

# Blacklight Games:

At Blacklight we bring classic game experience to mobile. Our games have been rocking the Play Store since launch. Our real time multiplayer games are a piece of cutting-edge technology, we take pride that they are played by more than 2 million players daily. Our flagship game, Ludo Superstar has been downloaded more than 100 million times. Other titles include - Call Break, Carrom.

**Assignment**

**Coding interview questions: (Approx. 30 Mins)**

Note: This section requires working code written in java, JavaScript or c++. You have to describe multiple solutions with their time and space complexities but try to write running code for the optimal solution that you’ve come up with.

1. **Two Sum:** Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to**target**.

You may assume that each input would have **exactly one solution**, and you may not use the same element twice.

You can return the answer in any order.

1. **Matrix Diagonal Sum:** Given a square matrix mat, return the sum of the matrix diagonals.

Only include the sum of all the elements on the primary diagonal and all the elements on the secondary diagonal that are not part of the primary diagonal.

1. **Array Partition:** Given an integer array nums of 2n integers, group these integers into n pairs (a1, b1), (a2, b2), ..., (an, bn) such that the sum of min(ai, bi) for all i is **maximized**. Return the maximized sum.
2. **Pascal's Triangle :** Given an integer numRows, return the first numRows of **Pascal's triangle**.

In **Pascal's triangle**, each number is the sum of the two numbers directly it as shown below :



1. **Reshape the Matrix:** In MATLAB, there is a handy function called reshape which can reshape an m x n matrix into a new one with a different size r x c keeping its original data.

You are given an m x n matrix mat and two integers r and c representing the number of rows and the number of columns of the wanted reshaped matrix.

The reshaped matrix should be filled with all the elements of the original matrix in the same row-traversing order as they were.

If the reshape operation with given parameters is possible and legal, output the new reshaped matrix; Otherwise, output the original matrix.

**OR**

**System design questions: (Approx. 45 mins)**

Note: You can make educated guesses or assumptions whenever needed with stating a very brief explanation (if needed). Please try to implement as much as possible,

however, evaluation weighs less on how much of it is implemented but more on how well implemented things are done. So, focus on delivering quality features rather than quantity.

**1) Online movie ticket booking**

**Requirements:** You can book a movie ticket, select seats, make payment and get the ticket. You need to design a database schema for storing all the data by this ticket booking system.

The system includes:

City

Movie theatres (there can be multiple theatres in one city)

Movie halls (there can be multiple halls in one theatre)

movie (movie can be in different languages)

Ticket

Payment

Other:

- User can book multiple tickets at a time and select available seats.

Related task: Design rest api for this system.

**2) Online hotel booking**

**Requirements**: You can book rooms for stay in your journey, make payment and get receipt of confirmation. You need to design database schema for storing all the data by this system.

The system includes:

City

Hotel (there can be multiple Hotels in one city, hotel includes stays and other services)

Stay (no of days, no of people, no of rooms, rooms type(ac/non ac), check in/out time, other service subscription(cab service, tourist guide, food))

Payment

Other:

- Users can book hotel stays and can subscribe to specific additional services that the hotel is providing.

Related task: Design rest api for this system.