EL 644: VLSI Systems and Architectures

SKILL Programming

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Introduction

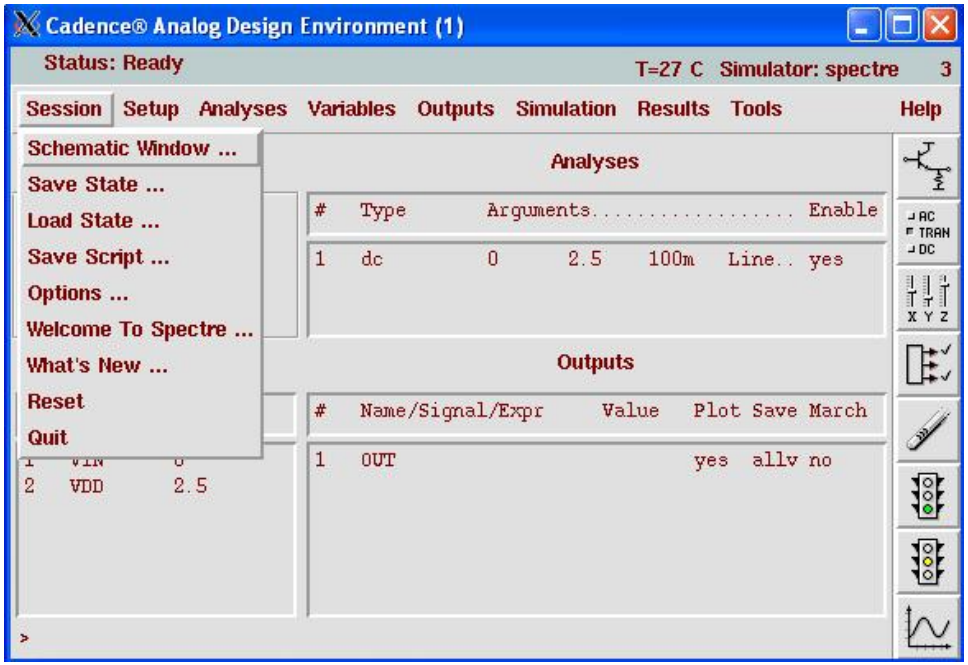
- SKILL – Cadence scripting language, form of LISP
- Cadence GUI interface is supported by SKILL code
- SKILL code is driven by database syntax
- Anything you can do with the Cadence GUI, you can do with SKILL
- Key to SKILL is a large set of library functions that allow you to manipulate *data structures* such as cells, nets, mask information, etc.

Learn from the GUI

- As you perform operations in Cadence, keep an ey on the ICFB window
- These operations often show up in the ICFB window as functions that can be used in your own script
- You can also start with the Analog Environment

SKILL Simulation

- Start by setting up a Spectre simulation in the Analog Environment – save the state
- Now, select Session -> Save Script …
- You now have a script version of your simulation



A DC Sweep

```
simulator( 'spectre )
design("/home/batcher/u1/faculty/grose/cadence/simulation/inverter/spectre/schematic/netlist/netlist")
resultsDir( "/home/batcher/u1/faculty/grose/cadence/simulation/inverter/spectre/
schematic" )
modelFile(
    '("/home/batcher/u1/faculty/grose/cadence/models/spectre/tsmc25P.m" "")
    '("/home/batcher/u1/faculty/grose/cadence/models/spectre/tsmc25N.m" "")
)
stimulusFile( ?xlate nil

        "/home/batcher/u1/faculty/grose/cadence/simulation/inverter/spectre/schematic/netlist/_graphical_stim
        uli.scs")
analysis('dc ?param "VIN"  ?start "0"  ?stop "2.5" ?step "0.1"  )
desVar(   "VIN" 0       )
desVar(   "VDD" 2.5     )
temp( 27 )
run()
selectResult( 'dc )
plot(getData("/OUT") )
```

Simulation setup

Analysis setup

A Routine for Simulation

```
procedure(INVSIM()

simulator( 'spectre )
design("/home/batcher/u1/faculty/grose/cadence/simulation/
    inverter/spectre/schematic/netlist/netlist")
resultsDir( "/home/batcher/u1/faculty/grose/cadence/simulation/inverter/spectre/
schematic" )
modelFile(
   '("/home/batcher/u1/faculty/grose/cadence/models/spectre/tsmc25P.m" "")
   '("/home/batcher/u1/faculty/grose/cadence/models/spectre/tsmc25N.m" "")
)
stimulusFile( ?xlate nil
   "/home/batcher/u1/faculty/grose/cadence/simulation/inverter/spectre/
   schematic/netlist/_graphical_stimuli.scs")
analysis('dc ?param "VIN"  ?start "0"  ?stop "2.5" ?step "0.1"  )
desVar(   "VIN" 0       )
desVar(   "VDD" 2.5     )
temp( 27 )
run()
selectResult( 'dc )
plot(getData("/OUT") )

)
```

- Create a procedure from your code
- Save this file with the procedure name
- To run, you will need to load into ICFB

Running the New Routine

- In the ICFB window: enter load(<path/filename.il>)
- For our example:

Running the New Routine

- This little script simulates an inverter
- Results appear automatically