

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 4³⁰-6⁰⁰ 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 =

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

3×3

mat2 =

$$\begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}$$

2×3

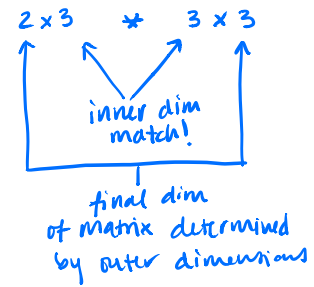
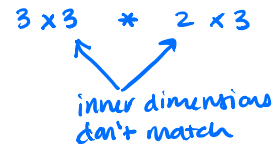
mat3 =

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

2×3

>> mat1 * mat2

error, dimensions don't match!



>> mat2 * mat1

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

$$\begin{aligned} (1)(1) + (2)(4) + (3)(7) &= 30 & (1)(2) + (2)(5) + (3)(8) &= 36 & (1)(3) + (2)(6) + (3)(9) &= 42 \\ (3)(1) + (2)(4) + (1)(7) &= 18 & (3)(2) + (2)(5) + (1)(8) &= 24 & (3)(3) + (2)(6) + (1)(9) &= 30 \end{aligned}$$

$$\begin{bmatrix} 30 & 36 & 42 \\ 18 & 24 & 30 \end{bmatrix}$$

>> mat2 * mat3

error, dimensions don't match

>> mat2 .* mat3

$$\begin{bmatrix} \underline{1} & \underline{2} & \underline{3} \\ \underline{3} & \underline{2} & \underline{1} \end{bmatrix} \begin{bmatrix} \underline{4} & \underline{2} & \underline{0} \\ \underline{2} & \underline{6} & \underline{8} \end{bmatrix} \begin{matrix} (1)(4) & (2)(2) & (3)(0) \\ (3)(2) & (2)(6) & (1)(8) \end{matrix} \Rightarrow \begin{bmatrix} \underline{4} & \underline{4} & \underline{0} \\ \underline{6} & \underline{12} & \underline{8} \end{bmatrix}$$

>> 3 * mat2

$$\begin{bmatrix} 3 & 6 & 9 \\ 9 & 6 & 3 \end{bmatrix}$$

>> mat2 .* 3

$$\begin{bmatrix} 3 & 6 & 9 \\ 9 & 6 & 3 \end{bmatrix}$$