

CS1132 Lab Exercise 2

1 Subarray

Type each of the following expressions in the MATLAB *Command Window* (and press *Enter*) to see what it does. Write the screen output on each blank.

```
A= [9 8 7 2 0]

b= A(3)

C= A(3:5)          % -----

D= [A; ...
    ones(1,5); ...
    4*ones(1,5)]  % -----

E= D(1:3,2:4)     % -----

F= D(:,2)        % -----
% What does the colon mean when it is used where indices are expected?

% Ask for help now if you are unsure how to access a subarray
```

2 Find a value in a matrix

Write the following function:

```
function [r, c] = findInMatrix(n,M)
% Find all occurrences of the number n in matrix M.
% r and c are column vectors of row and column numbers such that
% M(r(k),c(k)) is equal to n.
% If n is not found in M, r and c are empty vectors.
```

Example: Given matrix D from Question 1 above, the function call `[rs, cs]= findInMatrix(4,D)` should return in `rs` the vector `[3; 3; 3; 3; 3]` and in `cs` the vector `[1; 2; 3; 4; 5]`.

Use loop(s). *Do not* use any built-in functions other than `size`. For extra practice, first hand-write the solution without using the computer. Then type up your function in MATLAB for testing.

3 Cumulative sums

Write the following function:

```
function A = matrixCSums(M)
% M is a numeric matrix and A has the same size as M.
% Each element in A is the sum of the corresponding element in M and all
% the elements above it. Example:
% M = [ 1 3; ...           A = [ 1 3; ...
%      4 5; ...           then  5 8; ...
%      -7 2]                -2 10]
% Do NOT use any built-in functions other than size
```

Use any remaining time to ask questions or work on Assignment A1b!
In the computer lab, please **delete your files from the computer before you leave.**