));

*add*(topPanel, BorderLayout.*NORTH*);

        seatPanel = *new* *JPanel*(*new* *GridLayout*(rows, cols, 5, 5));

        seats = *new* JButton[rows][cols];

*add*(seatPanel, BorderLayout.*CENTER*);

        JButton bookButton = *new* *JButton*("Book Seats");

        bookButton.*setPreferredSize*(*new* *Dimension*(150, 40));

*add*(bookButton, BorderLayout.*SOUTH*);

        movieDropdown.*addActionListener*(e -> *updateTheaterDropdown*());

        theaterDropdown.*addActionListener*(e -> *updateSeatLayout*());

        bookButton.*addActionListener*(e -> *handleBooking*());

        movieDropdown.*setSelectedIndex*(0);

*updateTheaterDropdown*();

*setVisible*(true);

    }

*private* void *loadMoviesFromCSV*(String filename) {

*try* (BufferedReader br = *new* *BufferedReader*(*new* *FileReader*(filename))) {

            String line;

            br.*readLine*();

*while* ((line = br.*readLine*()) != null) {

                String[] parts = line.*split*(",", 4);

*if* (parts.*length* == 4) {

                    movieList.*add*(*new* *Movie*(parts[0].*trim*(), parts[1].*trim*(), parts[2].*trim*(), parts[3].*trim*()));

                }

            }

        } *catch* (IOException e) {

            JOptionPane.*showMessageDialog*(this, "Error loading movie data!!!");

        }

    }

*private* void *loadBookedSeats*() {

        File file = *new* *File*("booked\_seats.csv");

*if* (!file.*exists*()) *return*;

*try* (BufferedReader br = *new* *BufferedReader*(*new* *FileReader*(file))) {

            String line;

*while* ((line = br.*readLine*()) != null) {

                String[] parts = line.*split*(",", 2);

*if* (parts.*length* == 2) {

                    String key = parts[0];

                    String[] seats = parts[1].*split*(" ");

                    bookedSeatsMap.*putIfAbsent*(key, *new* HashSet<>());

                    bookedSeatsMap.*get*(key).*addAll*(Arrays.*asList*(seats));

                }

            }

        } *catch* (IOException e) {

            e.*printStackTrace*();

        }

    }

*private* Set<String> *getUniqueMovieTitles*() {

        Set<String> titles = *new* HashSet<>();

*for* (Movie m *:* movieList) titles.*add*(m.*title*);

*return* titles;

    }

*private* void *updateTheaterDropdown*() {

        theaterDropdown.*removeAllItems*();

        String selectedMovie = (String) movieDropdown.*getSelectedItem*();

*for* (Movie m *:* movieList) {

*if* (m.*title*.*equals*(selectedMovie)) {

                theaterDropdown.*addItem*(m.*theater* + " (" + m.*showtime* + ")");

            }

        }

*for* (Movie m *:* movieList) {

*if* (m.*title*.*equals*(selectedMovie)) {

                movieDescriptionArea.*setText*(m.*description*);

*break*;

            }

        }

*if* (theaterDropdown.*getItemCount*() > 0)

            theaterDropdown.*setSelectedIndex*(0);

    }

*private* void *updateSeatLayout*() {

        seatPanel.*removeAll*();

        String movie = (String) movieDropdown.*getSelectedItem*();

        String theaterInfo = (String) theaterDropdown.*getSelectedItem*();

*if* (movie == null || theaterInfo == null) *return*;

        String theater = theaterInfo.*split*(" \\(")[0];

        String showtime = theaterInfo.*split*("\\(")[1].*replace*(")", "");

        String bookingKey = movie + "\_" + theater + "\_" + showtime;

        Set<String> booked = bookedSeatsMap.*getOrDefault*(bookingKey, *new* HashSet<>());

*for* (int i = 0; i < rows; i++) {

*for* (int j = 0; j < cols; j++) {

                String seatCode = (i + 1) + "" + (char) ('A' + j);

                JButton seat = *new* *JButton*(seatCode);

*if* (booked.*contains*(seatCode)) {

                    seat.*setBackground*(Color.*RED*);

                    seat.*setEnabled*(false);

                } *else* {

                    seat.*setBackground*(Color.*GREEN*);

                    seat.*addActionListener*(*new* *SeatClickHandler*(seat));

                }

                seats[i][j] = seat;

                seatPanel.*add*(seat);

            }

        }

        seatPanel.*revalidate*();

        seatPanel.*repaint*();

    }

*private* void *handleBooking*() {

        String movie = (String) movieDropdown.*getSelectedItem*();

        String theaterInfo = (String) theaterDropdown.*getSelectedItem*();

*if* (movie == null || theaterInfo == null) *return*;

        String theater = theaterInfo.*split*(" \\(")[0];

        String showtime = theaterInfo.*split*("\\(")[1].*replace*(")", "");

        String bookingKey = movie + "\_" + theater + "\_" + showtime;

        StringBuilder selectedSeats = *new* *StringBuilder*();

        List<String> newBookedSeats = *new* ArrayList<>();

*for* (int i = 0; i < rows; i++) {

*for* (int j = 0; j < cols; j++) {

                JButton btn = seats[i][j];

*if* (btn.*getBackground*() == Color.*YELLOW*) {

                    String seatCode = btn.*getText*();

                    selectedSeats.*append*(seatCode).*append*(" ");

                    newBookedSeats.*add*(seatCode);

                }

            }

        }

*if* (newBookedSeats.*isEmpty*()) {

            JOptionPane.*showMessageDialog*(this, "No seats selected!");

*return*;

        }

        int choice = JOptionPane.*showConfirmDialog*(this,

                "Selected Seats: " + selectedSeats.*toString*() + "\nProceed to payment?",

                "Confirm Booking",

                JOptionPane.*OK\_CANCEL\_OPTION*,

                JOptionPane.*INFORMATION\_MESSAGE*);

*if* (choice == JOptionPane.*OK\_OPTION*) {

*try* (FileWriter fw = *new* *FileWriter*("booked\_seats.csv", true)) {

                fw.*write*(bookingKey + "," + String.*join*(" ", newBookedSeats) + "\n");

            } *catch* (IOException e) {

                e.*printStackTrace*();

            }

            bookedSeatsMap.*putIfAbsent*(bookingKey, *new* HashSet<>());

            bookedSeatsMap.*get*(bookingKey).*addAll*(newBookedSeats);

*dispose*();

*new* *PaymentPage*(username, movie, theater, showtime, newBookedSeats);

        }

    }

*class* SeatClickHandler *implements* ActionListener {

*private* JButton seat;

*public* *SeatClickHandler*(JButton seat) {

            this.*seat* = seat;

        }

*public* void *actionPerformed*(ActionEvent e) {

*if* (seat.*getBackground*() == Color.*GREEN*) {

                seat.*setBackground*(Color.*YELLOW*);

            } *else* *if* (seat.*getBackground*() == Color.*YELLOW*) {

                seat.*setBackground*(Color.*GREEN*);

            }

        }

    }

*class* Movie {

        String title, description, theater, showtime;

*Movie*(String title, String description, String theater, String showtime) {

            this.*title* = title;

            this.*description* = description;

            this.*theater* = theater;

            this.*showtime* = showtime;

        }

    }

*public* *static* void *main*(String[] args) {

*new* *MovieSelectionPage*("testuser");

    }

}

*PaymentPage.java*

import *javax*.*swing*.*\**;

import *java*.*awt*.*\**;

import *java*.*awt*.*event*.*\**;

import *java*.*io*.*FileWriter*;

import *java*.*io*.*IOException*;

import *java*.*time*.*LocalDateTime*;

import *java*.*util*.*List*;

*public* *class* PaymentPage *extends* JFrame {

*private* String username, movie, theater, showtime;

*private* List<String> selectedSeats;

*public* *PaymentPage*(String username, String movie, String theater, String showtime, List<String> selectedSeats) {

        this.*username* = username;

        this.*movie* = movie;

        this.*theater* = theater;

        this.*showtime* = showtime;

        this.*selectedSeats* = selectedSeats;

*setTitle*("Book My Ticket - Pay for Happiness");

*setSize*(400, 350);

*setDefaultCloseOperation*(JFrame.*EXIT\_ON\_CLOSE*);

*setLocationRelativeTo*(null);

*setResizable*(false);

        JPanel panel = *new* *JPanel*();

        panel.*setLayout*(*new* *BoxLayout*(panel, BoxLayout.*Y\_AXIS*));

        panel.*setBorder*(BorderFactory.*createEmptyBorder*(20, 20, 20, 20));

        JLabel label = *new* *JLabel*("Proceed with payment to confirm your booking:");

        label.*setAlignmentX*(Component.*CENTER\_ALIGNMENT*);

        JLabel userLabel = *new* *JLabel*("User: " + username);

        userLabel.*setAlignmentX*(Component.*CENTER\_ALIGNMENT*);

        JLabel amountLabel = *new* *JLabel*("Total Amount: ₹" + (selectedSeats.*size*() \* 100));

        amountLabel.*setAlignmentX*(Component.*CENTER\_ALIGNMENT*);

        JButton payButton = *new* *JButton*("Pay Now");

        payButton.*setAlignmentX*(Component.*CENTER\_ALIGNMENT*);

        panel.*add*(label);

        panel.*add*(Box.*createRigidArea*(*new* *Dimension*(0, 10)));

        panel.*add*(userLabel);

        panel.*add*(Box.*createRigidArea*(*new* *Dimension*(0, 10)));

        panel.*add*(amountLabel);

        panel.*add*(Box.*createRigidArea*(*new* *Dimension*(0, 20)));

        panel.*add*(payButton);

*add*(panel);

*setVisible*(true);

        payButton.*addActionListener*(*new* *ActionListener*() {

*public* void *actionPerformed*(ActionEvent e) {

*saveReceipt*();

*showConfirmation*();

            }

        });

    }

*private* void *saveReceipt*() {

*try* (FileWriter fw = *new* *FileWriter*("receipt.csv", true)) {

            String record = username + "," + movie + "," + theater + "," + showtime + "," +

                    String.*join*(" ", selectedSeats) + "," + (selectedSeats.*size*() \* 150) + "," +

                    LocalDateTime.*now*();

            fw.*write*(record + "\n");

        } *catch* (IOException e) {

            e.*printStackTrace*();

        }

    }

*private* void *showConfirmation*() {

        String seatList = String.*join*(", ", selectedSeats);

        String message = "Booking Confirmed!\n\n" +

                         "User: " + username + "\n" +

                         "Movie: " + movie + "\n" +

                         "Theater: " + theater + "\n" +

                         "Showtime: " + showtime + "\n" +

                         "Seats: " + seatList + "\n" +

                         "Amount Paid: ₹" + (selectedSeats.*size*() \* 150) + "\n\n" +

                         "Enjoy your movie!";

        int option = JOptionPane.*showOptionDialog*(null, message, "Ticket Confirmation",

                JOptionPane.*YES\_NO\_OPTION*, JOptionPane.*INFORMATION\_MESSAGE*, null,

*new* String[]{"Book Another Ticket", "Exit"}, "Book Another Ticket");

*if* (option == 0) {

*dispose*();

*new* *MovieSelectionPage*(username);

        } *else* {

            JOptionPane.*showMessageDialog*(null, "Thank you for using Movie Booking App!!!");

            System.*exit*(0);

        }

    }

*public* *static* void *main*(String[] args) {

*new* *PaymentPage*("testuser", "Dune", "PVR", "6 PM", List.*of*("3A", "3B"));

    }

}

**Screenshots(Output)**

* LogIn page

A screenshot of a login screen

AI-generated content may be incorrect.

* SignUp Page

A screenshot of a login screen

AI-generated content may be incorrect.

* Ticket Booking Page

A screen shot of a computer

AI-generated content may be incorrect.

* Payment Page

A screenshot of a computer screen

AI-generated content may be incorrect.

* Booking confirmed

A screen shot of a computer

AI-generated content may be incorrect.

**References**

* Oracle Java Docs: <https://docs.oracle.com/javase/8/docs/api/>
* Swing Tutorials: <https://docs.oracle.com/javase/tutorial/uiswing/>
* CSV File I/O: https://www.baeldung.com/java-csv-file-array
* Coursera GUI App Project: <https://www.coursera.org/projects/build-java-gui-apps>