BA – Discussion #5, 2020-10-02

GOOD LUCK ON THE EXAM!

Announcements

- HW#2 will be released this weekend
- Next Wednesday, October 7th is the last day to drop a course without a "W"
- Exam 1 today 4:30 – 6:00 pm EDT
  - to ask questions, you can either join the Zoom meeting and raise your hand, or you can email (list will be given on the exam instructions)

Review Quiz #2

Review of Material

- Matrix multiplication
- Vectorizing code

Vectorizing code

```
mat = [5 4 6 7 1; 10 23 5 14 20];
%{
mat = 5 4 6 7 1
      10 23 5 20 5
%}
[r c] = size(mat);
biggest = 0;
for i=1:r
    for j=1:c
        if mat(i,j)> biggest
            biggest = mat(i,j);
        end
    end
end
```

```
max(max(mat))
```

```
x = sin(linspace(0,10,100))
count = 0;
for i = 1:length(x)
    if x(i)>0
        count = count + 1;
    end
end
%count = 62
count = length(find(x>0))
count = length(x(sin(x)>0))
count = sum(x>0)
```

} multiple ways!

load/save

```
1 -    mat = [1:5;6:10];
2 -    save practice.dat mat -ascii
3 -    mat2 = 1:5
4 -    save practice.dat mat2 -ascii -append
5 -    load practice.dat
6
7 -    practice
```

Command Window

```
practice =

     1     2     3     4     5
     6     7     8     9    10
     1     2     3     4     5
```

Matrix Multiplication

mat1 =

1	2	3
4	5	6
7	8	9

3 x 3

mat2 =

1	2	3
3	2	1

2 x 3

mat3 =

4	2	0
2	6	8

2 x 3

>> mat1 * mat2

error, dimensions don't match!

3 x 3 * 2 x 3

inner dimensions don't match

2 x 3 * 3 x 3

inner dim match!

final dim of matrix determined by outer dimensions

>> mat2 * mat1

$$\begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

(1)(1) + (2)(4) + (3)(7) = 30 (1)(2) + (2)(5) + (3)(8) = 36 (1)(3) + (2)(6) + (3)(9) = 42

(3)(1) + (2)(4) + (1)(7) = 18 (3)(2) + (2)(5) + (1)(8) = 24 (3)(3) + (2)(6) + (1)(9) = 30

30	36	42
18	24	30

>> mat2 * mat3

error, dimensions don't match

>> mat2 .* mat3

$$\begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix} \begin{bmatrix} 4 & 2 & 0 \\ 2 & 6 & 8 \end{bmatrix}$$

(1)(4) (2)(2) (3)(0)

(3)(2) (2)(6) (1)(8) =>

4	4	0
6	12	8

>> 3 * mat2

3	6	9
9	6	3

>> mat2 .* 3

3	6	9
9	6	3