MATH.2720 Introduction to Programming with MATLAB
Homework on Array Basics (Due 2/8)

Please email me (`stephen_pennell@uml.edu`) a single script file containing your work.

1. a) Create a row array x with 15 equally spaced elements starting at -21 and ending at 7. **Do not type in all 15 elements. Use either the linspace command or the double colon command.**

   b) Create a column array y that is the transpose of the row array x.

2. Write a script file containing a single command that produces a row array of length 2 containing the first and last elements of the row array x. (Assume x has already been defined.) For example, if x = [2, 3, 5, 8, 13] your script should produce the array [2, 13]. Your code should work on arrays of any length.

3. Write a script file that produces a row array containing the second through the last elements of the row array x. For example, if x = [2, 3, 5, 8, 13] your script should produce the array [3, 5, 8, 13]. Your code should work on arrays of any length.

4. Write a script file containing a single statement that shifts the row array x one position to the left. The rightmost element in x keeps its value. For example, if x = [2, 3, 5, 8, 13] your script should produce [3, 5, 8, 13, 13]. Your code should work on arrays of any length.

5. Write a script file that reverses the contents of the row array x. For example, if x = [2, 3, 5, 8, 13] your code should produce [13, 8, 5, 3, 2]. **Do not use any of the `flip` commands.** Your code should work on arrays of any length.

6. a) Use the double colon command or the linspace command to generate the row array b=[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18].

   b) Reshape the row array b to produce the following 2D array. Do not create this array from scratch.

$$B = \begin{bmatrix} 1 & 4 & 7 & 10 & 13 & 16 \\ 2 & 5 & 8 & 11 & 14 & 17 \\ 3 & 6 & 9 & 12 & 15 & 18 \end{bmatrix}$$

7. Use the commands `eye`, `ones`, and `zeros` to produce the following 2D array.

$$A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \\ 0 & 0 & 0 \end{bmatrix}$$