

## Lab 8

This lab will consist of using file I/O and string construction. Each problem builds on the last to make one single project in the end.

1. Given a file consisting of a square matrix, copy it to a second file, which consists of the name of the input file, with the size of the matrix placed at the end of the file name, prior to the suffix. For instance, if the input file is given as `matrix.txt`, which contains a 4x4 matrix, the output file would be `matrix4.txt`. The contents of an example file are listed below:

```
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
```

2. Using (potentially a variation) of the previous function, read the matrix into a 2 dimensional vector. Keep in mind the matrix is square, but the size is unknown at the start of the input.
3. Read a file, which consists of potentially many different matrices, and read each into a 2 dimensional vector. The file will consist of a matrix, followed by a blank line, then another matrix. The end of the file will be marked by 2 blank lines.
4. Write out each matrix to individual files, numbered sequentially from 0, each of which is starting with a user defined string. In other words, each file will have the same prefix, with a number suffix, followed by `.txt`.