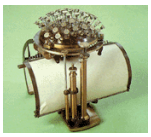
Text Processing



Outline

- Announcements:
  - Homework I: due Today. by 5, by e-mail
    - Discuss on Friday.
  - Homework II: on web
- HW I: question 7
- Finish functions
- Text
- Matlab path
- Survey

HW I: question 7

- Lots of people having trouble
  - dt=0.1, t=(0:dt:21*dt)';
  - N is up to you, so pick something easy

This isn't English!

- Why do we need text?
  - Comments from functions
  - File names
  - Label plots
  - Interact with users
  - Record-based I/O

Hello World!

- Create strings with single quote (')
  - a='Hello World!'
- Believe it or not, characters are not doubles
  - a is an array of char
- Can display text nicely with disp(str)
  - if str is a matrix, each row is a new line

Working with text

- Concatenation--same as with other vectors
  - a='Hello'; b='World!';
  - greetings=[a, ' ',b];
  - Will greetings=[a;b] work?

Number-to-String Conversions

- int2str & num2str convert numbers to text
  - int2str(2) returns '2'
- str2num converts to numbers
  - str2num('3')*2 returns 6

Searching for strings

- can search for single characters with find
  - str='Scripts are evil!';
  - I=find(str==' '); % I=[8 12]
- search for substring ss in str with
  - I=findstr(ss,str)
    - I=find('evil',str); % I=[13];
  - findstr(str,ss) is the same
    - findstr always searches for small string in big string

Working with ASCII

- double(str) returns an array with ASCII codes
  - str='012ABCabc'
  - num=double(str)=[48 49 50 65 66 67 97 98 99]
- char(num) converts ASCII codes to char
  - char(num) returns '012ABCabc'

Misc. Text Functions

- R=input(QuestionStr)
  - asks user for input, returned as R
  - DO NOT USE IN THIS CLASS!!!
  - For entertainment purposes only. Function arguments are the best way to get info into your functions
- xlabel, ylabel, title --label plots
- text(x,y,str)--places string at x,y on plot
- S=sprintf(str, val1, val2, …)--C-like string creation
  - S=sprintf('Integer %d\nDouble %f\n', 5, -pi);

    Integer 5

    Double -3.141593
    - S is 1-by-27 array of char

String Summary

- Matlab stores strings in arrays of char (ASCII)
  - convert to ASCII values with double, to ASCII text with text
  - Convert numbers to strings with int2str, num2str, sprintf
  - Convert strings to numbers with str2num
- Search strings with find (single character) or findstr (substring)

Matlab Path

- Matlab maintains a list of directories where it searches for files
  - m-files, data files
- Type "path" to see
- Can add directories using addpath or through GUI
  - Ex: addpath('D:\Andy\mfiles')

startup.m

- startup.m is a special script (the only good one!) that (if it exists) is executed as Matlab starts
  - Not installed-You must create it
- On UNIX/Mac, startup.m is in ~/matlab
- Windows: $MATLABROOT\toolbox\local
- Windows NT/2000: in matlab in Profiles directory
  - Ex: C:\WINNT\Profiles\andy\matlab
  - Can find out where profiles are found by typing getenv('USERPROFILE')

startup.m

- Uses of startup.m
  - Personalize path--place addpath statements
  - Customize matlab
  - Set default directory
  - Set default graphics output (see 402)

Personal Opinion*

- Create your own m-files directory, & put m-files there
  - group m-files into subdirectories by topics
- Place addpaths in startup.m so you can always use your functions
- CD into data directories & work there

*Above is the instructor's opinion and does not necessarily reflect that of CIS or Cornell University

Survey

- You now know the basics of Matlab
  - The rest of the course will be spent extending and reinforcing that knowledge
- More Matlab or more applications?

Matlab	Polymorphic functions	
	Objects beyond arrays	
	Improving performance	
Applications	File I/O (binary & text)	
	Linear Systems	
	Diff. Equations	
	Statistics	
	Graphics	
	Polynomials & splines	
	Signal processing (FFT)	
	Optimization	