

Homework #1

* Due date: September 17 (M)

** Whenever necessary, capture the screen and submit the printed screen.

1. Construct a nested list to hold the matrix $\begin{bmatrix} 1 & .5 \\ .5 & 1 \end{bmatrix}$ so that item $[i][j]$ corresponds to the position in the matrix.
2. Assign the matrix you just created first to x , and then assign $y=x$. Change $y[0][0]$ to 1.61. What happens to x ?
3. Initialize a list containing 4, 3.1415, 1.0, 2+4j, 'Hello', 'World'. How could you:
 - (a) Delete 1.0 if you knew its position? What if you didn't know its position?
 - (b) How can the list [1.0, 2+4j, 'Hello'] be added to the existing list?
 - (c) How can the list be reversed?
 - (d) In the extended list, how can you count the occurrence of 'Hello'?
4. Construct a dictionary with the keyword-value pairs: 'alpha' and 1.0, 'beta' and 3.1415, 'gamma' and -99. How can the value of alpha be retrieved?
5. Input the following mathematical expressions into Python as both arrays and matrices.

$$u = [1 \ 1 \ 2 \ 3 \ 5 \ 8]$$

$$v = \begin{bmatrix} 1 \\ 1 \\ 2 \\ 3 \\ 5 \\ 8 \end{bmatrix}$$

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

$$y = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

$$z = \begin{bmatrix} 1 & 2 & 1 & 2 \\ 3 & 4 & 3 & 4 \\ 1 & 2 & 1 & 2 \end{bmatrix}$$

$$w = \begin{bmatrix} x & x \\ y & y \end{bmatrix}$$

6. What command would select x from w ?
7. What command would select y from z ? List all alternatives