Help XYZ design and code a Cab booking system for one of its client CoolCabs. The system is required to be a computer-based-booking system that receives booking requests and books the cabs corresponding to requests.

The city in which CoolCabs operates in is divided into 100 sectors each having 6 digits area codes ranging

from 100001 to 100100. The distance between two adjacent sectors is 2 km I.e. distance between area 100008 and 100009 is 2 km, similarly between 100008 and 100015 is 14 km. Time taken by a cab to travel 1 km is 2 minutes. The company incurs a cost of Rs. 5/ km but charges a fare of Rs.10/ km.

The system specifications for booking are as follows:

The system takes a batch of booking requests and finds suitable cabs for serving the requests. It can be

assumed that requests can only have pickup time on the same day. A request comprises of unique

request id, pick up area code, and drop area code and pickup time.

System should take the requests and book the cabs that meet the following criteria:

• The cab booked should reach the pickup point 15 minutes early.

• The cab earns a profit margin of at least 20%.

In case system finds multiple cabs satisfying above criteria for a request then system books the one in

which profit is maximum.

For the purpose of simulation, you can assume that there are 4 cabs at the following location:

**Cab No# Initial location**

DL01HB001 100020

DL01HB002 100040

DL01HB003 100060

DL01HB004 100080

And there is following batch of booking requests:

BookingId Pickuparea Droparea PickUpTime

BR001 100025 100036 10 am

BR002 100056 100042 11am

BR003 100044 100056 12pm

BR004 100028 100036 3pm

Evaluation criteria

• Code Completeness/ Correctness

• Code Structure and quality: Modularity, usage of OO principles, size of classes/functions,

class/function/variable names, package/class structure

• Choice of data structures

• Unit Test cases

• Coding productivity (more time you take to submit the exercise, lesser you will score)

Better you perform on this criteria, higher you will score.