Week 5

Problem 4

The chess horse starts at cell (0,0), this is the first cell to be visited, numbered with a 0. On our board, the chess horse will be able to do a total of 64 max moves, as it is an 8*8 board (N*N, where N = 8 is the number of rows and columns).

While moving the chess horse, we check if it has covered all the cells. If all 64 cells were covered, the complete board is printed with the numbers that indicate the horse´s moves.

The horse will have 8 possible moves at maximum. One of the possible moves is chosen and the position (row and column) is updated and the next move in sequence is invoked. However, there is a possibility where the knight has no more possible moves without visiting all the cells, due to already visited cells, as it can visit each only once. If this occurs, false value is returned, and the previous cell is cleared off because at least the last movement should have been incorrect. Like that, if the failure continues, the process of clearing off cells propagates up and other possibilities are examined. Like that, we either obtain the solution or print a message where no solution was found.

In an 8x8 board, we obtain this result:

```
0 59 38 33 30 17 8 63
37 34 31 60 9 62 29 16
58 1 36 39 32 27 18 7
35 48 41 26 61 10 15 28
42 57 2 49 40 23 6 19
47 50 45 54 25 20 11 14
56 43 52 3 22 13 24 5
51 46 55 44 53 4 21 12
```

We can easily track the movements of the horse by following the numbers in order, where 0 is the starting point. We can also check that the algorithm works perfectly.