

Computing for Math and Stats

Lecture 12.

Computing with Functions

- So far we used scripts
 - Convenient
 - Simple
 - Excellent for quick and dirty things
- But
 - Hard to package their functionality
 - Hard to integrate them in big programs
 - Have to keep track of names of variables
 - Can have accidental interactions

Functions in Matlab

- Like any other language, Matlab has [user defined] functions
 - With some quirks
- Every function is defined in a function file (similar to a script file)
- Only one function callable from the outside can be defined in a single file

Function Jargon

- *We define* a function in a function file
- *We invoke* or *call* a function to make the Matlab code execute
- Every function has a *Function Definition Line* where we
 - Give it a *name*
 - List its *input arguments*
 - Specify its *return arguments(s)*
- A function may (better) have a help line *H1*.
- A function has a body, ie a script-like list of commands
 - Includes assignments to output arguments
- See fibfun.m, mynorm1.m

Functions in other languages

- Matlab is unique in several respects
- Has multiple return or output arguments
- Has a help line
- All variables used in a function file are by default local
 - We use the keyword `global` to override this
- We define one function callable from the outside per function file

Comparison to Scripts

- Both have files ending in .m
- All variables in a function file are local
- All variables in a script are global

How to write a function

- Click on the new function menu rather than new script
- The Matlab editor will start with an empty untitled function.
- Edit the untitled function, to reflect your design, fill the help line and save it to a file with the same name (with a .m in the end).
- To test it invoke it from the command window (the play button is too much hassle usually)