BA – Discussion #8, 2020-10-23

Announcements

- This upcoming Monday is combination of material from Ch. 14 as well as material that is available as a PDF online. READ THE ONLINE VERSION! (it's updated)
- Quiz #5 this afternoon 4^40 EDT ... 15 min to complete, 5 min to upload, due by 5pm ... alternate time zone, you know the deal!
- HW#3 due Monday morning at 9 am EDT (10/26)
- Other HW & Final project will be posted soon
- Exam #2 is one week from today! STUDY NOW!!!

Review of Material

CHAPTER 9: FILE I/O

Write a script "LADodgers" that will read names from a file "LArooster.txt" in the form "Last, First" and print in form "First Last". For example, if the file stores the following:

```
>> type LArooster.txt
Bellinger, Cody
Seager, Cory
Turner, Justin
Betts, Mookie
```

Executing script would produce the following:

```
>> LADodgers
Cody Bellinger
Cory Seager
Justin Turner
Mookie Betts
```

LADodgers.m

```
fid = fopen('LArooster.txt');
aline = fgetl(fid);
while aline ~= -1
    [last, first] = strtok(aline);        ← last: Bellinger,   first: _Cody
    last = last(1:end-1);
    first = strtrim(first);
    fprintf('%s %s\n', first, last)
    aline = fgetl(fid);
end
fc = fclose(fid);
```

We have a file engenroll.dat that looks something like this:

```
Aerospace    201
Mechanical    66
Electrical   107
```

Write a script that will read this info from the file and create a new file that has just the first four characters from the department names, followed by the enrollments. The new file newengenroll.dat will be in this form:

```
Aero  201
Mech   66
Elec  107
```

myscript.m

```
% comment block
fid = fopen('engenroll.dat');
if fid == -1
   disp('File open unsuccessful')
else
    new_fid = fopen('newengenroll.dat', 'w');
    aline = fgetl(fid);
    while aline ~= -1
       [dept, num] = strtok(aline);
       num = str2num(num);  % str2num() will take off trailing/leading blanks
       fprintf(new_fid, '%.4s   %d\n', dept(1:4), num);
       aline = fgetl(fid);
    end
    closeresult = fclose('all');
    if closeresult == 0
        disp('File close successful')
    else
        disp('File close not successful')
    end
end
```

CHAPTER 10: ADVANCED FUNCTIONS

```
function [varargout] = areaVolumeCirc(r, varargin)
% comment block
if nargin == 1
    varargout{1} = pi * r ^ 2;
else
    varargout{1} = pi * r ^ 2;
    varargout{2} = varargout{1} * varargout{1};
end
end
```

→ examples of calling:

```
[area vol] = areaVolumeCirc(5,5)
    area =
        78.5398
    vol =
        392.6991
```

} same idea as the size() function! (i.e. [r, c] = size(something);)

Anonymous Functions: Why?
- doesn't need a separate code file
- one line of code (aka the simple stuff)

funcname = @(x) funcbody

Velocity of sound in air $49.02\sqrt{T}$ ft/sec where T is air temperature in Rankine. Write an anonymous function:

```
vel_sound = @(RT) 49.02 * sqrt(RT); % anony function for velocity of sound
```

an approximation for factorials can be done with Stirling's Formula. Write an anonymous function.

$$n! \approx \sqrt{2\pi n}\left(\frac{n}{e}\right)^n$$

```
anonyfunc = @(n) sqrt(2*pi*n) * (n/exp(1))^n;
```