# Knight's Tour Problem

S Krishna Savant
100070056

August 2, 2012

## 1 Algorithm for solving the problem

The idea is to intelligently brute-force to find the solution. The algorithm starts from a point and keeps on exploring until all squares are covered or a dead end is found. On finding a deadend, the algorithm will backtrack the steps and go to the previous location to see if there are other unexplored paths and go to the square nearest to the corners . On covering all squares, it'll check whether the path is closed. If it is not closed, the algorithm will again backtrack the path to find another tour.

## 2 Programming and Data Structures

I implemented the program in python. The board is represented as a list of lists of strings representing when the square is reached and the path traversed till now is stored as a list of list of tuples , a list of tuples for each move.

## 3 Sample Output

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

## 4 References

see.stanford.edu/materials/icspacs106b/H19-RecBacktrackExamples.pdf
en.wikipedia.org/wiki/Knight's_tour

www.csc.liv.ac.uk/~ped/teachadmin/algor/search.html