

When to Use the *guidata* Function (v. 1.3)
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The *guidata* function is used to save and retrieve application data associated with a figure associated with a Matlab graphical user interface (GUI) program. The function is often used in conjunction with the *handles* structure that the GUIDE tool provides as an input argument to callback functions. This structure contains handles to the main GUI figure (tagged *figure1* by default) and each component making up the GUI. The field names in the *handles* structure correspond to component tag properties.

Changing a property associated with a handle can be done directly, with no need to call *guidata*, as illustrated by the following code:

```
set(handles.theText, 'String', 'Clicked!');
```

In this case, *set* changes the *String* property of the *theText* component to *Clicked!*. Since, the *handles* structure itself is not changed; it doesn't have to be "saved" using *guidata*.

On the other hand, if application specific data contained directly in the *handles* structure is changed, the *guidata* function must be called afterwards to store it in the figure's "appdata" as shown below:

```
handles.myData = handles.myData + 1;  
guidata(hObject, handles);
```

In this case, the *handles* structure itself is being modified (its *myData* property is incremented). So the call to *guidata* is required. Note that in this example *hObject* is the handle of the component triggering the callback that is also an input argument of all callback functions created by GUIDE. The *guidata* function automatically finds the figure containing this component and stores the *handles* structure in its "appdata." This behavior assures that all the components in a given GUI figure, and its associated program, refer to the same *handles* structure and have the same state.

The call to *guidata* function is required because Matlab always uses a call by value approach. Copies of arguments are provided to functions. These copies cease to exist when functions return. The *guidata* function copies the data from the variable in the function back to the "master copy" that is a property of the main figure.

GUIDE uses *guidata* to manage its special *handles* structure. The *guidata* function can only manage one variable at a time. Therefore, never call *guidata* with arguments other than a GUI component (typically *hObject*) and the *handles* structure in GUIDE generated programs. But note that you can add as many fields as you want to the *handles* structure, as shown above.