General Computer Science for Engineers CISC 106 Lecture 02

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Lecture Overview

- Unix 101
  - Finding files
  - Handling files
  - Creating files
- Loops 101
  - For loops
  - While loops

MATLAB

- When you log into a UNIX terminal
  - You are in your home directory.
  - To see the files in your directory.
    - ls
  - To make an new folder/directory.
    - mkdir exampledir
  - To change directories.
    - cd exampledir
  - To go back one directory.
    - cd ..
  - To go back to your home directory.
    - cd

Handling files

- cp *file1 file2*
  - copy file1 and call it file2
- mv *file1 file2*
  - move or rename file1 to file2
- rm *file*
  - remove a file
- rmdir *exampledir*
  - remove a directory
- cat *file*
  - display contents of a file
- less *file*
  - display a file a page at a time

Emacs

- To start emacs
  - *emacs* *Graphical version*
  - *emacs –nw* *Text version*
- To open a file
  - *emacs <filename>*
  - *emacs … then Ctrl-x Ctrl-f*
  - *Menu: File then "Open File…"*
- To save file
  - *Ctrl-x Ctrl-s*
  - *Menu: File then "Save (current buffer)"*
- Exit
  - *Ctrl-x Ctrl-c*

Matlab's Loops

- Loops execute blocks of code repeatedly
- There are two types of loops
  - For loops
  - While loops (discuss this later)

For Loops

- Used when you know how many times code is to be executed.
- Syntax

<variable> = <start>:<increment>:<end>

- Variable is initially the start value
- At end of iteration variable changes by increment
- If value is not greater than end the loop runs again.

Example Problem

- I want to find the average # of widgets sold in 4 days

Day	# of widgets sold
1	15
2	22
3	20
4	18

- Widget(1) = 15
- Widget(2) = 22
- Widget(3) = 20
- Widget(4) = 18

- Avg = (Widget(1) + Widget(2) + Widget(3) + Widget(4)) / 4
  - This is easy for a small number of days.
  - What if we had a 1000 days?
  - We can use a for loop!

Example Problem

- total = 0;
  for i = 1:1:1000
    total = total+widget (i);
  end
  Avg = total / i;

loop starts at 1

loop increments by 1

loop ends at 1000

A Loop Analogy

- The mail man/woman executes a loop.
- If they know the number of deliveries
- For loop

```
for delivery = start : next_delivery : end
    deliver_mail(delivery)
end
```