

# A201/A597 Introduction to Programming I

First Summer 2007



Lecture Eleven: Tuesday May 22, 2007 (ED1204)

Starting today we begin reviewing for the exam. Just come to class.



Minute paper: write code to generate a matrix of given width and height. The elements of the matrix are positive integers between 0 and 9 (inclusive). The size of the matrix is given by the user. Code should also print it nicely. Use nested lists to store the matrix, for example: `[[1, 2, 3], [2, 1, 3]]` is a matrix with 2 lines and three columns that should be printed as follows:

```
1 2 3
2 1 3
```

This would be a very good start for today's lab assignment.



Lab Seven: Tuesday May 22, 2007 (ED2025)

Magic squares.

Implement the following procedure to construct magic  $n$ -by- $n$  squares; the procedure works only if  $n$  is odd.

- Place a 1 in the middle of the bottom row.
- After  $k$  has been placed in the  $(i, j)$  square, place  $k+1$  into the square to the right and down, wrapping around the borders.
- However,
  1. if the square to the right and down has already been filled, or
  2. if you are in the lower right corner,

then you must move to the square straight up instead.

Here's the 5-by-5 square that you get if you follow this method:

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

Check that the square above is magic.

Calculate the 3-by-3, 7-by-7 and 13-by-13 magic squares.

How are you going to implement the squares?