Lab02 - Counting

Student 1 Name	**Luke Creech**
Student 1 Computing ID	**lmc3axn**
Student 2 Name	**Jinming Liang**
Student 2 Computing ID	**jl7ut**
Student 3 Name	**Tianze Ren**
Student 3 Computing ID	**tr2bx**

Simple Square

Write your pseudo code for objective ‘2.1 - Simple Square’ here.

```
num = number of doors walked through
Check S
        If S has a door:
            -   Walk through the door
            -   Add 1 to num
            -   Repeat until S does not have a door
        Else
            -   Stop
side = num + 1
Rooms = side * side
# On an n-by-n grid the robot moves through num + 1 doors
```

Simple Rectangular

Write your pseudo code for objective ‘2.2 - Simple Rectangular’ here.

```
num = number of doors walked through vertically
num2 = number of doors walked through horizontally
Check S
        If S has a door:
            -   Walk through the door
            -   Add 1 to num
            -   Repeat until S does not have a door
        Else
            -   Stop
Check E
```

```
        If E has a door:
            -   Walk through the door
            -   Add 1 to num2
            -   Repeat until E does not have a door
        Else
            -   Stop

side = num + 1
side2 = num2 + 1
```

*Rooms = side * side2*

General Rectangular

Write your pseudo code for objective ‘2.3 - General Rectangular’ here.

```
num = number of doors walked through vertically
num2 = number of doors walked through horizontally
Check W
        If W has a door:
            -   Walk through the door
            -   Repeat until W does not have a door
        Else
            -   Stop
Check N
        If N has a door:
            -   Walk through the door
            -   Repeat until N does not have a door
        Else
            -   Stop
Check S
        If S has a door:
            -   Walk through the door
            -   Add 1 to num
            -   Repeat until S does not have a door
        Else
            -   Stop
Check E
        If E has a door:
            -   Walk through the door
            -   Add 1 to num2
            -   Repeat until E does not have a door
        Else
        - Stop
side = num + 1
side2 = num2 + 1
Rooms = side * side2
```

Stranger Grids

Write your pseudo code for objective ‘2.4 - Stranger Grids’ here.

# This algorithm can determine the amount of rooms in a diamond (assuming all doors and rooms are present).

```
Check N
    If N has a door
        - Walk through the door
        - Repeat until N does not have a door
    Else
        - Check E
            - If E has a door:
                - Walk through the door
                - Return to Checking N
            Else
                - Check W
                    - If W has a door:
                        - Walk through the door
                        - Return to Checking N
                    Else
                        - Stop

Check S
    If S has a door
        - Walk through the door
        - Add 1 to n
        - Repeat until S does not have a door
n = number of rooms counted
C = n + 1
Number of rooms in grid = (((C^2) + 1)/ 2)
```

# This algorithm counts the number of rooms in the central column and then uses that value to calculate the number of rooms in the diamond.