EP375 Computational Physics

Topic 6

MATLAB GUI

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1. Introduction

- A graphical user interface (GUI) is a type of user interface that allows users to interact with electronic devices with images rather than text commands.

- GUls are used is because it makes things simple for the end-users of the program.

- See Also:
2. Initializing GUI

Open up MATLAB. Go to the command window and type in guide.

Choose the first option Blank GUI (Default).

![GUIDE Quick Start]

Create New GUI  Open Existing GUI

GUIDE templates

- Blank GUI (Default)
- GUI with Uicontrols
- GUI with Axes and Menu
- Modal Question Dialog

Save on startup as: [Browse...]

[OK]  [Cancel]  [Help]
You should see the following screen appear.

You can design your gui program using the tool box left.
3. Adder Program

Add the following components to the canvas:

- 3 Edit Text components
- 4 Static Text component
- 1 Push Button
Double click each component. You will see the *Property Inspector* window. This allows you to modify the properties of a component.

Change **String**, **FontSize** and **Foreground Color** parameters.
Save the settings as **adder.fig**. MATLAB automatically generates an m-file to go along with the figure that you just put together.
Modify the function

```matlab
function pushbutton1_Callback(hObject, eventdata, handles)

x = str2num(get(handles.edit1,'String'));
y = str2num(get(handles.edit2,'String'));
z = num2str(x+y);
set(handles.edit3,'String',z);
guidata(hObject, handles); % update handles structures
end
```
Finally, type in the name of the GUI at the command prompt

```
>> adder
```

![Command Window](image1.png)

![adder](image2.png)
4. Plotting on the Canvas

Add the following components to the canvas and save as `plotter.fig`.
Modify the `pushbutton1_CallBack()` function in `plotter.m`

```matlab
function pushbutton1_Callback(hObject, eventdata, handles)
    x = 0:0.1:10;
    axes(handles.axes1);
    plot(x, sin(x));
```

Type in the name of the GUI at the command prompt:

```
>> plotter
```
HW 1:
Write a GUI program similar to the Windows standard calculator.
HW 2: Write a GUI program that reads a function in an edit box and plots the function. There must be additional push button for grid on/off.

```
>> f = input('Enter function (of x) to be plotted: ', 's');
x.*x
>> x = 0:0.01:10;
>> plot(x, eval(f))
```
References: