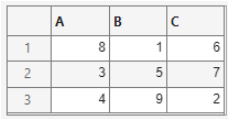
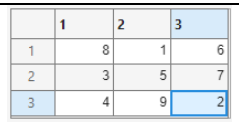
Documented MATLAB Recommendations for Java Swing Alternatives

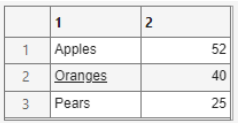
The following tables show common MATLAB app building tasks. Each task has an example code snippet using unsupported Java-based capabilities and a recommended alternative example using documented MATLAB functionality.

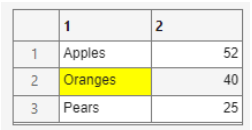
Tables

Task	Java or ActiveX Functionality (Not Supported)	Recommended MATLAB Functionality	Output	Release	More Information

Enable table sorting	`fig = figure;`
	`mtable = uitable(fig,'Data',magic(3), …`
	`  'ColumnName',{'A','B','C'});`
	`jscrollpane = findjobj(mtable);`
	`jtable = jscrollpane.getViewport.getView;`
	`jtable.setSortable(true);`
		`fig = uifigure;`
		`t = uitable(fig,Data=magic(3), …`
		`  ColumnName={'A','B','C'}, …`
		`  ColumnSortable=true);`
				R2019b	Table `ColumnSortable` property

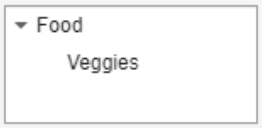
Control table selection	`fig = figure;`
	`mtable = uitable(fig,'Data',magic(3));`
	`jscrollpane = findjobj(mtable);`
	`jtable = jscrollpane.getViewport.getView;`
	`jtable.changeSelection(2,2,false,false);`
		`fig = uifigure;`
		`t = uitable(fig,Data=magic(3));`
		`t.Selection = [3 3];`
				R2022a	Table `Selection` and `SelectionType` properties

Add HTML markup in table contents	`d = {'Apples',52;'<html><u>Oranges</u></html>',`
	`  40;'Pears',25};`
	`fig = figure;`
	`t = uitable(fig,'Data',d);`
		`d = {'Apples',52;'<html><u>Oranges</u>`
		`  </html>',40;'Pears',25};`
		`fig = uifigure;`
		`t = uitable(fig,Data=d);`
		`s = uistyle(Interpreter="html");`
		`addStyle(t,s,"cell",[2 1])`
				R2022a	`uistyle`

Add color to table contents	`d = {'Apples',52;'<html><body style="background-`
	`  color:yellow;">Oranges</body></html>',40;'Pear`
	`  s',25};`
	`fig = figure;`
	`t = uitable(fig,'Data',d);`
		`d = {'Apples',52;'Oranges',40;'Pears',`
		`  25};`
		`fig = uifigure;`
		`t = uitable(fig,Data=d);`
		`s = uistyle(BackgroundColor="yellow");`
		`addStyle(t,s,"cell",[2 1])`
				R2019b	`uistyle`

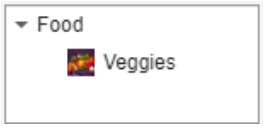
Trees

Task	Java or ActiveX Functionality (Not Supported)	Recommended MATLAB Functionality	Output	Release	More Information

Create a tree	`import com.mathworks.mwswing.checkboxtree.*`
	`jRoot = DefaultCheckBoxNode('Food');`
	`jNode = DefaultCheckBoxNode('Veggies');`
	`jRoot.add(jNode);`
	`jTree = com.mathworks.mwswing.MJTree(jRoot);`
		`fig = uifigure;`
		`t = uitree(fig);`
		`n1 = uitreenode(t,Text="Food");`
		`n2 = uitreenode(n1,Text="Veggies");`
		`expand(t)`
				R2017b	`uitree`

	`[jComp,hc] = javacomponent(jTree,[10,10,120,110],gcf);`				

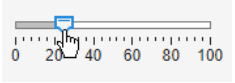
Create a check box tree	`import com.mathworks.mwswing.*`
	`jRoot = checkboxtree.DefaultCheckBoxNode('Food');`
	`jNode = checkboxtree.DefaultCheckBoxNode('Veggies');`
	`jRoot.add(jNode);`
	`jTree = MJTree(jRoot);`
	`jCheckBoxTree = checkboxtree.CheckBoxTree(jTree.getModel);`
	`[jComp,hc] = javacomponent(jCheckBoxTree, …`
	`  [10,100,120,180],gcf);`
		`fig = uifigure;`
		`t = uitree(fig,"checkbox");`
		`n1 = uitreenode(t,Text="Food");`
		`n2 = uitreenode(n1,Text="Veggies");`
		`expand(t)`
				R2021a	`uitree`

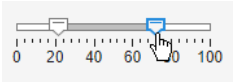
Add an icon to a tree node	`food = uitreenode('v0','Food','Food',[],false);`
	`iconPath = fullfile(matlabroot, …`
	`  '/toolbox/matlab/icons/greenarrowicon.gif');`
	`veggies = uitreenode('v0','Veggies', …`
	`  'Veggies',iconPath,true);`
	`food.add(veggies)`
	`mtree = uitree('v0','Root',food, …`
	`  'Position',[10 10 120 110]);`
		`fig = uifigure;`
		`t = uitree(fig);`
		`n1 = uitreenode(t,Text="Food");`
		`n2 = uitreenode(n1,Text="Veggies");`
		`imgStyle = uistyle(Icon="peppers.png");`
		`addStyle(t,imgStyle,"node",n2)`
		`expand(t)`
				R2022a	`uistyle`

Add color, font options, or markup to a tree node	`import com.mathworks.mwswing.checkboxtree.*`
	`jRoot = DefaultCheckBoxNode('Letters');`
	`l1a = DefaultCheckBoxNode('<html><b>A</b></html>');`
	`jRoot.add(l1a);`
	`l1b = DefaultCheckBoxNode('<html><i>B</i></html>');`
	`jRoot.add(l1b);`
	`jTree = com.mathworks.mwswing.MJTree(jRoot);`
	`[jComp,hc] = javacomponent(jTree, …`
	`  [10,10,120,110],gcf);`
		`fig = uifigure;`
		`t = uitree(fig);`
		`n1=uitreenode(t,Text="Letters");`
		`n2=uitreenode(n1,Text="A");`
		`n3=uitreenode(n1,Text="B");`
		`boldStyle = uistyle(FontWeight="bold");`
		`italicStyle = uistyle(FontAngle="italic");`
		`addStyle(t,boldStyle,"node",n2)`
		`addStyle(t,italicStyle,"node",[n2 n3])`
		`expand(t)`
				R2021b	`uistyle`

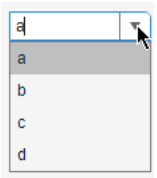
Additional UI Components

Task	Java or ActiveX Functionality (Not Supported)	Recommended MATLAB Functionality	Output	Release	More Information

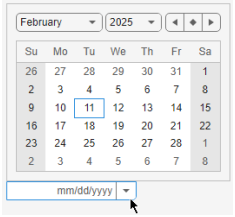
Create a slider	`fig = figure;`
	`jSlider = javax.swing.JSlider;`
	`javacomponent(jSlider, …`
	`  [10,70,200,45],fig);`
		`fig = uifigure;`
		`sld = uislider(fig);`
				R2016a	`uislider`

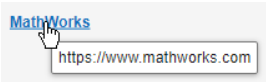
Create a range slider	`fig = figure;`
	`jRangeSlider = com.jidesoft.swing.RangeSlider(0,100,0,100);`
	`jRangeSlider = javacomponent(jRangeSlider, …`
	`  [20,20,200,80],fig);`
		`fig = uifigure;`
		`sld = uislider(fig,"range");`
				R2023b	`uislider`

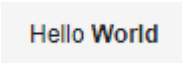
Create a spinner	`fig = figure;`
	`jModel =`
	`javax.swing.SpinnerNumberModel(24,20,35,1);`
	`jSpinner = javax.swing.JSpinner(jModel);`
	`jhSpinner = javacomponent(jSpinner, …`
	`  [10,10,60,20],fig);`
		`fig = uifigure;`
		`s = uispinner(fig,Value=24);`
				R2016a	uispinner

Create an editable combo box	`fig = figure;`
	`items = {'a','b','c','d'};`
	`jModel =`
	`javax.swing.DefaultComboBoxModel(items);`
	`jCombo = javacomponent( …`
	`  'javax.swing.JComboBox',[100 100 80 22],fig);`
	`jCombo.setModel(jModel);`
	`jCombo.setEditable(true);`
		`fig = uifigure;`
		`dd = uidropdown(fig, …`
		`Items={'a','b','c','d'},Editable="on");`
				R2016a	uidropdown

Create an image or icon	`fig = figure;`
	`jIcon = javax.swing.JLabel('<html><img src="https://www.mathworks.com/help/matlab/import_export/peppers_thumb.png" height="100" width="100"/></html>');`
	`javacomponent(jIcon,[50 50 100 100],fig);`
		`fig = uifigure;`
		`im = uiimage(fig, …`
		`  Position=[50 50 100 100], …`
		`  ImageSource="peppers.png");`
				R2019a	uiimage

Create a date picker	`fig = figure;`
	`jPanel = com.jidesoft.combobox.DateChooserPanel;`
	`[hPanel,hContainer] = javacomponent(jPanel, …`
	`  [10,10,200,200],fig);`
		`fig = uifigure;`
		`d = uidatepicker(fig);`
				R2018a	uidatepicker

Create a hyperlink	`url = 'https://www.mathworks.com';`
	`str = ['<html><a href="">MathWorks</a></html>'];`
	`jLabel =`
	`javaObjectEDT('javax.swing.JLabel',str);`
	`[hjLabel,hContainer] = javacomponent(jLabel, …`
	`  [100,100,250,20],gcf);`
	`hjLabel.setCursor(java.awt.Cursor.getPredefinedCursor(java.awt.Cursor.HAND_CURSOR));`
	`hjLabel.setToolTipText(url);`
	`set(hjLabel,'MouseClickedCallback', …`
	`  @(h,e)web(url,'-browser'))`
		`fig = uifigure;`
		`hlink = uihyperlink(fig, …`
		`  URL="https://www.mathworks.com", …`
		`  Text="MathWorks");`
				R2021a	uihyperlink

Format text using HTML or LaTeX	`str = ['<html>Hello <b>World</b></html>'];`
	`jLabel = javaObjectEDT('javax.swing.JLabel', …`
	`  str);`
	`[hjLabel,hContainer] = javacomponent(jLabel, ..`
	`  [100,100,250,20],gcf);`
		`fig = uifigure;`
		`lbl = uilabel(fig, …`
		`Text="<html>Hello<b>World</b></html>",…`
		`  Interpreter="html", …`
		`  Position=[100,100,250,20]);`
				R2021a	Label Interpreter property

Display a locally hosted video	`fig = figure;`
	`actx = actxcontrol('WMPlayer.ocx.7', …`
	`  [10 10 320 240],fig);`
	`actx.URL = 'xylophone.oga';`
		`fig = uifigure;`
		`h = uihtml(fig);`
		`h.Position = [10 10 320 240];`
		`h.HTMLSource = '<video width="320" height="240" controls><source src="./xylophone.oga"></video>';`
				R2019b	uihtml

Containers

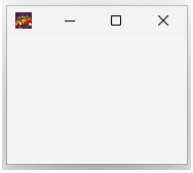
Task	Java or ActiveX Functionality (Not Supported)	Recommended MATLAB Functionality	Output	Release	More Information

Create a tab group with tabs	`fig = figure;`
	`[jTabbedPane, hContainer] =`
	`javacomponent('javax.swing.JTabbedPane', …`
	`  [20,50,200,200],fig);`
	`jTabbedPane.addTab('Tab 1',javax.swing.JPanel);`
	`jTabbedPane.addTab('Tab 2',javax.swing.JPanel);`
		`fig = uifigure;`
		`tg = uitabgroup(fig);`
		`t1 = uitab(tg,Title="Tab 1");`
		`t2 = uitab(tg,Title="Tab 2");`
				R2014b	`uitabgroup`

Create a scrollable container	`fig = figure;`
	`hPanel = uipanel(fig,'Units','pixels', …`
	`  'Position',[10 10 100 100]);`
	`drawnow`
	`jPanel =`
	`hPanel.JavaFrame.getGUIDEView.getParent;`
	`jScrollPanel =`
	`javaObjectEDT(javax.swing.JScrollPane(jPanel));`
	`jScrollPanel.setBorder([]);`
	`pixelpos = getpixelposition(hPanel);`
	`hParent = hPanel.Parent;`
	`[hjScrollPanel, hScrollPanel] =`
	`javacomponent(jScrollPanel, pixelpos, hParent);`
	`hScrollPanel.Units = 'pixels';`
	`btn = uicontrol(hPanel,'Position',[200 200 70 20]);`
		`fig = uifigure;`
		`p =`
		`uipanel(fig,Scrollable="on",Position=[10 10 100 100]);`
		`b = uibutton(p,Position=[200 200 70 20]);`
				R2018b	`uipanel`

Figure Window Customization

Task	Java or ActiveX Functionality (Not Supported)	Recommended MATLAB Functionality	Output	Release	More Information

Customize figure icon	`fig = figure;`
	`jFrame = get(fig,'javaframe');`
	`jicon = javax.swing.ImageIcon('peppers.png');`
	`jFrame.setFigureIcon(jicon);`
		`fig = uifigure(Icon="peppers.png");`		R2020b	`Figure Icon` property

Create an always-on-top or modal figure	`fig = figure;`
	`jFrame = get(fig,'JavaFrame');`
	`jWindow =`
	`jFrame.getFigurePanelContainer.getTopLevelAncestor;`
	`jWindow.setAlwaysOnTop(true);`
		`fig =`
		`uifigure(WindowStyle="alwaysontop");`
		`% or`
		`fig = uifigure(WindowStyle="modal");`
			N/A	R2021a	`Figure WindowStyle` property

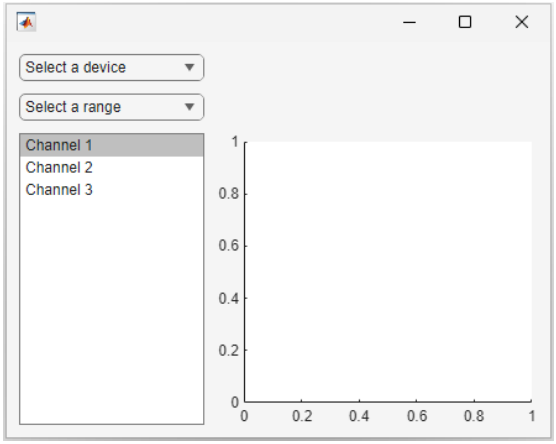
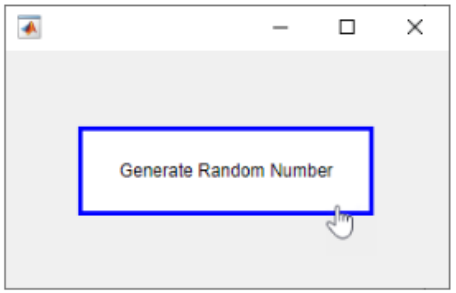
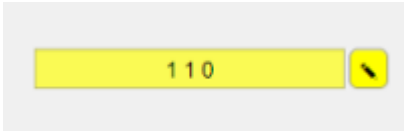
Maximize or minimize window	`fig = figure;`
	`jFrame = get(fig,'JavaFrame');`
	`jFrame.setMaximized(true);`
		`fig = uifigure(WindowState="maximized");`
		`% or`
		`fig = uifigure(WindowState="minimized");`
			N/A	R2018a	Figure `WindowState` property

Callbacks

Task	Java or ActiveX Functionality (Not Supported)	Recommended MATLAB Functionality	Output	Release	More Information

Program a response to a user typing in a text area.	`fig = figure;`
	`[j,~] = javacomponent('javax.swing.JTextArea', …`
	`  [100 100 200 100],fig);`
	`set(j,'KeyPressedCallback', …`
	`  @(src,event)disp(getText(src)));`
		`fig = uifigure;`
		`t = uitextarea(fig, …`
		`  ValueChangingFcn=@(src,event)disp(event.Value));`
			a
			b
			c
				R2021b	TextArea `ValueChangingFcn` callback property

Additional Component Layouts and Extensibility

Task	Example	Output	Release	More Information
Lay out UI components in a grid	Simple 3-by-2 Grid		R2018b	`uigridlayout`
Embed HTML, JavaScript®, or CSS content into your app and interface with third-party libraries	Send Event from JavaScript to MATLAB		R2019b	`uihtml`
Create a class implementation of a reusable custom UI component	Develop Custom UI Components Programmatically		R2020b	`ComponentContainer`