Lab 5 — Cinema Management System

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**Course:** Object Oriented Programming

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**Department:** Computer Science

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**Code Excerpts:**

1. **Seat.java**

The Seat class is the foundational entity, representing a single chair with properties for its ID, type, and availability. It uses a type-safe Type enum for classification and tracks its availability with a boolean variable. The toString() method provides a clean summary of the seat’s state.

public class Seat{

private String id;

private Type type;

private boolean isAvailable;

private int price;

private int availabilityCount = 0;

Seat(int row, int column, Type type){

id = String.format("%d-%03d", row, column);

this.type = type;

isAvailable = true;

if(isAvailable == true){

availabilityCount++;

}

this.price = type.getPrice();

}

public boolean bookSeat(){

if(isAvailable){

isAvailable = false;

availabilityCount--;

return true;

}

else{

return false;

}

}

public boolean cancelBooking(){

if(!isAvailable){

isAvailable = true;

availabilityCount++;

return true;

}

else{

return false;

}

}

@Override

public String toString(){

return String.format("[%s]-%s-%d: %b", id, type, type.getPrice(), isAvailable);

}

}

1. **Screen.java**

The Screen class represents a physical auditorium backed by a jagged two-dimensional array of Seat objects. The constructor materializes the entire seat grid and assigns seat types and prices based on a defined policy. The class also includes methods to locate and manage seats, as well as generate compact and verbose display layouts.

public class Screen{

private String screenName;

//made changes in line 7

private final Seat seats[][] = new Seat[8][];

/\*Screen(String screenName){

this();

}\*/

Screen(String screenName){

this.screenName = screenName;

//initializing columns

for(int i = 0; i < seats.length; i++){

seats[i] = new Seat[10 + i];

}

//initializing objects

for(int i = 0; i < seats.length; i++){

for(int j = 0; j < seats[i].length; j++){

//conditions for distinction in seats

if(i < 2){

seats[i][j] = new Seat(i, j, Type.Regular);

}

else if(i >= 2 && i <= 3){

seats[i][j] = new Seat(i, j, Type.Premium);

}

else if(i >= 4 && i <= 5){

seats[i][j] = new Seat(i, j, Type.Vip);

}

else{

seats[i][j] = new Seat(i, j, Type.Recliner);

}

}

}

}

public void simpleDisplay(){

System.out.println("=== " + screenName + " | Layout ===");

for(int i = 0; i < seats.length; i++){

StringBuilder str = new StringBuilder();

for(int j = 0; j < seats[i].length; j++){

Seat s = seats[i][j];

char mark = (s.getAvailability() ? 'A' : 'X');

str.append(String.format("[%s:%c] ", s.getId(), mark));

}

System.out.println(str.toString());

}

System.out.printf("Total Seats: %d, Available Seats: %d%n%n", getTotalSeats(), AvailableSeatCount());

}

public Seat getSeat(int row, int column){

return seats[row][column];

}

public Seat getSeatById(String id){

for(int i = 0; i < seats.length; i++){

Seat[] row = seats[i];

for(int j = 0; j < row.length; j++){

Seat s = row[j];

if (id.equals(s.getId())){

return s;

}

}

}

return null;

}

1. **Cinema.java**

The Cinema class aggregates Screen instances using a plain Screen[] array. It manually grows capacity when needed by allocating a larger array and copying elements. It provides methods to manage screens, relay booking requests, and compute total and available seats. The toString() method summarizes its state in a single line.

public class Cinema{

private String cinemaName;

private int numberOfScreens;

Screen screens[];

Cinema(String cinemaName, int numberOfScreens){

this.numberOfScreens = numberOfScreens;

screens = new Screen[numberOfScreens];

for(int i = 0; i < screens.length; i++){

screens[i] = new Screen("Screen-"+ (i+1));

}

this.cinemaName = cinemaName;

}

public Screen getScreenByName(String screenName) {

for (Screen s : screens) {

if(screenName.equalsIgnoreCase(s.getScreenName())){

return s;

}

}

return null;

}

public void addScreen(Screen screen) {

if(screen == null) {

System.out.println("Cannot add screen: screen must not be null.");

return;

}

if(getScreenByName(screen.getScreenName()) != null) {

System.out.println("Screen with name '" + screen.getScreenName() + "' already exists.");

return;

}

Screen[] newScreens = new Screen[numberOfScreens + 1];

// Copy the old screens to the new array

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

newScreens[i] = screens[i];

}

// Add the new screen

newScreens[numberOfScreens] = screen;

// Update the array reference and screen count

screens = newScreens;

numberOfScreens++;

System.out.println("Screen '" + screen.getScreenName() + "' added successfully.");

}

public boolean book(String screenName, String seatId) {

Screen s = requireScreen(screenName);

return s.bookSeatById(seatId);

}

@Override

public String toString(){

return String.format("Cinema [name='%s', screens=%d, totalSeats=%d, available=%d]", cinemaName, getScreenCount(), getTotalSeatCount(),getAvailableSeatCount());

1. **CityCinema.java**

The CityCinema class manages multiple Cinema branches within a city using an arrays-only approach. It provides methods to add cinemas and relay booking/cancellation requests. It also includes a discovery helper to find the first available VIP seat and a method to preload data.

public class CityCinema {

private Cinema[] cinemas;

private final String cityName;

private int cinemaCount;

public CityCinema(String cityName) {

this.cityName = cityName;

this.cinemaCount = 0;

this.cinemas = new Cinema[2];

}

public CityCinema(String cityName, int numCinemas, int screensPerCinema) {

this(cityName);

if (numCinemas <= 0 || screensPerCinema <= 0) {

System.out.println("numCinemas and screensPerCinema must be positive.");

return;

}

ensureCapacity(numCinemas);

for (int i = 1; i <= numCinemas; i++) {

cinemas[cinemaCount++] = new Cinema("Cinema-" + i, screensPerCinema);

}

}

public boolean book(String cinemaName, String screenName, String seatId) {

Cinema c = requireCinema(cinemaName);

return c.book(screenName, seatId);

}

public String findFirstAvailablePretty(Type type) {

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

Cinema c = cinemas[i];

int screenCount = c.getScreenCount();

for (int sIdx = 0; sIdx < screenCount; sIdx++) {

Screen s = c.getScreen(sIdx);

Seat seat = s.findFirstAvailable(type);

if (seat != null) {

return String.format("%s > %s > Seat %s (%s, %d)",c.getCinemaName(), s.getScreenName(), seat.getId(), seat.getSeatType(), seat.getPrice());

}

}

}

return null;

}

public void simpleDisplay() {

System.out.println("=== CITY: " + cityName + " | All Cinema Layouts ===");

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

cinemas[i].simpleDisplay();

System.out.println("=======================================");

}

System.out.printf("City Totals -> Seats: %d, Available: %d%n", getTotalSeatCount(), getAvailableSeatCount());

System.out.println();

}

}

**Sample Outputs:**

1. **SeatDemo:**

--- Cinema Management System ---

>>> Making few seats:

New Regular Seat: [0-001]-Regular-500: true

New VIP Seat: [4-007]-Vip-1000: true

New Recliner Seat: [7-009]-Recliner-1200: true

>>> Demonstrating a booking:

Booking the VIP seat...

Booking successful? true

VIP Seat after booking: [4-007]-Vip-1000: false

>>> Attempting to book the same seat again:

Second booking successful? false

VIP Seat after failed attempt: [4-007]-Vip-1000: false

>>> Cancelling the booking:

Cancellation successful? true

VIP Seat after cancellation: [4-007]-Vip-1000: true

>>> Checking for a seat that was never booked:

Cancellation on an unbooked seat successful? false

Regular Seat state: [0-001]-Regular-500: true

1. **CinemaDemo:**

--- Cinema Management System ---

Initial Layouts:

=== CITY: Karachi | All Cinema Layouts ===

=== CINEMA: Cinema-1 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-3 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 324, Available: 324

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=== CINEMA: Cinema-2 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-3 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 324, Available: 324

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City Totals -> Seats: 648, Available: 648

=== CITY: Lahore | All Cinema Layouts ===

=== CINEMA: Cinema-1 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 216, Available: 216

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City Totals -> Seats: 216, Available: 216

=== CITY: Islamabad | All Cinema Layouts ===

=== CINEMA: Cinema-1 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 216, Available: 216

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=== CINEMA: Cinema-2 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 216, Available: 216

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City Totals -> Seats: 432, Available: 432

>>> Booking seat 3-007 in Karachi, Cinema-1, Screen-1

Booking success? true

>>> Trying to book the same seat again (failure is expected)

Second booking success? false

>>> Cancelling the booking

Cancellation success? true

Updated Layout for Karachi:

=== CITY: Karachi | All Cinema Layouts ===

=== CINEMA: Cinema-1 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-3 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 324, Available: 324

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=== CINEMA: Cinema-2 | Layouts ===

=== Screen-1 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-2 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

=== Screen-3 | Layout ===

[0-000:A] [0-001:A] [0-002:A] [0-003:A] [0-004:A] [0-005:A] [0-006:A] [0-007:A] [0-008:A] [0-009:A] [1-000:A] [1-001:A] [1-002:A] [1-003:A] [1-004:A] [1-005:A] [1-006:A] [1-007:A] [1-008:A] [1-009:A] [1-010:A] [2-000:A] [2-001:A] [2-002:A] [2-003:A] [2-004:A] [2-005:A] [2-006:A] [2-007:A] [2-008:A] [2-009:A] [2-010:A] [2-011:A] [3-000:A] [3-001:A] [3-002:A] [3-003:A] [3-004:A] [3-005:A] [3-006:A] [3-007:A] [3-008:A] [3-009:A] [3-010:A] [3-011:A] [3-012:A] [4-000:A] [4-001:A] [4-002:A] [4-003:A] [4-004:A] [4-005:A] [4-006:A] [4-007:A] [4-008:A] [4-009:A] [4-010:A] [4-011:A] [4-012:A] [4-013:A] [5-000:A] [5-001:A] [5-002:A] [5-003:A] [5-004:A] [5-005:A] [5-006:A] [5-007:A] [5-008:A] [5-009:A] [5-010:A] [5-011:A] [5-012:A] [5-013:A] [5-014:A] [6-000:A] [6-001:A] [6-002:A] [6-003:A] [6-004:A] [6-005:A] [6-006:A] [6-007:A] [6-008:A] [6-009:A] [6-010:A] [6-011:A] [6-012:A] [6-013:A] [6-014:A] [6-015:A] [7-000:A] [7-001:A] [7-002:A] [7-003:A] [7-004:A] [7-005:A] [7-006:A] [7-007:A] [7-008:A] [7-009:A] [7-010:A] [7-011:A] [7-012:A] [7-013:A] [7-014:A] [7-015:A] [7-016:A]

Total Seats: 108, Available Seats: 108

Cinema Totals -> Seats: 324, Available: 324

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City Totals -> Seats: 648, Available: 648

City Stats:

CityCinema [city='Karachi', cinemas=2, totalSeats=648, available=648]

CityCinema [city='Lahore', cinemas=1, totalSeats=216, available=216]

CityCinema [city='Islamabad', cinemas=2, totalSeats=432, available=432]

Finding first available VIP seat in Karachi:

Cinema-1 > Screen-1 > Seat 4-000 (Vip, 1000)