Taylor Rembos
Lab 0 Part 2
EEL 3135
Due May 13 by 11:59pm

Lab 0 Part 2

Write a function that uses this method, iterating through a matrix, to create a magic square of size `n`, where `n` is an odd number equal to or greater than 3.

Function magicsquare.m

```
% IMPORTANT: only works for odd numbers greater than 3
function output = magicsquare(n)

    % initialize with zeros() function
    matrix = zeros(n);

    % place first number
    col = (n-1)/2 + 1; % first number of magic square starts in the
middle of top row
    row = 1; % top row

    % for loop with iterator i
    for i = 1:(n^2) % start with 1 up to n^2 (perfect square of n sized
matrix)
        % if filled, move down one from original
        if(matrix(row, col) ~= 0) % if a space in square is filled ...
            row = row + 2; % ... move down 2 rows ...
            col = col - 1; % ... and 1 column to the left
        end
        % up one, right one method
        matrix(row, col) = i % input i at matrix(a,b) position
        row = row - 1; % move up one row
        col = col + 1; % move right one column

        % out of matrix space -- create wrap matrix
        if col < 1 % if column goes to left of col 1
            col = n; % go to right most column
        end
        if row > (n+1) % if row goes down past last row by more than
one space
            row = 2; % go to second row
        end
        if row > n % does not exist by one space
            row = 1; % go to first row
        end
        if row < 1 && col > n % diagonal, out of bounds on both row and
col
            row = 2;
            col = n;
        end
```

```
        if col > n
            col = 1; % go to left most column
        end
        if row < 1
            row = n; % go to last row
        end
    end
output = matrix; % print the magic square
end
```

OUTPUT:

>> magicsquare(5)

ans =

```
  17   24    1    8   15
  23    5    7   14   16
   4    6   13   20   22
  10   12   19   21    3
  11   18   25    2    9
```

>> magicsquare(7)

ans =

```
  30   39   48    1   10   19   28
  38   47    7    9   18   27   29
  46    6    8   17   26   35   37
   5   14   16   25   34   36   45
  13   15   24   33   42   44    4
  21   23   32   41   43    3   12
  22   31   40   49    2   11   20
```

>> magicsquare(9)

ans =

```
  47   58   69   80    1   12   23   34   45
  57   68   79    9   11   22   33   44   46
  67   78    8   10   21   32   43   54   56
  77    7   18   20   31   42   53   55   66
   6   17   19   30   41   52   63   65   76
  16   27   29   40   51   62   64   75    5
  26   28   39   50   61   72   74    4   15
  36   38   49   60   71   73    3   14   25
  37   48   59   70   81    2   13   24   35
```

```
>> magicsquare(11)

ans =

  68   81   94  107  120    1   14   27   40   53   66
  80   93  106  119   11   13   26   39   52   65   67
  92  105  118   10   12   25   38   51   64   77   79
 104  117    9   22   24   37   50   63   76   78   91
 116    8   21   23   36   49   62   75   88   90  103
   7   20   33   35   48   61   74   87   89  102  115
  19   32   34   47   60   73   86   99  101  114    6
  31   44   46   59   72   85   98  100  113    5   18
  43   45   58   71   84   97  110  112    4   17   30
  55   57   70   83   96  109  111    3   16   29   42
  56   69   82   95  108  121    2   15   28   41   54
```