

## Still More About Matlab GUI's (v. 1.3)

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### Popup Menus

- User selects one from a mutually exclusive list of options
- The `'String'` property is typically the only property that is set
  - Set during creation using the "matrix" editor
  - Set in functions with the `set` command; must be a cell array of strings (each string is an option)
- Get the `'Value'` property, which is the index number of the option chosen.
- Note that the `Value` can be used to extract the correspond `String` text.

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### Popup Menu Exercise

- Create a GUI with a popup menu (`ColorPopup`) that contains the four color names:  
Red, Green, Blue, Black
- When one of these is selected, display the name of the color in its appropriate color using static text component (`ColorText`).
- Name the figure Pop-up Demo and save it as `popupDemo`.
- See `ColorMixDemo` in a few slides.

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### List Boxes

- Similar to popup menu, except user can select more than one item from the list.
- Set `max - min` greater than one to allow more than one selection.
  - User selects multiple items by holding down the `shift` button
- `'String'` property defines the list items (set during creation or with `set` command as a cell array)

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### List Box Interface Options

- The callback function is called any time any contained component item is selected.
  - The boxes `value` property will be an array containing the numbers of all currently selected items (e.g., 2 or [1 3 4]).
- Use the figure's `SelectionType` property to obtain the nature of the most recent mouse action.
  - In the box callback, use `gcbf` (get callback figure) to get the figure handle. Then get its `SelectionType`.
  - For a simple single click, it is `normal`.
  - For a double click, it is `open`.
- As an alternative to dealing with mouse click types, provide a pushbutton for the user to use to indicate being done selecting.

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### Sliders

- Allows the user to select a value within a continuous range.
  - Range extremes are `min` and `max`.
- `'Value'` property is the output.
  - Updated after the slider is moved (mouse button released).
- There doesn't appear to be any simple way to track the slider position as it moves in GUIDE created Matlab programs.
- See `ColorMixDemo` for an example.

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## Practice

- Create the GUI to the right with the following features:
  - Font color represents chosen colors
  - User can select one or more colors to mix
  - Responds to double click or button push
  - Brightness level defaults to 100% when a new color mixture is selected



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## Strategies

- Responses to double click or button push will be identical
- Store the base color array as application data and multiply the slider value (0 to 1) by this array to create the brightness-adjusted color

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## Panels and Button Groups

- Containers, not created by `uicontrol` like other controls.
  - `uipanel`
  - `uibuttongroup`
- As with `uicontrol`'s, you'll probably create using the GUIDE.
- Property Inspector for a list of properties for panels and button groups.

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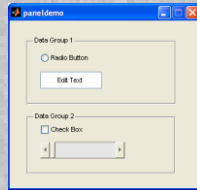
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## Panels

- Similar to figures, but no title bar and cannot have attached menus
- Generally just to group things together
- Mostly for looks and organization—no particular added functionality




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## Button Groups

- A way to organize a group of on/off buttons (radio buttons, toggle buttons, check boxes) such that only one can be selected at a time
- Introduced in previous example. Not covered well in your book

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## Button Group Details

- When a button in a group is selected, the function `ButtonGroupName_SelectionChangeFcn` is activated, rather than the Callback function associated with the button
- The `SelectionChangeFcn` is not automatically generated.
- See next slide to see how to generate it.

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### Axes

- One or more axes can be included in a GUIDE created GUI interface.
- If only one is included, all graphics related functions like *plot* and *image* refer to it.
- If more than one axes is included, each should have a unique tag to provide a corresponding value in the handles structure by which it can be referred to.
- See *AxisTest* for an example.

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### Axis, Axes and Set/Get

- *Axis* is a function (with command syntax) that controls the appearance of the current axis or specified axis.
- *Axes* is a function that creates a new axis or makes a specified axis the current axis. It can also be used to change axis properties.
- *Get* and *set* are functions that retrieve or change the properties of the specified axis.

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