Assignment 6

1. 15 points

Create a function generateMoves which takes a position as an argument,
and generates a list of tuples corresponding to the moves available in that position.

That is, complete the following:

```
def generateMoves(position):
    #your code here
```

for example, generateMoves((('X','O','X'),('O','X','O'),('-','-','-')))
should return [(2,0),(2,1),(2,2)]

2. 20 points

Create a function generateNextPositions which takes a position and the player on move as an argument,
and returns a dictionary from moves to positions.

That is, complete the following:

```
def generateNextPositions(position,playerOnMove):
    #your code here
```

hint: Use generateMoves in your code here.

3. 15 points

Create a function inputMove which takes a position and a player as an argument,
and returns an updated position after allowing the human player to make a move.

Input is obtained via standard input,
and expected to be two numbers on one line, separated by a space.

That is, complete the following:

```
def inputMove(position, player):
    #your code here
```

4. 50 points

For this problem you will create a program which can find a path out of a maze.

The input to the problem will be given via standard input.
The first line will be a single number n, the height of the maze.
The second line will be a single number m, the width of the maze.

The next n lines will be m characters long, and indicate the maze.

'S' means solid, 'E' means empty, and 'R' is where we are.

We can occupy any square marked empty,
and the square marked R becomes marked E when we move from it.
We cannot occupy any square marked as solid.

an example input would be

```
6
5
SESSS
SEESS
SSRSS
SSESS
SEEES
SSSSS
```

The program should output the path out of the maze, given as a sequence of UP, DOWN, LEFT, or RIGHT.

Thus a correct output to this puzzle is
UP LEFT UP UP