CSC 7003 : Basics of Software Engineering

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http://www-public.telecom-sudparis.eu/~gibson/Teaching/CSC7003/

Requirements Creep - Changes

~/gibson/Teaching/CSC7003/L6-RequirementsCreepChanges.pdf
The Robot Problem: Requirement 2

A second type of robot can also move \textit{diagonally}.

You are to extend the system to calculate the partition values for \textit{both} types of robot.

In this case, the number of partitions is now 2 as the previously \textit{separated} square is now connected to the partition in \textit{blue}.
The Robot Problem: Requirement 3

Robots are limited by the amount of distance they can travel. As a useful bound on this value, you are to calculate the size of the largest partition (for both types of robot)

In this example (with the 2\textsuperscript{nd} type of robot) the largest partition is coloured blue and its size is 58
The Robot Problem: Requirement 4 – visit each space once

Now the next requirement is a simple boolean function that returns whether all the spaces in a partition can be visited by a robot without that robot having to step on a space they have already stepped on. In the example above, the answer is true for the green partition. Is it true for the blue partition?

Can you solve this for both types of robot?
The Robot Problem: Requirement 5 - statistics

In a m*n grid, with each position having a probability of $p$ ($0<p<1$) of being a wall, what is the probability that the number of partitions for robot2 is less than the number of partitions for robot1?

You are to calculate the probability – as best as you can – to 3 decimal places.