Minimum Number of Refueling Stops

Try to solve the Minimum Number of Refueling Stops problem.

We'll cover the following

Statement

You need to find the minimum number of refueling stops that a car needs to make to cover a distance, `target`. For simplicity, assume that the car has to travel from west to east in a straight line. There are various fuel stations on the way that are represented as a 2-D array of stations, i.e., `stations[i]` $= [d_i, f_i]$, where d_i is the distance (in miles) of the i^{th} gas station from the starting position, and f_i is the amount of fuel (in liters) that it stores. Initially, the car starts with `k` liters of fuel. The car consumes one liter of fuel for every mile traveled. Upon reaching a gas station, the car can stop and refuel using all the petrol stored at the station. If it cannot reach the target, the program returns -1.

> **Note:** If the car reaches a station with 0 fuel left, it can refuel from that station, and all the fuel from that station can be transferred to the car. If the car reaches the target with 0 fuel left, it is still considered to have arrived.

Constraints:

- $1 \leq$ `target`, `k` $\leq 10^9$
- $0 \leq$ `stations.length` ≤ 900
- $1 \leq d_i < d_{i+1} <$ `target`
- $1 \leq f_i < 10^9$

Examples

Sample example

Starting fuel = 3
target = 15

Stations[distance][fuel]

distance	fuel
2	5
3	1

6	4
12	6

Understand the problem

Let’s take a moment to make sure you've correctly understood the problem. The quiz below helps you check if you're solving the correct problem:

Minimum Number of Refueling Stops

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Suppose the starting fuel is 9, and the target to be achieved is 33. Which of the following is the correct option for the minimum number of refueling stops?

```
|   Distance |    Fuel     |
-----------------------------
|          5 |      8      |
|          7 |     11      |
|         10 |      3      |
|         13 |      7      |
|         21 |      6      |
```

A) 4

B) 3

C) 5

D) 2

Submit Answer

Question 1 of 2
0 attempted

Reset Quiz

Figure it out!

We have a game for you to play. Rearrange the logical building blocks to develop a clearer understanding of how to solve this problem.

Drag and drop the cards to rearrange them in the correct sequence.

If the start fuel is greater than or equal to the target, then the car doesn't need to refuel, so return 0.

Iterate over the refueling stations until the maximum distance is less than the target and the car is not out of fuel.

If the car can reach the next station from the current position, then add its fuel capacity to the max-heap.

If the car cannot reach the next fuel station, pop the station with the highest fuel value from the max-heap, add its fuel to the car's tank, and increment the stops.

Return the number of stops. If the car cannot reach the destination even after stopping at all the fuel stations, return -1.

Reset | Show Solution | Submit

Try it yourself

Implement your solution in the following coding playground:

Java

usercode > MinimumRefuelStops.java

```
1  import java.util.*;
2  class MinimumRefuelStops {
5          return -1;
6      }
7  }
```

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Test Cases | Results

Case 1 | Case 2 | Case 3

Input #1

3

Input #2

3

Input #3

[]

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Solution: Two City Sch...

Next

Solution: Minimum Nu...

Mark as Completed