COMP517 Assignment 8
(Worth 20% of the module mark)

I have said much in lectures recently about reuse and the role of aggregation to build new objects.

In this exercise you are asked to implement part of the object model developed for the adventure game in the previous assignment, but also to reuse the code you developed for Assignment 5.

First of all, create a warehouse as a square (n x n) array of rooms, with no doors in any of the rooms initially. The size of n should be entered by the user. Next, randomly give each room some doors (doors are not allowed on external walls). This can be achieved by using an array of 4 elements for each room, indicating whether there is a door in each of the four walls. The algorithm is then:

```
For each room
    If no. of doors is less than 2   // i.e. zero or one door currently
        // Add a door
        Generate random doors until you find an internal one that is not already there
        Install the door
        Update the neighbouring room
```

Note that a door connects two rooms; hence the need to update the doors in the neighbouring room. This means that a room can end up with one or several doors.

Next, draw the floorplan of the warehouse, indicating the position of each door. For this, reuse the code you produced for Assignment 5. Draw a row of the warehouse at a time, asking each room to deliver its string representation and then breaking those strings into component parts so that you can output one whole line at a time. You may assume that consistent character symbols are to be used to draw each room. A sample run is given below. You will see that I have used a 'D' symbol to show the positions of doors more clearly, but you are free to choose how to draw your own!

Finally, ask the user to enter a starting position for the game (number each row and column from 1), and then describe that room to them.

Let the adventure begin!

MARKING CRITERIA

Program correctness and approach: 65%
Documentation (commenting and report): 15%
Program style (e.g. layout): 10%
Testing: 10%

SUBMISSION

As usual, submit your program, test data and output electronically. Include a brief report to explain your approach.

The deadline for submission of your solution is 16.00 on Friday November 24

SAMPLE RUN

```
Please enter the size of the warehouse: 3

---------------
|   ||   ||   |
|   DD   DD   |
|   ||   ||   |
--D----D----D--
--D----D----D--
|   ||   ||   |
|   ||   DD   |
|   ||   ||   |
--D---------D--
--D---------D--
|   ||   ||   |
|   ||   DD   |
|   ||   ||   |
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Enter starting position (row, col): 2 3

You are in a room.
There is a door going north
There is a door going south
There is a door going west
```