Matlab commands II

Creating a vector

- x=[1 3 4 5]: row vector
- y=[1; 4; 7]: column vector
- var_name=m:q:n

m:first element, q:spacing, n:last element

- var_name=linspace(xi, xf,n)
  xi: first elemet, xf: last element, n: number of elements

Creating a matrix

- x=[1 3 7; 4 5 2]
- zeros(m,n)
- ones(m,n)
- eye(n)

Transpose

'

Array addressing

x(1,2)

Whole row or column

- x(1:1, 2:3)

Concatenation

- x=[a b]

- x=[a; b]

Adding elements

- E=[1 2 3; 4 7 9]
  E(3,:)=[19 13 2]: new 3rd row

Deleting elements

- E=[1 2 3; 4 7 9]
  E(1,:)=[ ]

Built-in functions

1. length(A): returns the length of vector A.
2. size(A): For m-by-n matrix A, returns the two-element row vector D = [m,n] containing the number of rows and columns in the matrix.
3. reshape(A,m,n): returns the m-by-n matrix whose elements are taken columnwise from A
4. diag(a): creates a square matrix that puts a on the main diagonal
5. diag(X): main diagonal of matrix X.

Matrix operations

1. A+B
2. A-B
3. A*B
4. A′*B
5. inv(A)

6. det(A)

Element-by-element operations

.*, *^, ./

Built-in functions

1. mean(A): a row vector containing the mean value of each column
2. max(A): a row vector containing the maximum value of each column
3. min(A): a row vector containing the minimum value of each column
4. sum(A): a row vector with the sum over each column
5. sort(A): sorts each column of X in ascending order
6. median(A):a row vector containing the median value of each column
7. std(A): a row vector containing the standard deviation of each column
8. dot(a,b): a'b

Random number generations

1. rand(m,n): returns an m-by-n matrix containing pseudorandom values drawn from the standard uniform distribution on the open interval(0,1)
2. randi(imax,m,n): returns an m-by-n matrix containing pseudorandom integer values drawn from the discrete uniform distribution on 1:imax.
3. randn(m,n): returns an m-by-n matrix containing pseudorandom values drawn from the standard normal distribution
4. rng(sn): set the seed number to be sn.

Saving output to a file

1. fid=fopen('file_name', 'permission')
   'r'; reading
   'w': writing
   'a': writing and appending

2. fprintf(fid, 'text%-5.2f text', var_name)
   -: Left-justifies the number within the field
   5: field width
   2: number of digits to be displayed to the right of the decimal point
   f: fixed-point notation (e.g., 17.3485)

3. fclose(fid)

Loading and writing

1. var_anme=load('file_name.txt')

2. var_name=xlsread('file_name')

3. var_name=xlsread('file_name', 'sheet_name', 'range')

4. xlswrite('file_name', var_name)