

ENGR 1120 Lecture Chapter 2 - Vectors and Matrices

- MATLAB is the **Matrix Laboratory**
 - previously we have been using **scalars**
 - the default data type is a double precision **matrix**
 - a matrix is a container (variable) for storing multiple values under the same name
 - we will begin with **1 - Dimensional** matrices.
aka - **array** or **vector**

- Elements and Indices

Name: Squares					
Index:	1	2	3	4	5
Value:	14.0	9.0	16.0	25.0	36

Example: 1-D matrix named **squares**

- The Memory Bank

Name	Memory Address	Value
x	6	1.0
y	7	99.5
z	8	12.7
length	9	0.1
width	A	0.3
height	B	0.1
grav	C	9.8
–	D	–
–	E	–
–	F	–
–	10	–

This Memory Bank contains 7 variables. Each is a scalar.

Name	Memory Address	Value
a	11	4.3
b	12	9.0
squares	13	4.0
–	14	9.0
–	15	16.0
–	16	25.0
–	17	36.0
sum	18	90.0
avg	19	18.0
–	1A	–
–	1B	–
–	1C	–

This one contains a 1-D matrix called **squares** and 4 scalars.

- using **1D matrices** in MATLAB
 - Initialization of an Array
 - Accessing
 - Assignment
 - Re-Assignment , aka Overwrite

- compared to **scalars** in MATLAB
 - Initialization of an Array
 - Accessing
 - Assignment
 - Re-Assignment , aka Overwrite

- some important vocab

- elements of an Array

- index of an element

- size of an array

- shape of an array

- some useful functions for 1D arrays
 - `length()`
 - `size()`
 - `sum()`
 - `min()`
 - `max()`
 - `plot()`
 - and many more...