**Name: Ahmad Kaleem Bhatti**

**Roll No: 242820**

**Assignment (PF)**

***Code***

#include <iostream>

#include <fstream>

#include <string>

using namespace std;

const int ROWS = 10;

const int COLS = 10;

char seats[ROWS][COLS];

string createfilename(int month, int date, int year);

// Initialize seats for the given month and date

void initializeSeats(int month, int date ,int year) {

string filename = createfilename(month, date,year);

ifstream file(filename);

if (file.is\_open()) {

for (int i = 0; i < ROWS; ++i) {

for (int j = 0; j < COLS; ++j) {

file >> seats[i][j];

}

}

file.close();

}

else {

for (int i = 0; i < ROWS; ++i) {

for (int j = 0; j < COLS; ++j) {

seats[i][j] = 'A';

}

}

ofstream newFile(filename);

for (int i = 0; i < ROWS; ++i) {

for (int j = 0; j < COLS; ++j) {

newFile << seats[i][j] << " ";

}

newFile << endl;

}

newFile.close();

}

}

void savetofile(int month, int date,int year) {

string filename = createfilename(month, date,year);

ofstream file(filename);

for (int i = 0; i < ROWS; ++i) {

for (int j = 0; j < COLS; ++j) {

file << seats[i][j] << " ";

}

file << endl;

}

file.close();

}

void displaySeats() {

cout << "\nSeating Arrangement (A = Available, B = Booked):\n";

cout << " ";

for (int j = 0; j < COLS; ++j) {

cout << "S" << (j + 1);

if (j < 9) cout << " ";

else cout << " ";

}

cout << endl;

for (int i = 0; i < ROWS; ++i) {

cout << "R" << (i + 1);

if (i < 9) cout << " ";

else cout << " ";

for (int j = 0; j < COLS; ++j) {

cout << seats[i][j] << " ";

}

cout << endl;

}

}

void bookseat(int month, int date,int year) {

int row, col;

cout << "Enter row (1-10): ";

cin >> row;

cout << "Enter column (1-10): ";

cin >> col;

if (row < 1 || row > ROWS || col < 1 || col > COLS) {

cout << "Invalid seat position.\n";

return;

}

if (seats[row - 1][col - 1] == 'A') {

seats[row - 1][col - 1] = 'B';

savetofile(month, date,year);

cout << "Seat booked successfully.\n";

cout << "Thanks For Booking." << endl;

} else {

cout << "Seat is already booked.\n";

}

}

void cancelSeat(int month, int date,int year) {

int row, col;

cout << "Enter row (1-10): ";

cin >> row;

cout << "Enter column (1-10): ";

cin >> col;

if (row < 1 || row > ROWS || col < 1 || col > COLS) {

cout << "Invalid seat position.\n";

return;

}

if (seats[row - 1][col - 1] == 'B') {

seats[row - 1][col - 1] = 'A';

savetofile(month, date,year);

cout << "Seat reservation canceled successfully.\n";

} else {

cout << "Seat is already available.\n";

}

}

void checkSeatStatus() {

int row, col;

cout << "Enter row (1-10): ";

cin >> row;

cout << "Enter column (1-10): ";

cin >> col;

if (row < 1 || row > ROWS || col < 1 || col > COLS) {

cout << "Invalid seat position.\n";

return;

}

cout << "Seat is " << (seats[row - 1][col - 1] == 'A' ? "Available.\n" : "Booked.\n");

}

// Function to create a filename based on month,date and year

string createfilename(int month, int date, int year) {

return "Month\_" + to\_string(month) + "\_Date\_" + to\_string(date) + "\_Year\_" + to\_string(year) + ".txt";

}

int main() {

int choice, month, date, year;

do {

cout << "\n\t\t\t The Four Cinema \n";

cout << "1. Display Seating Arrangement\n";

cout << "2. Book a Seat\n";

cout << "3. Cancel a Booking\n";

cout << "4. Check Seat Status\n";

cout << "5. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

if (choice >= 1 && choice <= 4) {

cout << "Enter month (1-12): ";

cin >> month;

if (month < 1 || month > 12) {

cout << "Invalid month. Please try again.\n";

continue;

}

cout << "Enter date (1-31): ";

cin >> date;

if (date < 1 || date > 31) {

cout << "Invalid date. Please try again.\n";

continue;

}

cout << "Enter Year : ";

cin >> year;

if (year < 2024) {

cout << "Year must be after 2024. Please try again.\n";

continue;

}

initializeSeats(month, date,year);

}

switch (choice) {

case 1:

displaySeats();

break;

case 2:

bookseat(month, date,year);

break;

case 3:

cancelSeat(month, date,year);

break;

case 4:

checkSeatStatus();

break;

case 5:

cout << "Thanks for using our servives.\n";

cout << "Exiting the program.\n";

break;

default:

cout << "Invalid choice! Try again.\n";

}

} while (choice != 5);

return 0;

}