Using the Loader

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Introducing the loader...

Example:
- New
- Upload...
- Download
- Change both
- Change first
- Change second

A loader is used to load values into the interface from example files. The example files have the same format as the tool.xml file that they are being loaded into. In fact, they can be generated by running the tool and saving the output run.xml file. If you look in the example files, you'll see that each one also has an <about> section with a label and a description. These show up in the loader control.

The description appears in a tooltip when you hover over the loader control with your mouse.

You can see the real action here by selecting various examples from the loader. The simulate button doesn't do very much. It just copies the inputs to the output log.

Change both
Input #1: first
Input #2: second
Mass: 10g

Change first
Input #1: hello
Input #2: second
Mass: 10g

Change second
Input #1: hello
Input #2: goodbyes
Mass: 10g

New
Input #1: (enter a value here)
Input #2: (enter a value here)
Mass: 10g
Put the loader definition in your input section, usually near the top:

```xml
<loader>
  <about>
    <label>Example</label><description>This loads examples.</description>
  </about>
  <new>new.xml</new><example>*.xml</example>
  <default>new.xml</default>
</loader>
```

These files sit in
@tool/examples
@tool is where tool.xml sits

Load by default
How do you make an example file?

```xml
<run><about>
  <label>Change both</label>
  <description>This example changes both inputs, #1 to "first" and #2 to "second"</description>
</about>
...<input>
  <string id="one">
    <current>first</current>
  </string>
  <string id="two">
    <current>second</current>
  </string>
</input></run>
```

Add a description for the example

Set a `<current>` value for each element you want to set
More complex example

Resonant Tunneling Diodes

leaves these alone

Energy levels of resonant tunneling diodes produce negative differential resistance. Study the effects of various material layers and their properties on $I/V$ characteristics.

Choose a structure from the list on the left. The structures are composed of a stack of material layers with either pure GaAs or AlGaAs with a mole fraction $x$ (representing the amount of Al in the alloy). With $x=0$, the material is pure GaAs. With higher values of $x$, the added Al increases the band gap and the effective mass, creating barriers to electronic conduction. Adjust doping densities and material properties if you like, then push the Simulate button. Simulation results will appear here.

This application is powered by:
SEQUAL: Semiconductor Electrostatics by QUantum AnaLysis (v2.1)
written by Michael McLennan, School of Electrical Engineering, Purdue University, 1989.

https://nanohub.org/tools/rtd
Add targets for upload/download forms

Prompts the user to upload directly into various controls
Most useful for <string> inputs
Allows the user to download input values, edit, and upload again
Assignment #8: Add a loader

Add a `<loader>` to the Rappture interface for your MATLAB script:

The spirograph equations for three or more wheels can be generalized as follows:

\[ z(t) = \sum_{k=1}^{n} a_k e^{i2\pi(n_k t + \theta_k)}, \quad t \in [0, 1], \]

This program solves those equations for three wheels, assuming all of the \( a \) and \( \theta \) coefficients are 0. Find more details online at [link](http://linuxgazette.net/33/arena.html).

### Examples:

- **Fancy cross**
  - \( n_1 = 13 \)
  - \( n_2 = -7 \)
  - \( n_3 = -3 \)
- **Flower**
  - \( n_1 = 19 \)
  - \( n_2 = -13 \)
  - \( n_3 = 3 \)
- **Palm Branch**
  - \( n_1 = 7 \)
  - \( n_2 = -5 \)
  - \( n_3 = 2 \)

Include these examples.