Practice Exercises: Array Functions

Instructions:
Download the Arrays.mat file and save it in your current MATLAB directory. At the command prompt, type >> load Arrays.   Look in your workspace window. You should see a 1-d array called **vector** (1x12), and a 2-d array called **matrix** (10x5).

Don't change the values in vector or matrix. If you do inadvertently change them, just re-run the command >> `load Arrays` to recover the original arrays.

Problem 1: Useful Array Functions (max, min, and sum)
This problem refers to the arrays **vector** and **matrix**, loaded from the Arrays.mat file. Again, don't overwrite the values in the arrays **vector** and **matrix**. If you do, re-load Arrays.mat.

Execute the following commands first so you know what **vector** and **matrix** look like.

>> vector
>> matrix

(a) What does the command: `Max = max(vector)` do? **Show the result and explain the result in words.**

(b) What does the command: `[Max Loc] = max(vector)` do? **Show the result and explain the result in words.**

(c) What does the command: `Max = max(matrix)` do? **Show the result and explain the result in words.**

(d) What does the command: `[Max Loc] = max(matrix)` do? **Show the result and explain the result in words.**

(e) What does the command: `Max = max(matrix,[],2)` do? **Show the result and explain the result in words.**

(f) What does the command: `Max = max(max(matrix))` do? **Show the result and explain the result in words.**

(g) What does the command: `Total = sum(vector)` do? **Show the result and explain the result in words.**

(h) What does the command: `Total = sum(vector(4:10))` do? **Show the result and explain the result in words.**

(i) What does the command: `Total = sum(matrix)` do? **Show the result and explain the result in words.**

(j) What does the command: `Total = sum(matrix,2)` do? **Show the result and explain the result in words.**

(k) What does the command: `Total = sum(sum(matrix))` do**? Show the result and explain the result in words.**

(l) What does the command: `Total = sum(matrix(3:6,4))` do? **Show the result and explain the result in words.**

Problem 2: Arrays, Relational Operators, and Useful functions (sum and find)
This problem refers to the array ***vector*** loaded from the Arrays.mat file. Again, don't overwrite the values in the array ***vector***. If you do, re-load Arrays.mat. **For each of these commands, show the result and explain the result in words.**

(a) `sum(vector > 0)`

(b) `sum(vector > 0 & vector < 2)`

(c) `sum(vector(1:6)==4)`

(d) `location = find(vector ==0)`

(e) `location = find(vector > 0 & vector < 4)`

(f) `location = find(vector == -4); vector(location) = 173`