Homework 5

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Homework 5 Question 1

```
function [D] = specialMatrix(n,m)
% Funtion returns the n x m matrix that follows the following criteria
% - value of each element in the first row is the number of the
 column.
% - value of each element in the first column is the number of the
 row.% - rest of the elements each has a value equal to the sum of the
 element above it and element to the left.
% - The function must return a sensible error if the user does not
 input exactly two arguments.
% - The function should be well commented.
%
% Inputs:
% n = number of rows.
% m = number of columns.
%
%Outputs:
% [D] the function that gives the result for n x m matrix.

D = [];

tic % timer on to count how long it takes to calculate.
if nargin ~= 2 % If the values enter for the specialMatrix is less
 than 2 it will display the following error.
    error('Function requires excatly two arguements');
end

for k = 1:n % making a nth row vector.
    for h = 1:m %creating a mth column vector
        if k == 1 % if the value of k is equal to 1 it will display
 value of h.
            D(k,h) = h;
        elseif h == 1 % if the value of h is equal to 1 it will
 display value of k.
            D(k,h) = k;
        else
            D(k,h) = D(k,h-1)+ D(k-1,h); % This function is the
 summation of the matrix element above and the matrix element to the
 left of the current element. This is then stored in the specialMatrix
 array.
        end
    end
end
toc % Timer off
end
```

```
Elapsed time is 0.000932 seconds.
```

```
ans =

     1     2     3     4
     2     4     7    11
     3     7    14    25
     4    11    25    50
```

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