

# **Ciena Interview Experience (Java Profile)**

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## **Round 1 (Online Assessment - 110 minutes)**

For Java profile there were 2 coding questions

1. There is a small, one-way bridge that can carry a maximum weight of  $U$  units at a time. There is also a line of  $N$  cars waiting to cross the bridge. The weights of the cars are given as an array `weight`. The weight of the  $K^{th}$  car in the line is `weight[K]` (for  $K$  within the range  $[0..N-1]$ ). The car that will enter the bridge first weighs `weight[0]`, the car that will enter second weighs `weight[1]`, and so on.

At most two cars can be on the bridge at the same time. To begin, the first two cars in line will enter the bridge. Then the third car will enter the bridge as soon as the first car leaves the bridge, the fourth car will enter when the second car leaves, and so on. The cars leave the bridge in the same order they entered it.

However, this may lead to a situation where cars exceed the bridge's weight limit. To prevent such a situation, some drivers have to turn back. When a driver turns back, all drivers behind them in line move one position closer to the bridge. The driver who turns back is removed from the line and will not try to cross the bridge again.

Your task is to find the minimum number of drivers that must turn back so that the bridge will not be overloaded.

Write a function:

```
int solution (int U, List<Integer> weight)
```

that, given an integer  $U$  representing the weight limit of the bridge and an array `weight` of  $N$  integers representing the weights of the cars in line, returns the minimum number of drivers that must turn back so that the bridge will not be overloaded.

Example:

1. For  $U = 9$  and `weight = [5,3,8,1,8,7,7,6]`, the function should return 4. After the 3rd, 5th, 6th and 7th cars turn back, the `weights` of the remaining cars in line are `[5,3,1,6]`. Notice that instead of the 5th, 6th and 7th cars, any three of the last four cars can turn back to obtain an optimal answer. The cars will then cross the bridge as follows:
  - the 1st car (weight 5) enters the bridge
  - the 2nd car (weight 3) enters the bridge, the total weight of cars on the bridge is  $5 + 3 = 8$
  - the 1st car (weight 5) leaves the bridge
  - the 3rd car (weight 1) enters the bridge, the total weight of cars on the bridge is  $3 + 1 = 4$
  - the 2nd car (weight 3) leaves the bridge

- the 4th car (weight 6) enters the bridge, the total weight of cars on the bridge is  $1 + 6 = 7$
  - the 3rd car (weight 1) leaves the bridge
  - the 4th car (weight 6) leaves the bridge.
2. For  $U = 7$  and  $\text{weight} = [7, 6, 5, 2, 7, 4, 5, 4]$ , the function should return 5. After the 1st, 2nd, 5th, 6th and 7th cars turn back, the weights of the remaining cars in line are  $[5, 2, 4]$ . Notice that instead of the 6th and 7th cars, any two of the last three cars can turn back to obtain an optimal answer.
  3. For  $U = 7$  and  $\text{weight} = [3, 4, 3, 1]$ , the function should return 0. There is no need for any car to turn back.
2. There are  $N$  empty glasses with a capacity of  $1, 2, \dots, N$  liters (there is exactly one glass of each unique capacity). You want to pour exactly  $k$  liters of water into glasses. Each glass may be either full or empty (a glass cannot be partially filled). What is the minimum number of glasses that you need to contain  $K$  liters of water?

Write a function:

```
int solution(int N,int K)
```

that, given two integers  $N$  and  $K$ , returns the minimum number of glasses that are needed to contain exactly  $K$  liters of water. If it is not possible to pour exactly  $K$  liters of water into glasses then the function should return -1.

Examples:

1. Given  $N = 5$  and  $K = 8$ , the function should return 2. There are five glasses of capacity 1, 2, 3, 4 and 5. You can use two glasses with capacity 3 and 5 to hold 8 liters of water.
2. Given  $N = 4$  and  $K = 10$ , the function should return 4. You must use all the glasses to contain 10 liters of water.
3. Given  $N = 1$  and  $K = 2$ , the function should return -1. There is only one glass with capacity 1, so you cannot pour 2 liters of water.
4. Given  $N = 10$  and  $K = 5$ , the function should return 1. You can use the glass with capacity 5.

## Round 2 (Technical Interview 1 - 40 minutes)

The Interview started with my introduction, then he asked me to give an overview of one of my projects, then he asked me what database did I used in my project.

As I was using MongoDB he asked me how I am connecting to the database and asked me to write the code for the same, then we had a long discussion on MongoDB like

- Difference between MongoDB and MySQL.
- How is data stored in MongoDB database.
- Suppose you are given 1billion records of data, and we need to filter some records (like name starts with 'a') will mongodb be faster than MySQL.
- How is a MongoDB database scaled horizontally.
- Is reading a record from MongoDB faster than MySQL.
- Is writing a record to MongoDB faster than MySQL.

These are some of the points from our discussion on MongoDB which took approx 15-20 min.

Next he asked me how would I rate myself in java, and what all Collection classes I am familiar with.

Then he asked me

- To implement the HashMap class.
- What is collision, approaches to handle collision and which approach I was using in my HashMap implementation.
- What is polymorphism?

```
class A{ void f() {} }  
class B extends A{ void f() {} }  
A x = new B();  
x.f(); // which class function will be called.
```

- Given an array of integer say `[4,8,2,6,8,7,3]`, how will you sort these numbers.

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### ***Round 3 (Technical Interview 2 - 40 minutes)***

The interview directly started with my projects in depth discussion on all of the projects mentioned in my resume. this took more than 20-25 min.

Then he asked me how would I rate myself in Java and asked some questions on java.

- Have you heard anything about serializability.
- Gave a snippet of string pooling and asked me the output of the same.
- Do you know about Thread-safe?
- Gave a snippet of function overloading and asked me the output of the same.
- What is race condition?
- How can you prevent deadlock in java threads?
- What do you know about Ciena?
- In which field you want to move ahead in your career.
- Why did you chose computer science.

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### ***Round 4 (HR Interview - 10 minutes)***

The interview started with her introduction and then asked for my introduction and family background.

Then she asked me to give a brief overview of one of my project.

if I had worked on any other project that is not listed on my resume and if it was a team project.

How I handled any issues that arose in the team project.

While pursuing MCA, is there any skill that you learnt (apart from technical skills) that you will keep on using and that will help you in future.

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From both profiles combined 14 students were given Inter + FTE offer.

## **All The Best!!**