Topic 5
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.

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

- See Also:
  * http://en.wikipedia.org/wiki/Graphical_user_interface
  * http://blinkdagger.com/matlab/matlab-gui-graphical-user-interface-tutorial-for-beginners/
2. Initializing GUI

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

Choose the first option Blank GUI (Default).
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 Putton
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

function pushbutton1_Callback(hObject, eventdata, handles)

as follows:

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
```

```
adder

MY ADDER PROGRAM

10 + 20 = 30

ADD
```
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));
end
```

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: