

Department of Chemical and Biomolecular Engineering

Matlab Tutorial - Input Options

These tutorials are designed to show the introductory elements for any of the topics discussed. In almost all cases there are other ways to accomplish the same objective, or higher level features that can be added to the commands below.

Any text below appearing after the double prompt (>>) can be entered in the Command Window directly or in an m-file.

This tutorial contains the following sections;

Introduction

Matlab Prompted Input - The "input" Command

Dialog Boxes for User Input

Menu Boxes for User Choices

Introduction

Matlab offers a number of methods of entering or display data, both on the screen or for submission. Effective presentation of your results is an important step in any problem or project. This tutorial will cover input and output options other than the default settings in Matlab.

Matlab Prompted Input - The "input" Command

You can have MATLAB prompt you for input at any time by using the **input** command. This command will display a text string, specified by you, and then wait for input. Be sure to tell the user how to enter the data, especially if it is to be entered as an array.

```
>> time = input('Make an initial guess for the time in seconds    time = ')
%    32 is entered by the user
Make an initial guess for the time in seconds    time = 32
time =
    32
```

Multiple values may be entered if they are put in square brackets.

```
>> disp = ('  Make a guess for the concentrations of A and B.')
>> conc = input('  Enter as a row array in brackets [ ] ')
Make a guess for the concentrations of A and B.
Enter the values as a row array in square brackets.    [ 0.5    0.3 ]
conc =
    0.5000    0.3000
```

A semicolon at the end of the command will cause the on-screen display of the inputted values to be

suppressed.

```
>> time = input(' Make an initial guess for the time in seconds.  time = ');  
    Make an initial guess for the time in seconds.  time = 32
```

Dialog Boxes for User Input

An method which can be used for user specified input is the dialog box. The section of Matlab code for the input consists of two sections. The first creates the box with appropriate entry labels and title, and the second where the entries are converted to a form that is usable by Matlab. The entries initially are in what is termed a cell array and must be converted before they can be used in calculations. This is done using curly brackets to access the cell contents. Numerical data, characters, and file names can all be entered in a dialog box. Inside a dialog box you can move from field to field either with the mouse or by using the tab key.

Commands used to set the number of lines in the dialog fields and to set default values in the fields are explained by typing **help inputdlg**

The use of a dialog box is demonstrated in the example code below. Cut and paste this section into an m-file if you wish to see the dialog box it creates.

```
% Example Program for use of Dialog Boxes  
% Define a title for the dialog box  
box_title = 'Data Entry for Ideal Gas Law Problem';  
  
% Define the labels for the individual entries  
entries = { 'Temperature (K)', 'Pressure (atm)', 'Function filename'};  
  
% Create the dialog box with the inputdlg command  
z = inputdlg(entries, box_title);  
  
% Convert the entries. Numerical data is converted by using the curly  
% brackets to access the cell contents, and using the 'str2num' command  
% to convert the string to a number. To convert the filename only use the  
% curly brackets. Note: these are not parenthesis.  
temp = str2num(z{1});  
press = str2num(z{2});  
file = z{3};  
  
% The specified function filename (whatever the user typed in the dialog box) is  
% assigned the  
% name file in the previous step.
```

Menu Boxes for User Choices

It is easy to create a menu box that allows to user to select between different options. The menu box will assign a numerical value to a defined variable. The user would then use an if / else / elseif block to execute the appropriate commands.

The creation of a menu box is demonstrated in the following section of MATLAB code. Cut and paste this section into an m-file if you wish to see the menu box it creates.

```
-----  
% Example of a menu box. First a title for the box is defined.  
% Then the labels for the individual choices are defined.  
z = menu( 'Conversion of Temp', 'Celsius to Fahrenheit', 'Fahrenheit to Celsius')  
  
% If Celsius to Fahrenheit is selected a value of 1 is assigned to z.  
% If Fahrenheit to Celsius is selected a value of 2 is assigned to z.  
-----
```