Cint assignment 2008
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Assignment Instructions

Folder structure

All the necessary files and folders should be provided with the assignment. As well as this document.

The assignment folder structure looks as follows:

```
Cint.Cleaner\
     build\          Artifact directory
     doc\            Documentation and Assignment instructions
     lib\            The external libraries that are allowed to solve this
     src\            The source folder containing all your tests and source
     tools\          Tools used for build scripts
     cleaner.build   A nant-build file
     go.bat          A help file to run the nant commands
```

How to use the nant file

The nant build file could be used from your command prompt.
It can be used to issue 3 different commands.

```
#\>go [clean | compile | test]
```

- **`clean`** – Will remove the entire \build directory
- **`compile`** – Will compile your `\src\Cleaner.sln` with `AutomatedDebug` configuration. This will in turn make your output artifacts end up in build\Debug
- **`test`** – Will run clean, compile and then run all tests in the `Cint.Cleaner.Tests` assembly.

Assignment time limit

The assignment should be solved and resent to Cint within 3 days, starting when you receive the assignment.

Input/ Output

The assignment will be run through an automatic test-tool. Therefore I can't stress enough how "careful" you have to be with output and input! Make sure that you read input in a correct manner, and that your output looks **exactly** as the sample output. If there are any uncertainties regarding the assignment, please don't hesitate to ask us about it. The purpose of the assignment is for you to show us how you code, not to make you sweat blood and tears.

Regarding external libraries

You are not allowed to use any other external library than the ones provided with the assignment. That is `NMock` and `NUnit`.

Regarding the folder structure

Please resend the assignment intact. That is, in the same structure you got it and with all files that came with it.

Notes

The challenge is stated below. I look forward to review your code!

Good Luck!

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The CACR2008

Background

When you have a lot of people working, living and messing around in an office space, it eventually gets dirty and chaotic. To solve this, we had only 2 obvious solutions. The first one was to punish all the employees if they didn’t clean up before going home in some kind of way. The other (that was a bit more in the line of your work) was the idea of an automatic cleaning robot that should clean up the office during nighttime.

Assignment

Your assignment will be to build a prototype of this robot.
To make sure that we get something that will give us some business value as soon as possible, we designed the assignment to be as small as possible.
The robot will, given some instructions (stated below as input), run on its own (without any interference from us) during the night. When we get back in the morning we will ask it to report how many unique places in the office it has visited and cleaned.

The Input

The input will be given on standard in.
The number of commands that the robot should execute are given as an integer $\boldsymbol{n}\ \left(\mathbf{0} \le \boldsymbol{n} \le \mathbf{10\,000}\right)$ on the first line of input. Following that, is the starting position $(\boldsymbol{x}, \boldsymbol{y})$ of the robot in a plane, where the plane can be between $\boldsymbol{x}\ (-\mathbf{100\,000} \le \boldsymbol{x} \le \mathbf{100\,000})$ and $\boldsymbol{y}\ (-\mathbf{100\,000} \le \boldsymbol{y} \le \mathbf{100\,000})$**.**
The rest of the input will consist of a character $\boldsymbol{c}\ \boldsymbol{\epsilon}\ \{\boldsymbol{E}, \boldsymbol{W}, \boldsymbol{S}, \boldsymbol{N}\}$ denoting the point of compass that the robot should head towards next; followed by a number of steps $\boldsymbol{s}\ (\mathbf{0} < s < 100\,000)$ that the robot should take in that direction. The instructions will not send the robot outside the bounds of the plane, so you don’t have to consider that.

Note: The robot cleans everywhere as it moves forward. Not only on stops.

The Output

The output of your program should be a number $\mathbf{u}$, which will represent the number of unique places in the office that it has cleaned.

Sample input:

```
2
10 22
E 2
N 1
```

Sample output:

```
=> Cleaned: 4
```