## Python - Nested Lists

Adapted from Recommended Reading *–* How to Think Like a Computer Scientist

### **Nested lists**

A nested list is a list that appears as an element in another list. In this list, the element with index 3 is a nested list:

nested = ["hello", 2.0, 5, [10, 20]]

If we output the element at index 3, we get:

print(nested[3]) # [10, 20]

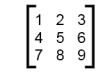
To extract an element from the nested list:

nested[3][1] # 20

This expression gets the 3’th element of nested and extracts the 1’th element from it.

### **Matrices**

Nested lists are often used to represent matrices. For example, the matrix:



might be represented as:

mx = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

mx is a list with three elements, where each element is a row of the matrix. We can select an entire row from the matrix in the usual way:

print(mx[1]) # [4, 5, 6]

Or we can extract a single element from the matrix using the double-index form:

print(mx[1][2]) # 6

The first index selects the row, and the second index selects the column.

### **Self-Check Question**

* What will be the output of the following program?

my\_list = ["Westminster", [2, 4, 8, 16]]

print(my\_list[0])

print(my\_list[0][1])

print(my\_list[1][3])