Creating Maplets Using the Maplet Builder

The following examples highlight several of the main features of the Maplet Builder.

To start the Maplet Builder, from the **Tools** menu, select **Assistants**, and then **Maplet Builder**.

A box layout is selected as the outermost Maplet layout scheme. This is the default setting when creating a new Maplet. To define a Maplet using a different layout scheme, from the **File** menu, select **New with layout**.

To learn about the structure of the Maplet Builder, see the Overview of the Maplet Builder help page.
To learn about the elements available when designing a Maplet, see the Overview of the Palette Pane help page.

General Information

When dragging elements to the **Layout** pane, the active region is highlighted.

Each element has a set of properties that customizes its appearance when applicable and sets its behavior. To access the properties of an element, select it from the drop-down menu in the **Properties** pane.

• When entering functions, do not end the statement with a semi-colon (**;**).

Elements are referenced using names of the form **Button1**, **Slider1**, and **BoxColumn1**. To assign a name that is more informative, change the **reference** property for the element in the **Properties** pane.

• To change the background or foreground color of an element, double-click the **background** or **foreground** property in the **Properties** pane to select a color from the Color dialog that displays.

• To close a running Maplet, click the **X** in the top-right corner of the window.

Example 1a: Simple Maplet

This Maplet displays a string.

Maplet Image

Steps

To add text to the Maplet, use the **Label** element.
1. From the **Body** palette, drag the **Label** element to the **Layout** pane.

To change the caption on the **Label** element, edit the **caption** property.
2. In the **Properties** pane,
    a. from the drop-down menu, select **Label1**.
    b. edit the **caption** property by deleting **Label1** and adding **Hello World**.

To run this Maplet, select Run.

3. From the **File** menu, select **Run**.
Note: Each time you select **Run** from the **File** menu, you are prompted to save the Maplet. To save the Maplet, click **Yes**.

Example 1b: Adding a Button

Building from the previous example, this Maplet includes a button that closes the Maplet when the user clicks it.

Maplet Image

Steps

To add a button to the Maplet, use the **Button** element.
1. From the **Body** palette, drag the **Button** element below the **Label** element.

To change the caption and set the action of the button, refer to the button properties.
2. In the **Properties** pane,
    a. from the drop-down menu, select **Button1**.
    b. change the **caption** to **Close**.
    c. to close the running Maplet, select the **onclick** region to display a drop-down menu of actions that can be performed when the user clicks the button.
    d. to specify that the Maplet closes when the user clicks the button, select **<Shutdown>**. The **Shutdown Event** dialog displays.
    In the **Shutdown Event** dialog,
        a. to return no information to the worksheet when the Maplet closes, simply click **Ok**.

3. From the **File** menu, select **Run**.

Example 2a: Add a Button, TextField, and Plotter Element

This Maplet accepts input from the user and plots the corresponding graph.

Maplet Image

Steps

Start a new Maplet and define the layout

To start a new Maplet definition, refer to the **File** menu.

1. From the **File** menu, select **New**.

To add multiple rows to the **BoxColumn** element, refer to the **BoxColumn** properties.

2. In the **Properties** pane,
   a. select **BoxColumn1**.
   b. in the **numrows** property, enter **3**.

Define the elements in the first row: Plotter region

To add a plot region to the Maplet, use the **Plotter** element.

1. From the **Body** palette, drag the **Plotter** element to the first row in the **Layout** pane.

To change the appearance of the plot region, refer to the **Plotter** properties.

2. In the **Properties** pane,
   a. from the drop-down menu, select **Plotter1**.
   b. double-click the **background** property. In the **Color** dialog that appears, click the white font in the top-left corner of the color palette, and then click **OK.**

Define the elements in the second row: Label and text field

To add columns to a specific row, edit the **BoxRow** properties.

1. In the **Properties** pane,

a. from the drop-down menu, select **BoxRow2**.
b. change the **numcolumns** property to **2**.

2. Drag the **Label** element to the left column in the **Layout** pane.

3. In the **Properties** pane,
a. from the drop-down menu, select **Label1**.
b. change the **caption** property to **Enter a function of x:**.

To add an input region for Maplet users to enter information, use the **TextField** element.
4. Drag the **TextField** element to the right column in the **Layout** pane. This allows the user to enter input in the Maplet.

Define the elements in the third row: Two buttons

1. In the **Properties** pane,
a. from the drop-down menu, select **BoxRow3**.
b. change the **numcolumns** property to **2**.

2. Drag a **Button** element to the left column in the third row in the **Layout** pane.

To change the caption and plot the function entered in the text region, refer to the button properties to set the action associated with this button.
3. In the **Properties** pane,
a. from the drop-down menu, select **Button1**.
b. in the **caption** property, enter **Plot**.
c. in the **onclick** property, select **<Evaluate>**. An **Evaluate Expression** window appears. The **Target** menu lists the available target elements. The **Option** menu lists the available elements for the target selected. The List group box lists the available elements to retrieve information from.
In the **Evaluate Expression** window,
a. ensure the **Target** is set to **Plotter1**.
b. enter the expression to evaluate. Enter **plot(TextField1, x=0..10)**. (Instead of entering **TextField1**, you can also double-click the element in the **List** window to include this element in the plot command). **Note:** Ensure that you do **not** include a semi-colon (**;**) at the end of the **plot** command.
c. click **Ok** to return to the Maplet Builder.

4. Drag a **Button** element to the right column in the third row.

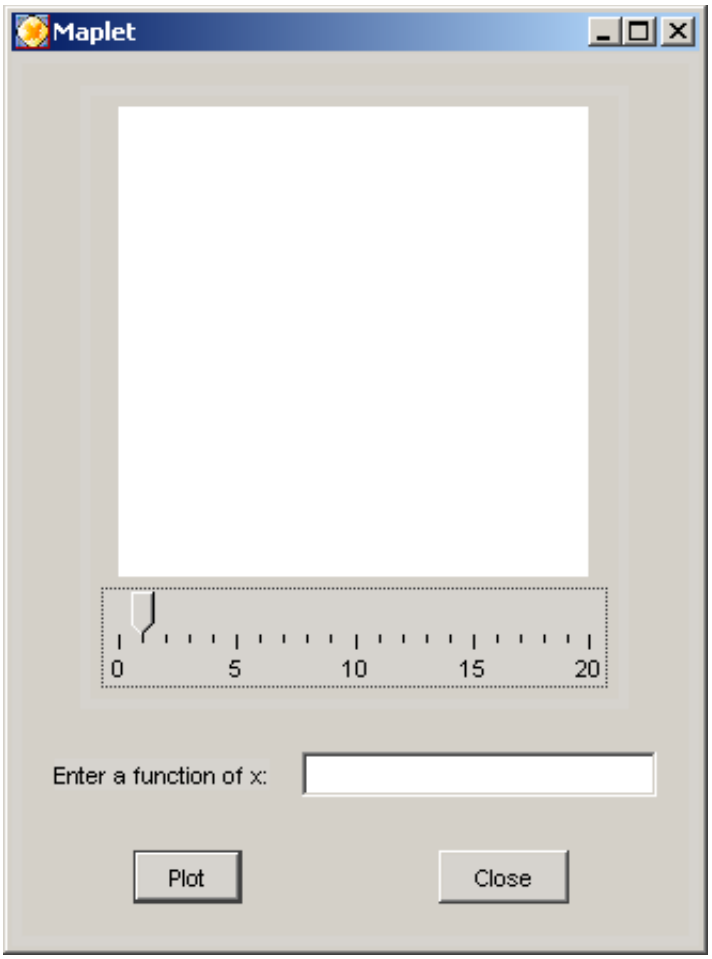
5. In the **Properties** pane,
a. from the drop-down menu, select **Button2**.
b. in the **caption** property, enter **Close**.
c. in the **onclick** property, select **<Shutdown>**.
In the **Shutdown Event Dialog**,
a. click **Ok**.

6. From the **File** menu, select **Run**.

Example 2b: Add a Slider Element

This version of the plotter Maplet includes a **Slider** element that controls the plot range displayed.

Maplet Image



Steps

To display a region that allows the user to select an integer between two points, use the **Slider** element.

1. From the **Body** palette, drag the **Slider** below the **Plotter** element in the **Layout** pane.

To alter the range of the plot based on the slider value, edit the **Slider** properties.

2. In the **Properties** pane,
    a. from the drop-down menu, select **Slider1**.
    b. change the **filled** property to **true**.
    c. change the **majorticks** property to **5**.
    d. change the **upper** property to **20**.
    e. in the **onchange** property select **clickButton1.**
    f. select **Button1** in the drop-down menu.
    g. in the **onclick** property, select **<Evaluate>**.

    In the **Evaluate Expression** window,
    a. change the plot expression to **plot(TextField1, x=0..Slider1)**.
    b. click **Ok**.

3. From the **File** menu, select **Run**.

Example 3: Adding a Drop-down Box

Maplet Image

Steps

Start a new Maplet and define the layout

To define a Maplet with a **BoxRow** as the outermost layout scheme, as opposed to a **BoxColumn**, refer to the **File** menu.

1. From the **File** menu, select **New with layout**.

To define multiple rows in the **BoxLayout**, refer to the **Default layout type and properties** dialog.

2. In the **Default layout type and properties** dialog,
   a. from the **choose layout type** group box, select **Box layout**.
   b. select **with rows**.
   c. ensure the default number of rows is set to **2**.
   d. click **Ok**.

Define the elements in the Maplet

1. In the **Properties** pane,
   a. from the drop-down menu, select **BoxRow1**.
   b. change the **numcolumns** property to **2**.

2. Drag a **Label** element to the left column.

3. In the **Properties** pane,
   a. from the drop-down menu, select **Label1**.
   b. change the **caption** property to **Select your favorite city:**.

To add a drop-down menu, use the **DropDownBox** element.

4. Drag the **DropDownBox** element to the right column.

To add entries in the **DropDownBox**, refer to the element properties.

5. In the **Properties** pane,
   a. from the drop-down menu, select **DropDownBox1**.
   b. in the **itemlist** property, enter **San Francisco,Chicago,Boston,New Orleans, Phoenix,Portland,New York**. **Note:** do not place spaces in the itemlist entry.

6. Drag a **Button** element to the second row.

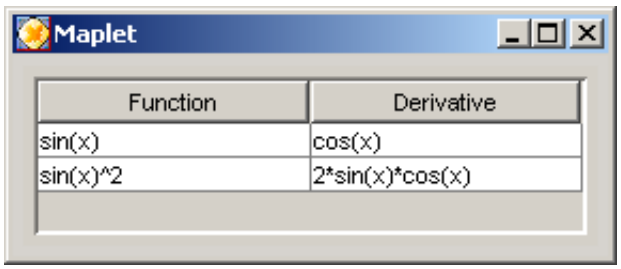
7. In the **Properties** pane,
   a. from the drop-down menu, select **Button1**.
   b. change the **caption** property to **OK**.
   c. in the **onclick** property, select **<Shutdown>**.

   In the **Shutdown Event Dialog** that appears,
   a. click **OK**.

8. From the **File** menu, select **Run**.

Example 4: Adding a Table

Maplet Image



Steps

Start a new Maplet definition

1. From the **File** menu, select **New**.

Define the elements in the Maplet

To add a table to the Maplet, use the Table element.

1. Drag the **Table** element to the **Layout** pane.

To edit number of rows and columns in the table, refer to the table properties.

2. In the **Properties** pane,
   a. from the drop-down menu, select **Table1**.
   b. double-click the **background** property. In the **Color** dialog that displays, select white and click **Ok**.
   c. change the **numcolumns** property to **2**.
   d. change the **numrows** property to **2**.

To add values to the table, enter the value in table of the Layout pane.

3. In the first row, left column, enter **sin(x)**.

4. In the first row, right column, enter **cos(x)**.

5. In the second row, left column, enter **sin(x)^2**.

6. In the second row, right column, enter **2*sin(x)*cos(x)**.

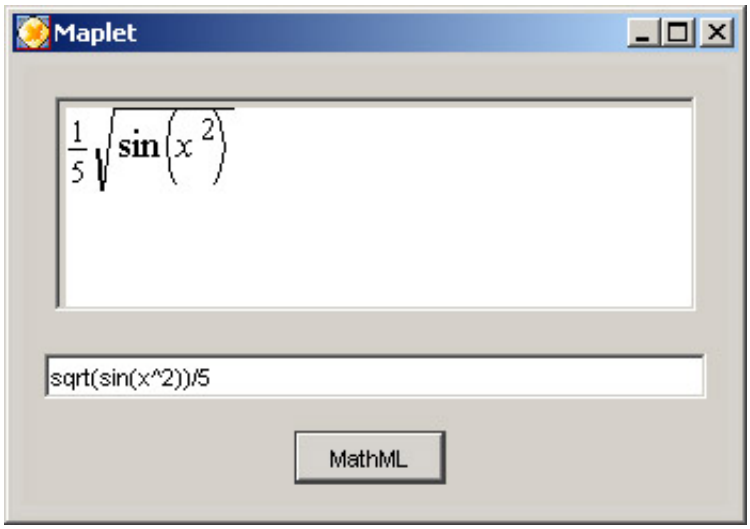
To change the column headings, refer to the **TableItem** properties.

7. In the **Properties** pane,
    a. from the drop-down menu, select **TableItem1**.
    b. change the **caption** property to **Function**.
    c. from the drop-down menu, select **TableItem2**.
    d. change the **caption** property to **Derivative**.

8. From the **File** menu, select **Run.**

Example 5: Adding a MathMLViewer Region

Maplet Image



Steps

Start a new Maplet definition

1. From the **File** menu, select **New**.

Define the elements in the Maplet

1. In the **Properties** pane,
    a. from the drop-down menu, select **BoxColumn1.**
    b. change the **numcolumns** property to **3**.

To display the expressions in 2D math, use the **MathMLViewer** element.

2. Drag a **MathMLViewer** element to the first row 3.

3. Drag a **TextField** element to the second row.

4. Drag a **Button** element to the third row.

5. In the **Properties** pane,
   a. from the drop-down menu, select **Button1**.
   b. in the **caption** property, enter **MathML**.
   c. in the **onclick** property, select **<Evaluate>**.

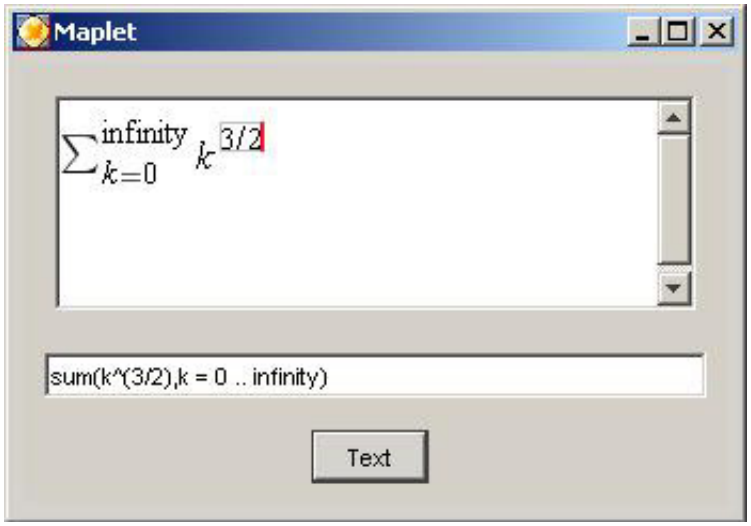
   In the **Evaluate Expression** window,
   a. verify that the **Target** field is set to **MathMLViewer1** and the **Option** field is set to **value**.

   To display the expression in 2D math, you must export the expression to MathML.
   b. enter **MathML[Export](TextField1)**.
   c. click **Ok**.

6. From the **File** menu, select **Run**

Example 6: Adding a MathMLEditor Region

Maplet Image



Steps

Start a new Maplet definition

1. From the **File** menu, select **New**

Define the elements in the Maplet

1. In the **Properties** pane,
   a. from the drop-down menu, select **BoxColumn1**.
   b. change the **numcolumns** property of the **BoxColumn** element to **3**.

To enter expression as 2D math, use the **MathMLEditor** element.

2. Drag a **MathMLEditor** element to the first row.

3. Drag a **TextField** element to the second row.

4. Drag a **Button** element to the third row.

5. In the **Properties** pane,
   a. from the drop-down menu, select **Button1**.
   b. change the **caption** property to **Text**.
   d. in the **onclick** property, select **<Evaluate>**.

   In the **Evaluate Expression** window,
   a. change the **Target** field to **TextField1**.
   b. select the **Argument Form** tab.

To display 2D math as 1D math, you must import the **MathMLEditor** entry as MathML.
   c. in the **Function** window, enter **MathML[Import]**.
   d. double-click **MathMLEditor1** to select this element as an **Argument** element.
   c. click **Ok**.

When importing 2D math, you must specify that the argument is passed as a string in the **Argument** property.

6. In the **Properties** pane,
   a. from the drop-down menu, select **Argument1**.
   b. in the **quotedtext** property, select **true**.

7. From the **File** menu, select **Run**.

Advanced Examples

For advanced examples of creating Maplet using the Maplet Builder, see the Advanced Maplet Builder Examples worksheet.

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