Gmail **Unmesh Vinchurkar <unmeshv02@gmail.com>**

Re: ThoughtWorks Code Review (Mars Rover) - INDIA

2 messages

Unmesh Vinchurkar <unmeshv02@gmail.com> Sun, Mar 22, 2009 at 11:31 PM
To: CODE@thoughtworks.com
Cc: Phani A Kumar <phanik@thoughtworks.com>

Hi,
Please find my solution for the Mars rover problem.

MarsRover.zip: Contains the source code.
ProgramDescription.docx: Describes the Interfaces, classes and their functionality. It also describes how to run the program.

Regards
Unmesh

On Thu, Mar 19, 2009 at 2:41 PM, Phani A Kumar <phanik@thoughtworks.com> wrote:

> Dear Unmesh:
>
> Thanks again for your interest in ThoughtWorks. Enclosed are two programming problems. We ask that you read both descriptions thoroughly then create a program to solve **ONE** of the problems. If you choose to do both problems, we will choose and evaluate only one of your solutions.
>
> · For the solution, we would want you use either Java, Ruby or C#.
> · We are interested in the DESIGN ASPECT of your solution and would like to evaluate your OBJECT ORIENTED PROGRAMMING SKILLS.
> · You may use external libraries or tools for building or testing purposes. Specifically, you may use JUnit / NUnit / Ant or their equivalents to assist your development.
> · Optionally, you may also include a brief explanation of your design and assumptions along with your code.
> · Kindly note that we are NOT expecting a web-based application or a comprehensive UI. Rather, we are expecting a simple, console based application and interested in your source code.
>
> Notes for C# developers:
> · For security reasons, please do NOT submit your C# code as a .msi file.
> · For convenience of reviewing, we request you NOT to use regions in the code.
>
> Please email your completed solution to CODE@THOUGHTWORKS.COM within three days. To expedite proper routing of your code, please type the COUNTRY of the ThoughtWorks office you are applying to (AUSTRALIA, UK, INDIA, USA, CHINA or CANADA) in the Subject Line of your email.
>
> As a general rule, we allow three days from the date that you receive this letter to submit your code to CODE@THOUGHTWORKS.COM, but you may request more time if needed. Because we may use your code as an interview tool, ThoughtWorks reserves the right to postpone your technical interview if your code is not received. If you have any questions about the code as it relates to your interview process, please contact us at CODE@THOUGHTWORKS.COM.

ThoughtWorks would like the opportunity to offer you a challenging career with our dynamic team. We wish you luck and look forward to receiving your response.

Regards,

Phani
ThoughtWorks Recruiting
CODE@THOUGHTWORKS.COM

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INTRODUCTION TO THE PROBLEMS

All problems below require some kind of input. You are free to implement any mechanism for feeding input into your solution (for example, using hard coded data within a unit test). You should provide sufficient evidence that your solution is complete by, as a minimum, indicating that it works correctly against the supplied test data.

PROBLEM ONE: MARS ROVERS

A squad of robotic rovers are to be landed by NASA on a plateau on Mars. This plateau, which is curiously rectangular, must be navigated by the rovers so that their on-board cameras can get a complete view of the surrounding terrain to send back to Earth.

A rover's position and location is represented by a combination of x and y co-ordinates and a letter representing one of the four cardinal compass points. The plateau is divided up into a grid to simplify navigation. An example position might be 0, 0, N, which means the rover is in the bottom left corner and facing North.

In order to control a rover, NASA sends a simple string of letters. The possible letters are 'L', 'R' and 'M'. 'L' and 'R' makes the rover spin 90 degrees left or right respectively, without moving from its current spot. 'M' means move forward one grid point, and maintain the same heading.

Assume that the square directly North from (x, y) is (x, y+1).

INPUT:
The first line of input is the upper-right coordinates of the plateau, the lower-left coordinates are assumed to be 0,0.

The rest of the input is information pertaining to the rovers that have been deployed. Each rover has two lines of input. The first line gives the rover's position, and the second line is a series of instructions telling the rover how to explore the plateau.

The position is made up of two integers and a letter separated by spaces, corresponding to the x and y co-ordinates and the rover's orientation.

Each rover will be finished sequentially, which means that the second rover won't start to move until the first one has finished moving.

OUTPUT
The output for each rover should be its final co-ordinates and heading.

INPUT AND OUTPUT

Test Input:

5 5
1 2 N
LMLMLMLMM
3 3 E
MMRMMRMRRM

Expected Output:
1 3 N
5 1 E
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PROBLEM TWO: SALES TAXES

Basic sales tax is applicable at a rate of 10% on all goods, except books, food, and medical products that are exempt. Import duty is an additional sales tax applicable on all imported goods at a rate of 5%, with no exemptions.

When I purchase items I receive a receipt which lists the name of all the items and their price (including tax), finishing with the total cost of the items, and the total amounts of sales taxes paid. The rounding rules for sales tax are that for a tax rate of n%, a shelf price of p contains (np/100 rounded up to the nearest 0.05) amount of sales tax.

Write an application that prints out the receipt details for these shopping baskets...
INPUT:

Input 1:
1 book at 12.49
1 music CD at 14.99
1 chocolate bar at 0.85

Input 2:
1 imported box of chocolates at 10.00
1 imported bottle of perfume at 47.50

Input 3:
1 imported bottle of perfume at 27.99
1 bottle of perfume at 18.99
1 packet of headache pills at 9.75
1 box of imported chocolates at 11.25

OUTPUT

Output 1:
1 book : 12.49
1 music CD: 16.49
1 chocolate bar: 0.85
Sales Taxes: 1.50
Total: 29.83

Output 2:
1 imported box of chocolates: 10.50
1 imported bottle of perfume: 54.65
Sales Taxes: 7.65
Total: 65.15

Output 3:
1 imported bottle of perfume: 32.19
1 bottle of perfume: 20.89
1 packet of headache pills: 9.75
1 imported box of chocolates: 11.85
Sales Taxes: 6.70
Total: 74.68

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3 attachments

ProgramDescription.txt
3K

MarsRover.zip
30K

ProgramDescription.docx
16K

Unmesh Vinchurkar <unmeshv02@gmail.com> Tue, May 18, 2010 at 1:31 PM
To: shrawan.raj@gmail.com

FYI
[Quoted text hidden]

3 attachments

ProgramDescription.txt
3K

MarsRover.zip
30K

ProgramDescription.docx
16K