The solution should be in the form of a Microsoft .NET application written in the C# language. Please feel free to exhibit any techniques or practices that you think may interest us.

Once you’re done, you can choose how to submit your solution. A link to a public GitHub repository or a ZIP file via email would be ideal.

Technical Task

Can you design an application to control the movements of NASA’s next Mars rover?

You have been told that your exploration area on Mars is a 100 metres x 100 metres square. The area has been divided into a 100 x 100 grid of numbered squares. The squares are numbered from 1 through to 10,000 (please see diagram 1 below).

The rover starts its journey located in square number 1, it is facing south and can either turn left, right or move forward a given number of metres. The rover can take a maximum of 5 commands at any time. After each set of commands, the rover reports back its current position and the direction that it is facing.

For example, here is a set of 5 commands:

50m  
  
  
  
Left  
  
  
  
23m  
  
  
  
Left  
  
  
  
4m

The above set of commands would cause the rover to report back position 4,624 north.

The next set of commands would then continue from the square where the rover finished. Please note that the rover cannot venture outside of the 100 x 100 area. If the rover is instructed to cross the perimeter of the exploration area, it will halt and refuse to execute any additional queued commands.

Diagram 1

1  
2  
3  
…

101  
102  
103  
…

201  
202  
203  
…

…  
…  
…  
…

If you have any questions about this task or the role, please feel free to send me an email. I look forward to hearing from you soon!