Exercise

This exercise will help you get more familiar with our domain and is a chance for us to understand how you approach problems.

We will be looking for the following from your exercise:

- Modern C#
- Problem Analysis
- Maintainability/Readability
- Testing
- Efficiency

There are many ways to achieve a working solution. If anything is not described in enough detail, please make assumptions on how you believe it should work. Please provide a list of any assumptions made.

You have been provided with a partial console application. You may change any part of the provided partial console application or choose to not use it altogether.

Specification

A customer wants to take some measurements using a coordinate measurement machine they recently purchased. This machine uses a probe to take a measurement when it collides with an object.

The table of the machine is divided into a 2D grid. The machine probe & objects on the table have positions represented as a combination of X and Y coordinates (X Y). The machine's probe can move from (0 0) to (N M) where (N M) is the machine table's upper right corner. You may assume the user knows the value of N & M.

The machine is only able to take a measurement when in "measurement mode", which is initially off. You may assume the desired measurement coordinates will be the collided object's position, and that the machine moves to the previous non-colliding position after collision.

The customer can send these commands to the machine:

- L – Move Left
- R – Move Right
- U – Move Up
- D – Move Down
- O – Measurement Mode On
- F – Measurement Mode Off

The customer currently knows their machine's size, machine probe's current position, and positions of objects on the table. The customer has a list of commands they'd like to send to the machine. Unfortunately, they're worried their list of commands may not work when they run them directly on the real machine. They've asked you to create a way to test out their list of commands in a simulated environment to verify their program does what they expect. They would like to know any measurements taken, the probe ending position, and/or errors that occur.

Console Solution Example

```
./ConsoleSimulator.exe
Machine Size: 7 7
Probe Starting Position: 2 4
Object Positions: 0 2, 1 2, 2 2, 3 2, 4 1
Machine Commands: DRODFRODDFR


Measurements Output: 3 2, 4 1
Probe Ending Position: 5 2
```

Graphic of Console Solution Example