Regression Testing

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You’ve published it!

**Build the tool…**

**Install, approve…**

**What’s next?**

Your latest code is installed and ready on nanoHUB.org. Please test your tool by clicking the button below to make sure that everything is working properly, as well as verify that the page describing your tool is created and displays correct information:
Usually doesn’t end there…

- Allow download of 3d simulation data
- New physics
- Wishes
- Bugs

What's next?

Your tool has been published and is now open to the public. Users will find out about your tool by reading the following page. Be sure to keep this information up to date:
http://nanoHUB.org/tools/rtd

Your options:
- I've made changes Please install the latest code for testing and approval.
You’ve published it again!

You can publish multiple versions and keep more than one active.
Remember that program from 1985?

A few months later, I went back and added a sorting routine.

My temp variable accidentally changed the ambient temperature!
Guard against those errors!

- Build up a suite of test cases
- Run them as you go along to make sure they still work
- Investigate failures and track down the problem
Create test cases

1. Run the desired test case…

Runner

```
<XML>
  ...
</XML>
```

tool.xml

Your Program

```
<XML>
  ...
</XML>
```

run12703129102.xml

2. Move into tests directory

```
$ ls
docs spirom tool.xml
docs spirom run12703129102.xml
$ mkdir tests
$ unset SESSIONDIR
$ rapptune
$ ls
docs run12703129102.xml spirom tests
$ mv run12703129102.xml tests
```

Results are moved out of the current working directory to the “results” directory unless you unset SESSIONDIR

```
~/data/results/
```

$SESSION

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3. Add label/description to each test

```xml
<?xml version="1.0"?>
<run>
  <test>
    <label>roomtemp|0eV</label>
    <description>Should work at room temperature and 0eV.</description>
  </test>
  <tool>
    <about>Press Simulate to view results.</about>
    <command>tclsh @tool/fermi.tcl @driver</command>
  </tool>
  <input>
    <number id="temperature">
      <about>
        <label>Ambient temperature</label>
        <description>Temperature of the environment.</description>
      </about>
    </number>
  </input>
</run>
```
Demo: app-femi tests

**Test: 1V**

*Test failed*

This test should generate a warning due to differences in the input parameters.

**Differences:**

- **Input: Control value**
  
  input.boolean(extra)

  Test case has this extra input value

- **Output: Extra number in output**
  
  output.number(extra)

  Result is missing from current output

- **Output: Fermi-Dirac Factor**
  
  output.curve(f12)

  Result differs from expected value
Types of errors

Output results:
- Output value has changed
- Output value is missing
- Output value is extra (not supposed to be there)

Input values:
- Input value has changed--label, units, etc.
- Input value is missing from test case
- Input value is extra (not supposed to be there)

Fix the tool
Fix the test

<< New golden standard
Assignment #10: Create tests for your tool

Create a test suite with these cases

<table>
<thead>
<tr>
<th></th>
<th>Fancy cross</th>
<th>Flower</th>
<th>Palm Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n_1 )</td>
<td>13</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>( n_2 )</td>
<td>-7</td>
<td>-13</td>
<td>-5</td>
</tr>
<tr>
<td>( n_3 )</td>
<td>-3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

- Run the regression tests (should run cleanly)
- Edit one of the tests and delete some numbers
- Run the tests, discover the error, then regoldenize