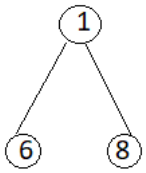
The Knight's Tour

Consider the graph G_n that corresponds to possible moves of a knight on a $n \times n$ chessboard. The vertices of the graph are at the centre of each square on the chessboard. Two vertices are adjacent when a knight can move from one square to another in a single move. In graph theory, if two vertices are adjacent, there exists an edge connecting them. For example, in a 3×3 chess board, all the possible moves from vertex 1 can be shown by

1	2	3
4	5	6
7	8	9



1) Draw the graph for G_5, Determine the number of vertices and edges of G_5.

Now consider the case if the knight is to visit each vertex exactly once in one walk.

2) Find the first value of n for which this occurs, draw a diagram of the chess board for this walk. Label the order of the vertices of your walk.