Introducing the Rappture Toolkit

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HUBzero® Platform for Scientific Collaboration

Purdue University

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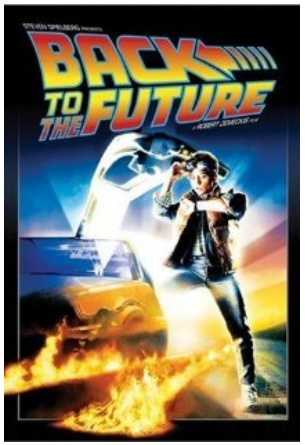
Take a trip back to 1985...



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picture from imdb.com

Video still from YouTube.com

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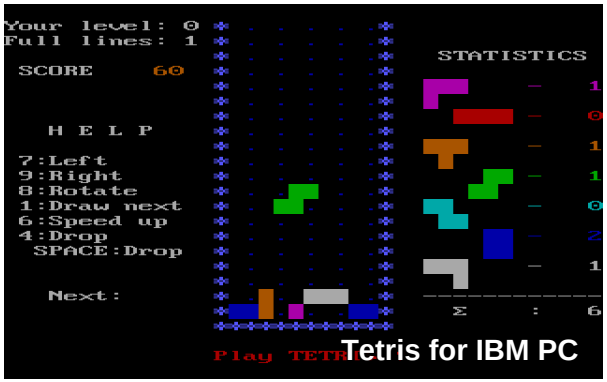
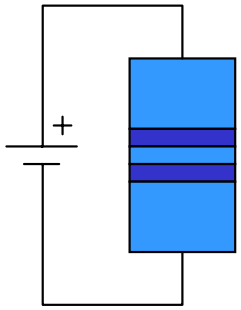


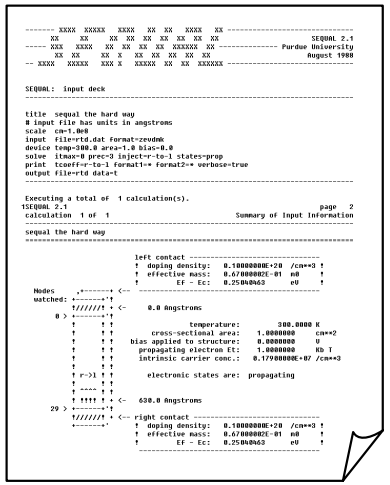
Screen shot from Wikipedia.org

Semiconductor Electrostatics QUantum AnaLysis

SEQUAL 2.1 - 7862 lines of Fortran 77



Resonant Tunneling Diode



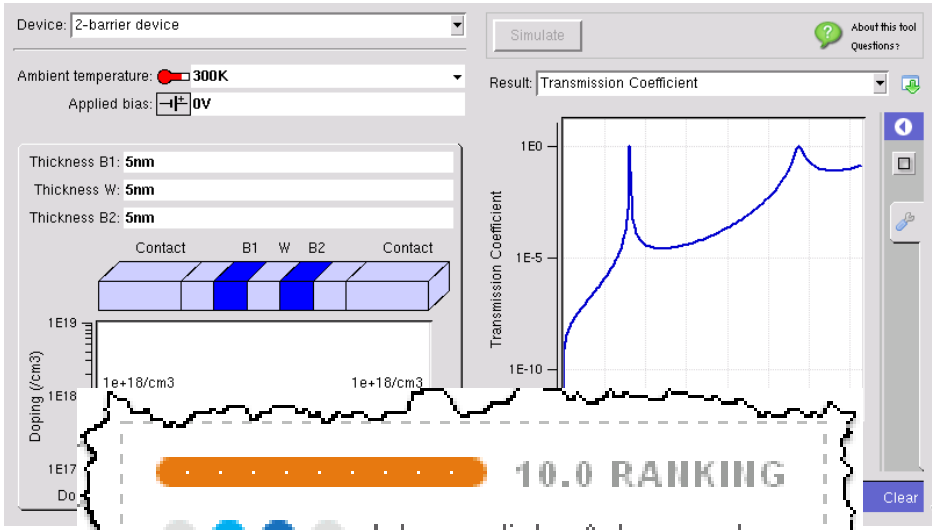
Magnetic Tape: $10

```
------- XXXX  XXXXX   XXXX   XX  XX   XXXX   XX -------------------------------
      XX     XX     XX  XX  XX  XX  XX  XX  XX                      SEQUAL 2.1
----- XXX   XXXX   XX  XX  XX  XX  XXXXXX  XX -------------- Purdue University
       XX  XX     XX  X   XX  XX  XX  XX  XX                      August 1988
-- XXXX   XXXXX   XXX X   XXXXX  XX  XX  XXXXXX -------------------------------

SEQUAL:  input deck
--------------------------------------------------------------------------------

title  sequal the hard way
# input file has units in angstroms
scale  cm=1.0e8
input  file=rtd.dat format=zevdmk
device temp=300.0 area=1.0 bias=0.0
solve  itmax=0 prec=3 inject=r-to-l states=prop
print  tcoeff=r-to-l format1=* format2=* verbose=true
output file=rtd data=t
--------------------------------------------------------------------------------

 Executing a total of  1 calculation(s).
1SEQUAL 2.1                                                      page   2
 calculation  1 of  1                          Summary of Input Information
 --------------------------------------------------------------------------------

                                    ==================================

                                    ---------------------------
                                    :   0.10000000E+20  /cm**3 !
                                    :   0.67000002E-01  m0     !
                                    :   0.25040463      eV     !
                                    ---------------------------



                                    erature:         300.0000 K
                                    al area:     1.0000000     cm**2
                                    ructure:     0.0000000     V
                                    tron Et:     1.0000000     Kb T
                                    r conc.:   0.17900000E+07 /cm**3

                                    tes are:  propagating
```

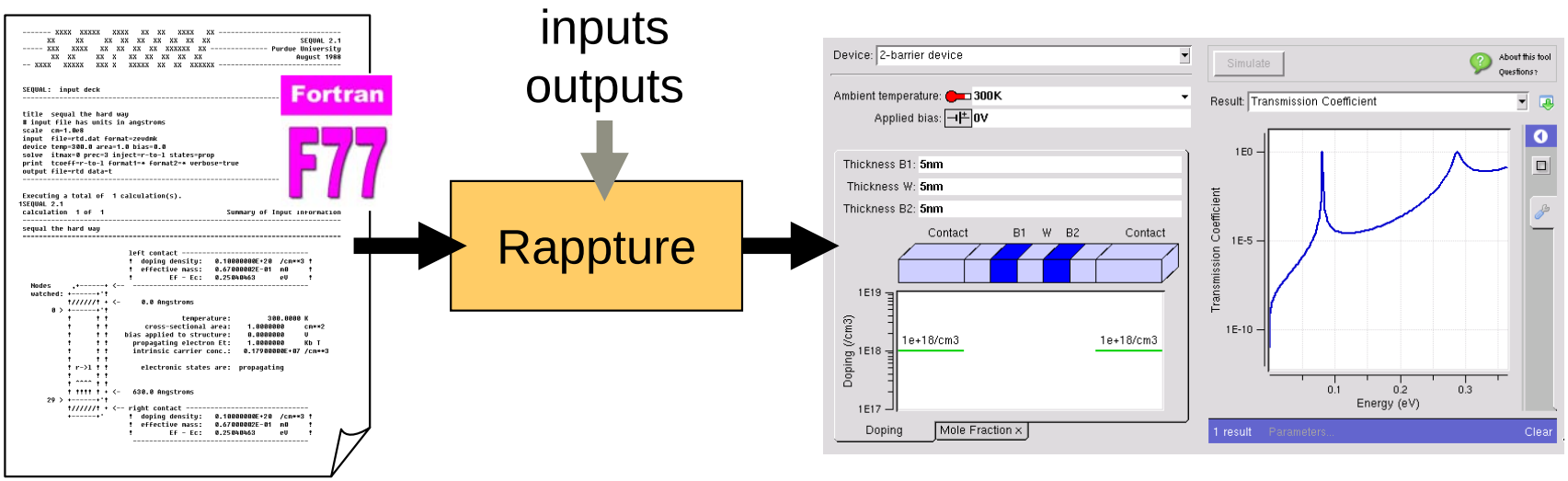
Fortran

F77

Live Tool: **Priceless**

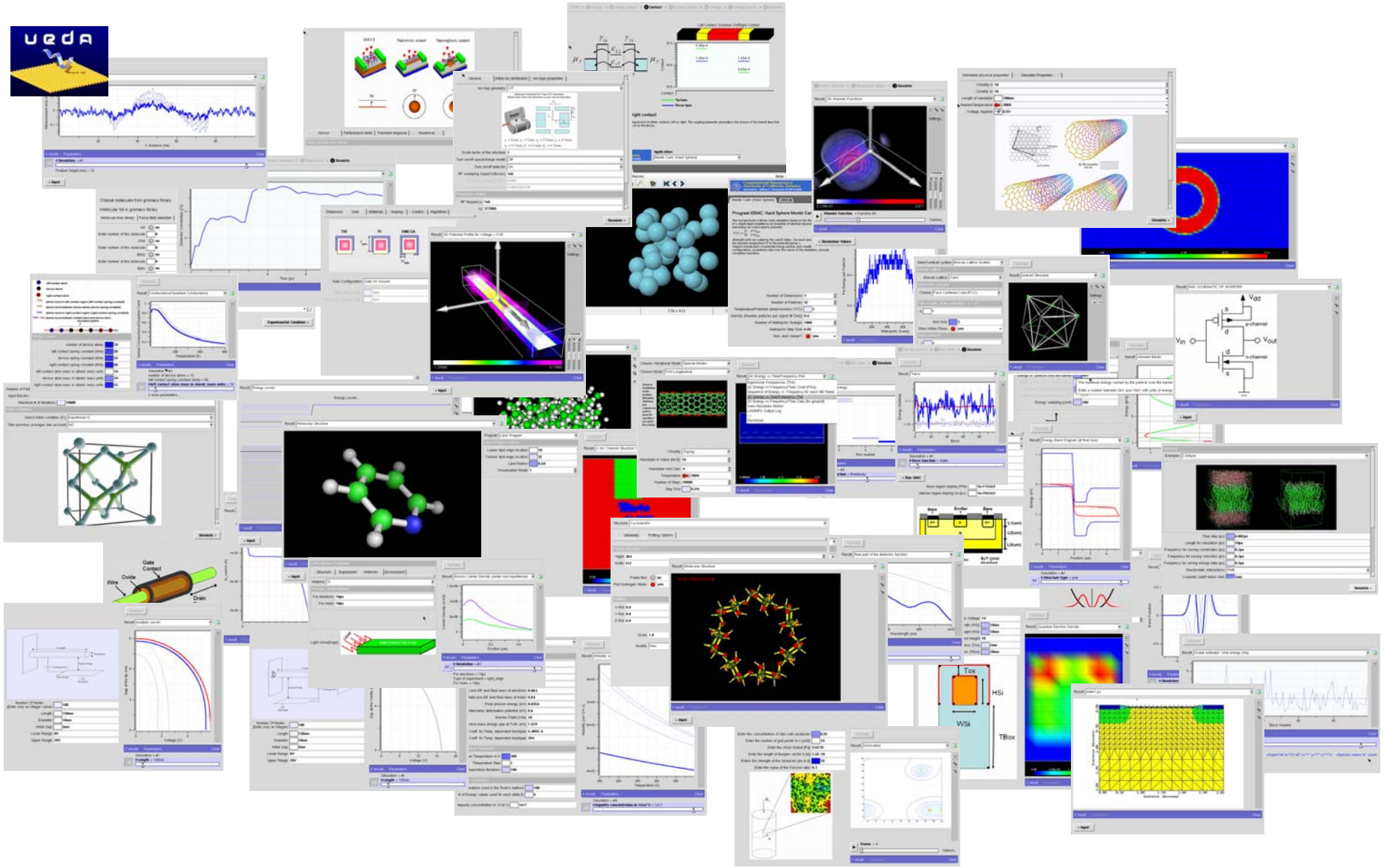


Introducing: The Rappture Toolkit

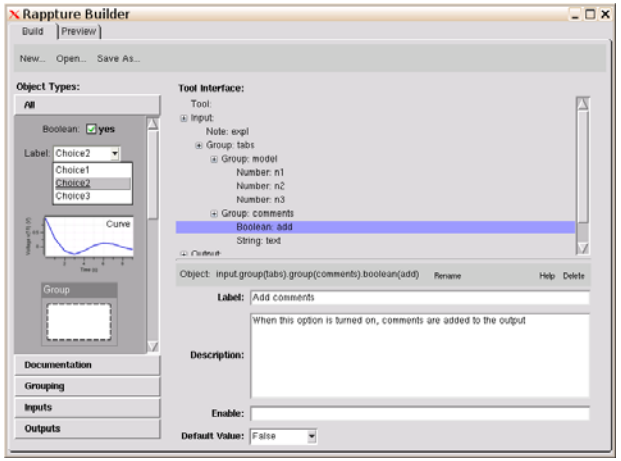


- Rapid Application Infrastructure
- Released in May 2005
- Open Source (rappture.org)
- Create standard desktop apps
- Works with your favorite programming language

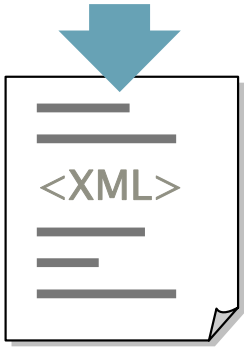
Used to deploy hundreds of tools



Builder



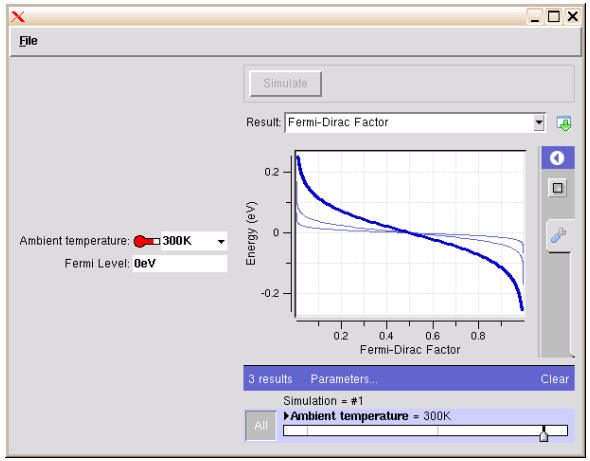
`rappture -builder`



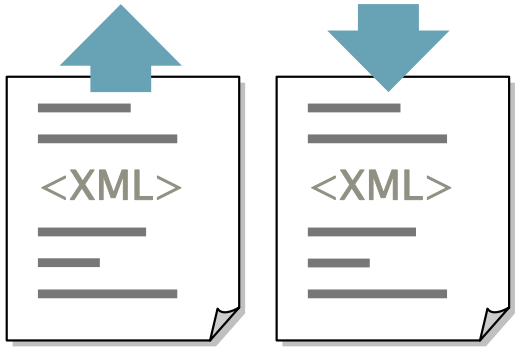
tool.xml

Generates tool description

Runner



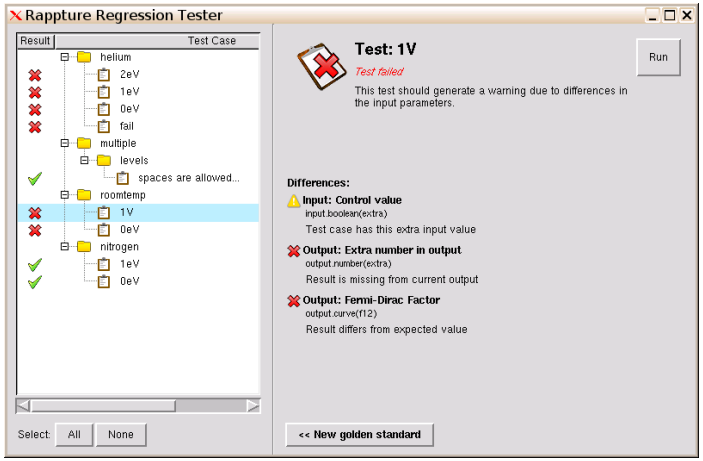
`rappture`
`rappture -run`



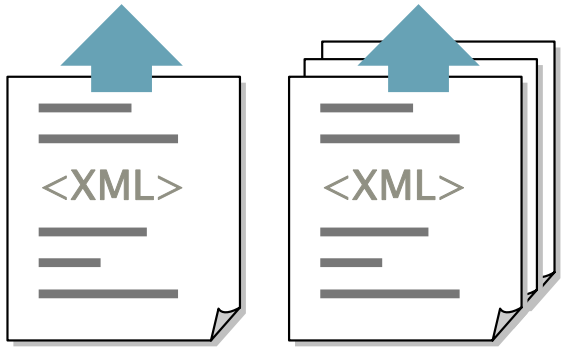
tool.xml **run.xml**

Reads tool description
Generates simulation results

Tester



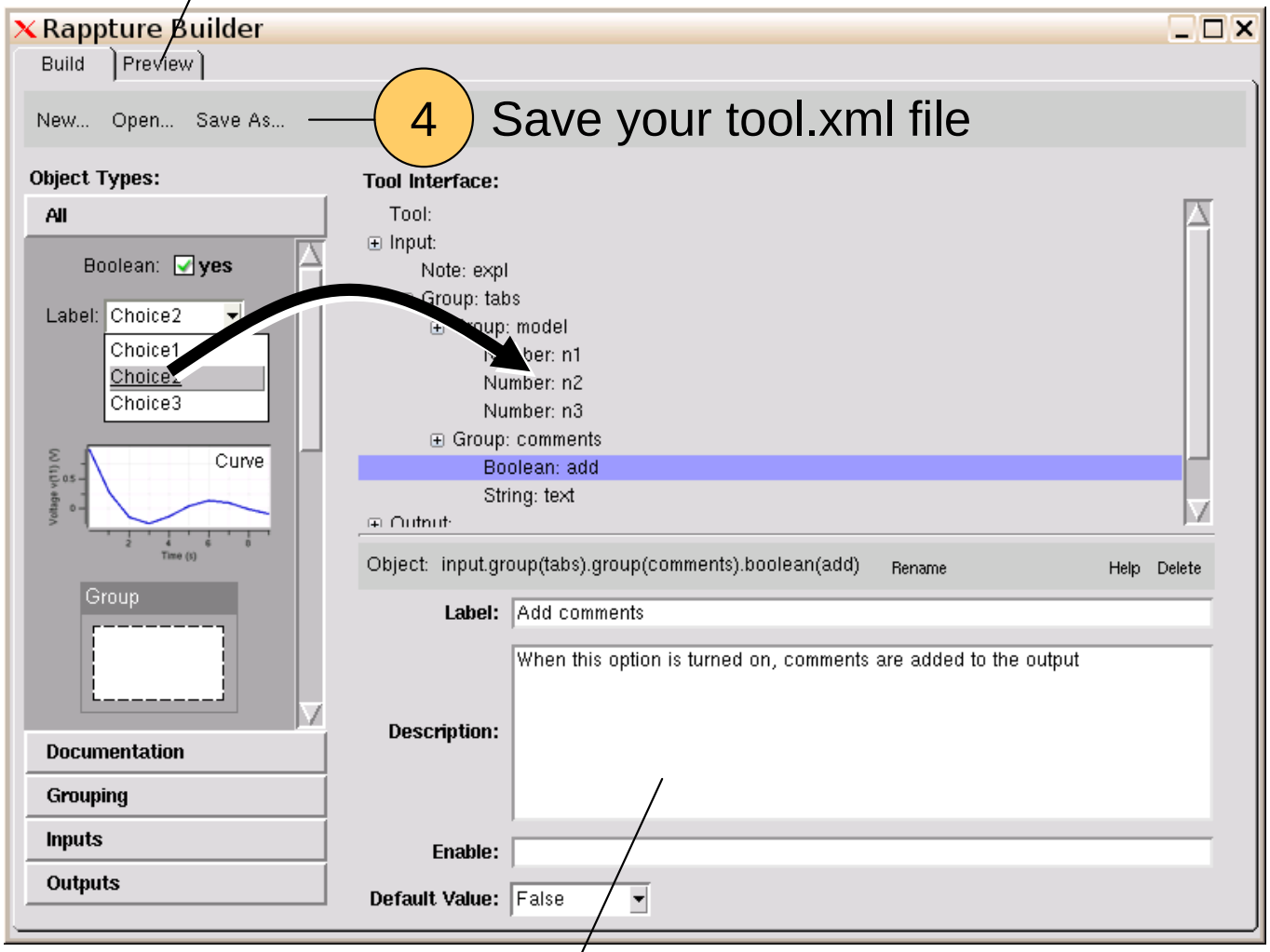
`rappture -tester`



tool.xml **tests**

Reads tool description
Runs tests and compares results

3 Click on the “Preview” tab to preview your tool



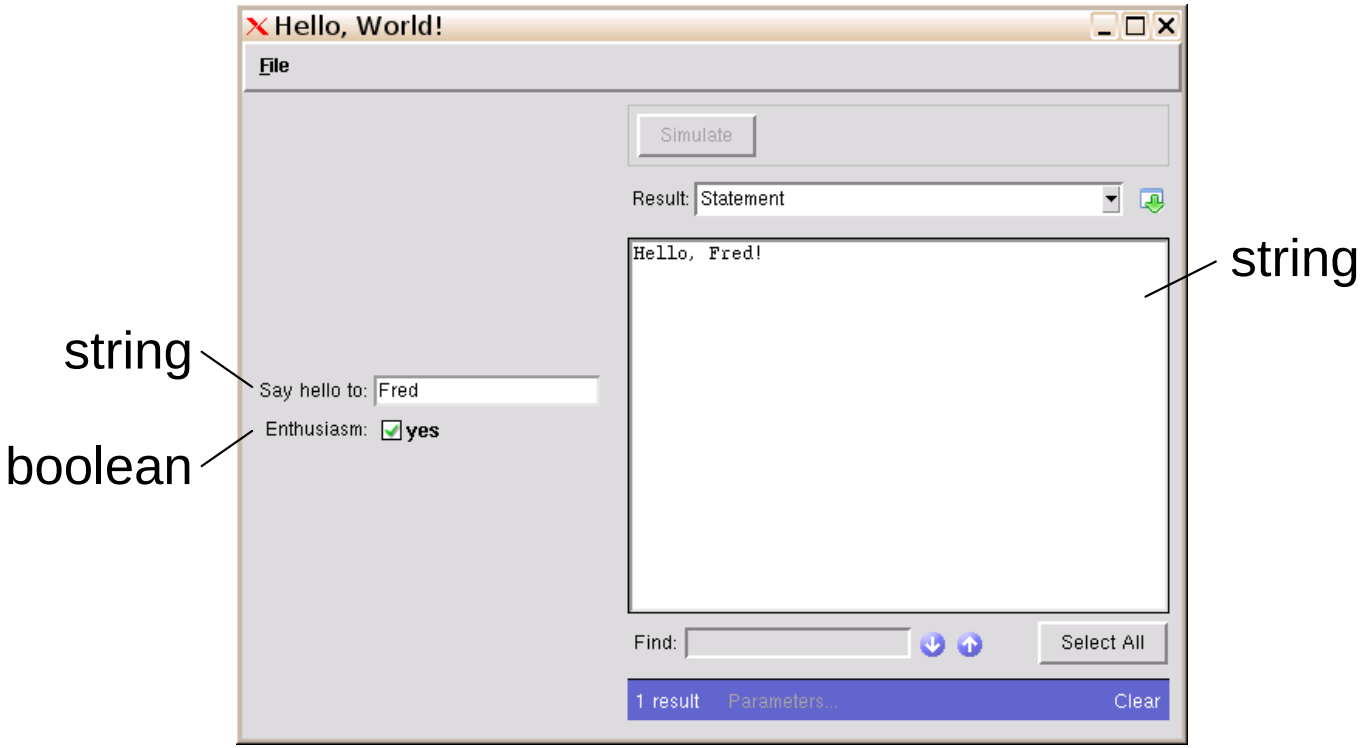
1 Drag controls from the palette and drop in inputs/ouputs

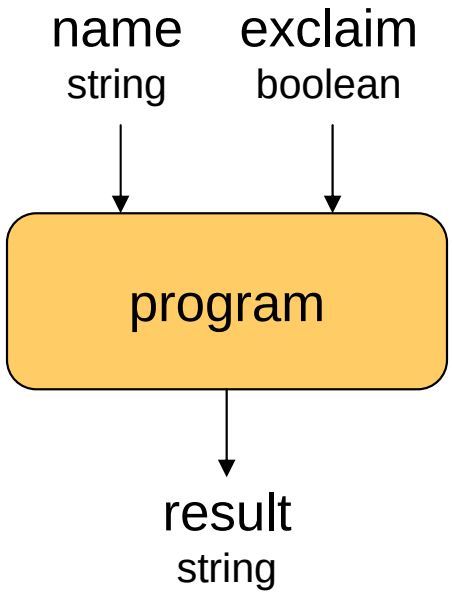
2 Click on a control and edit its parameters

Demo: Hello, World!

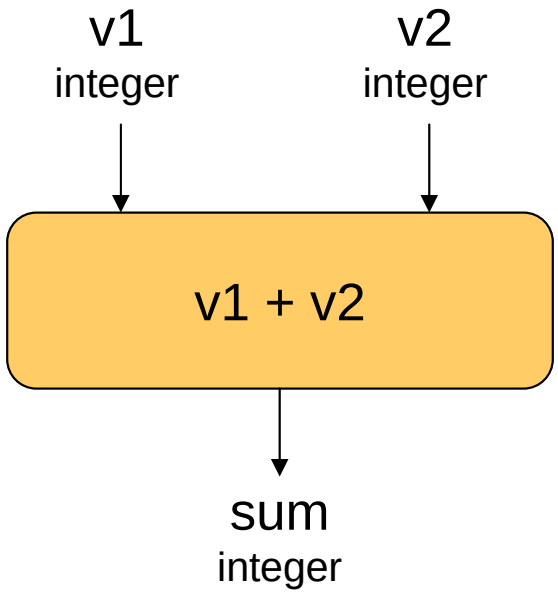
- Takes a name and an “enthusiasm” level
- Enthusiasm adds an exclamation point
- Produces a “hello, world” string

Build two ways:

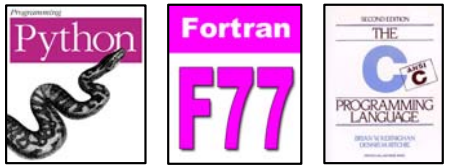
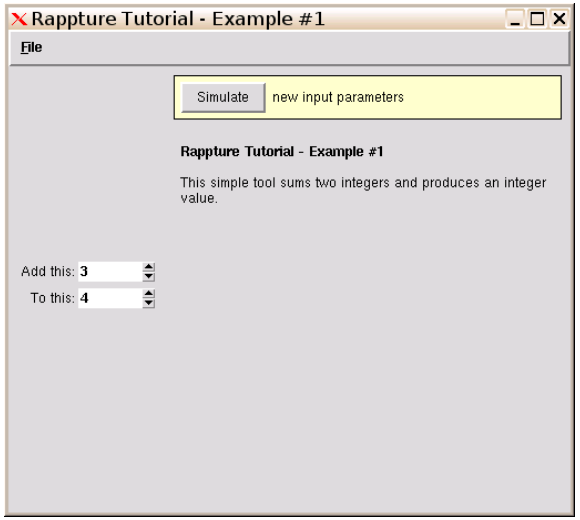
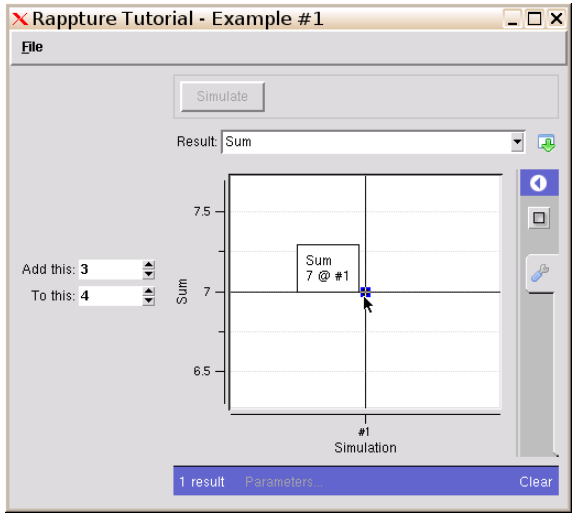




Assignment #1: Build a simple Addition tool



Pick your favorite language: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