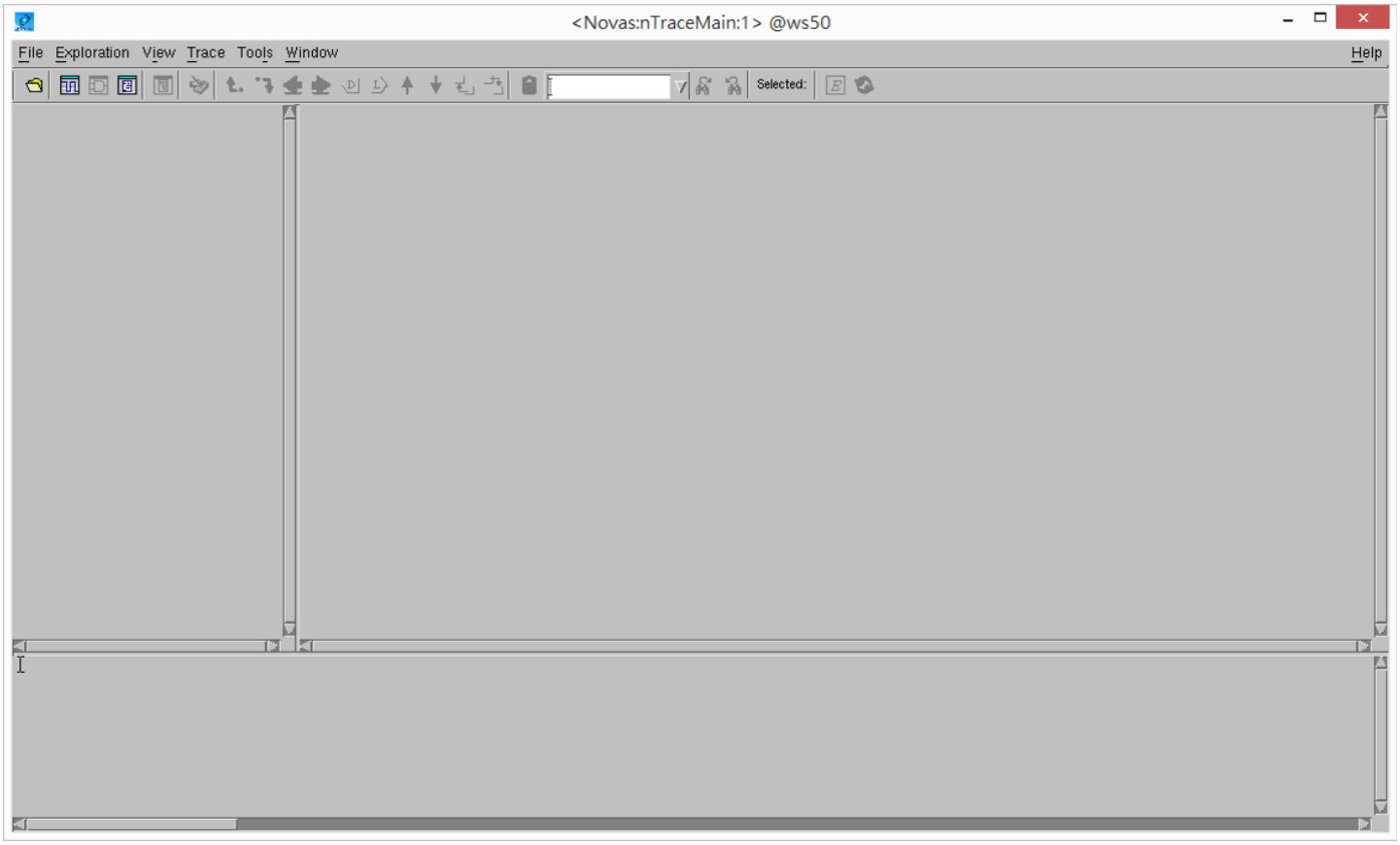
Verdi

nTrace

Start Verdi

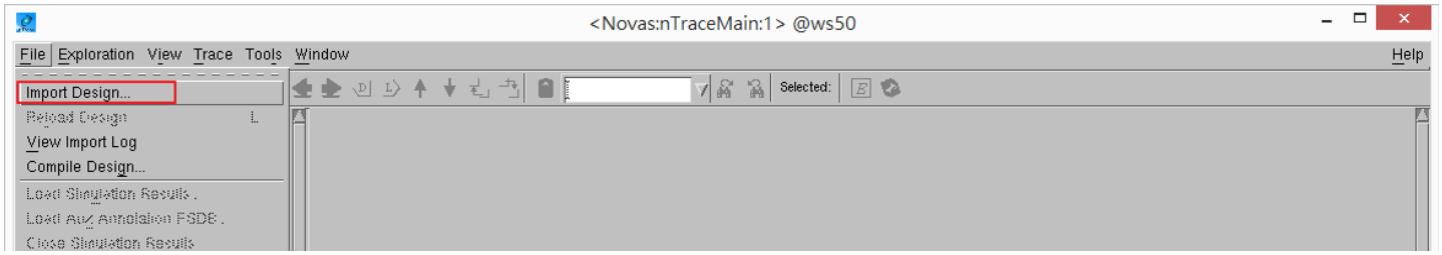
execute the following command

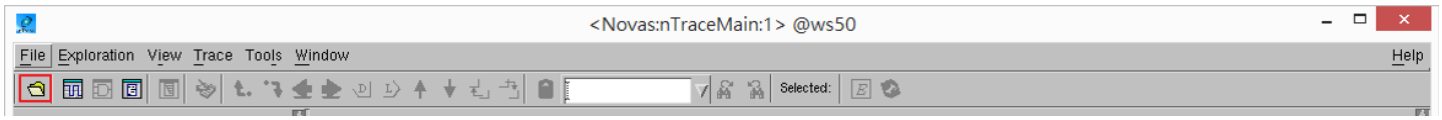
```
$ verdi &
```

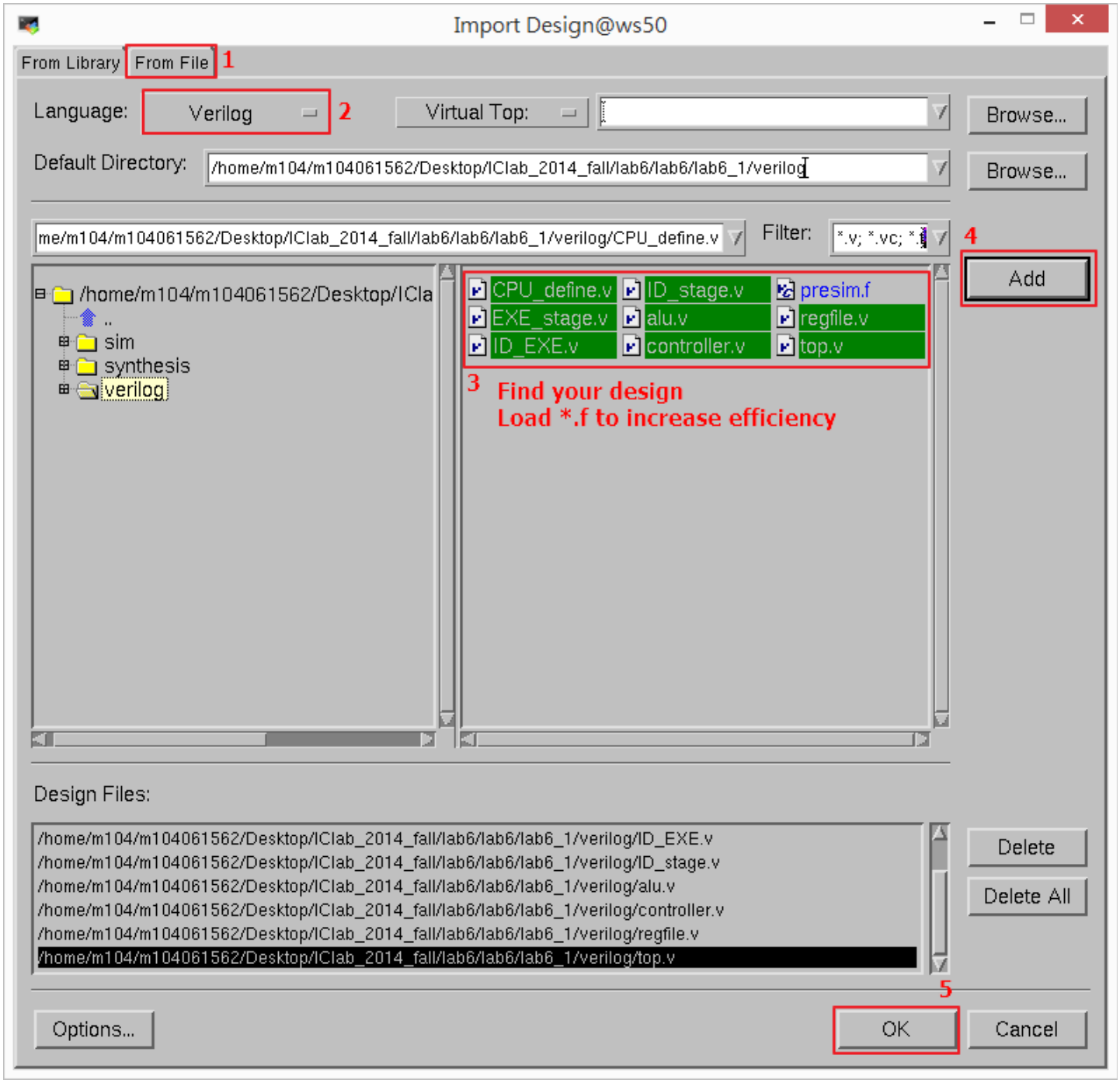


Import Design

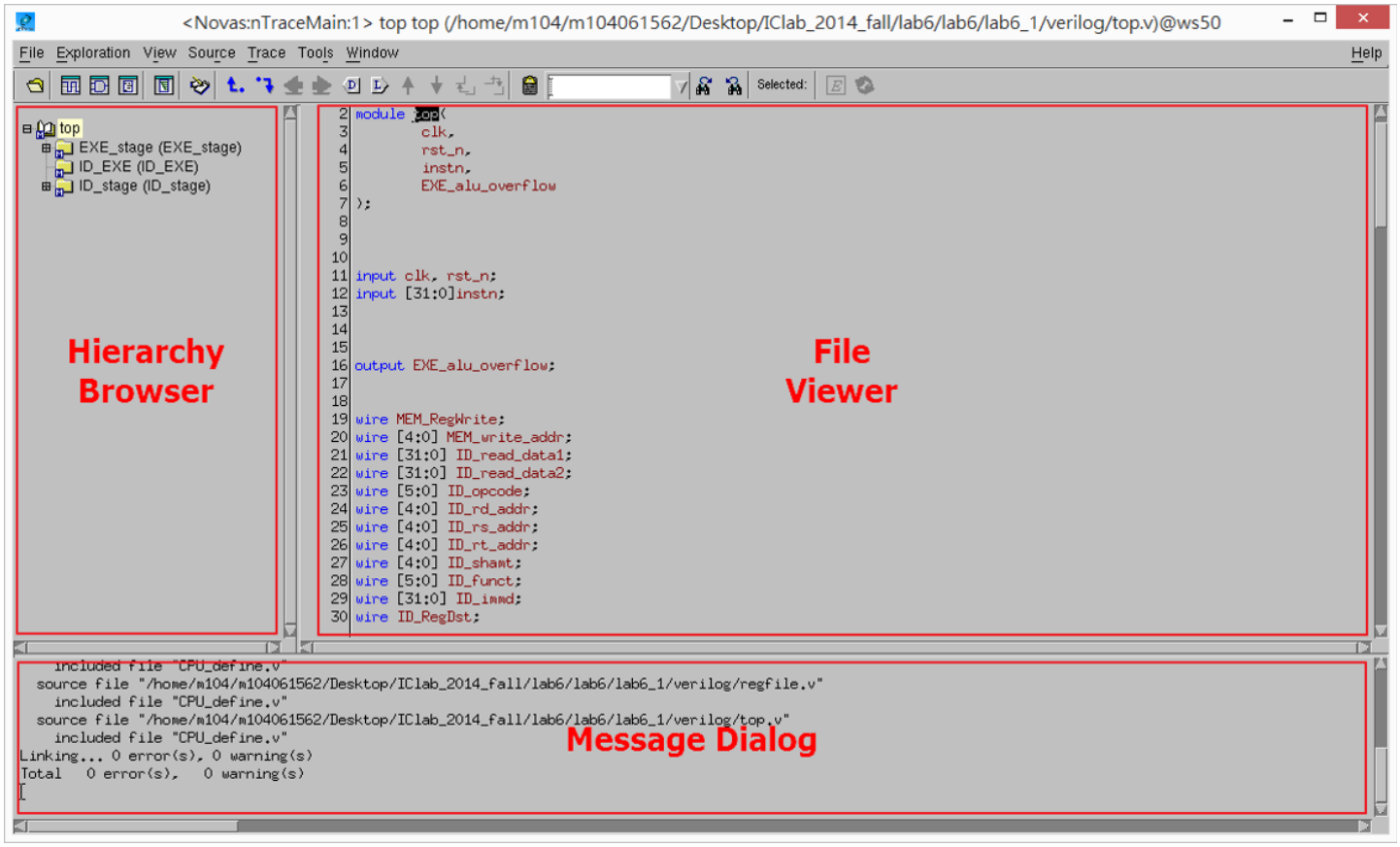
File > Import Design or Click

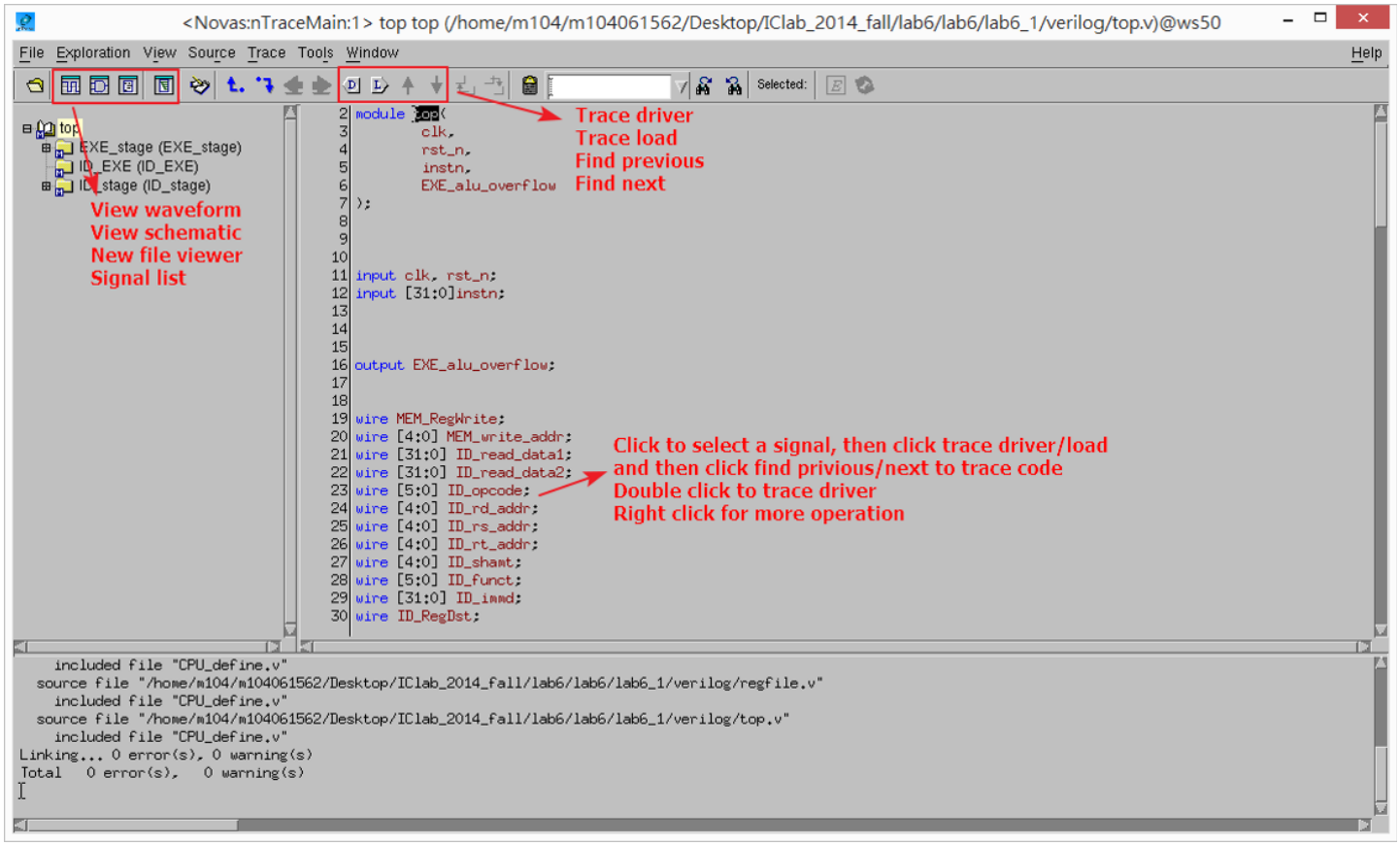






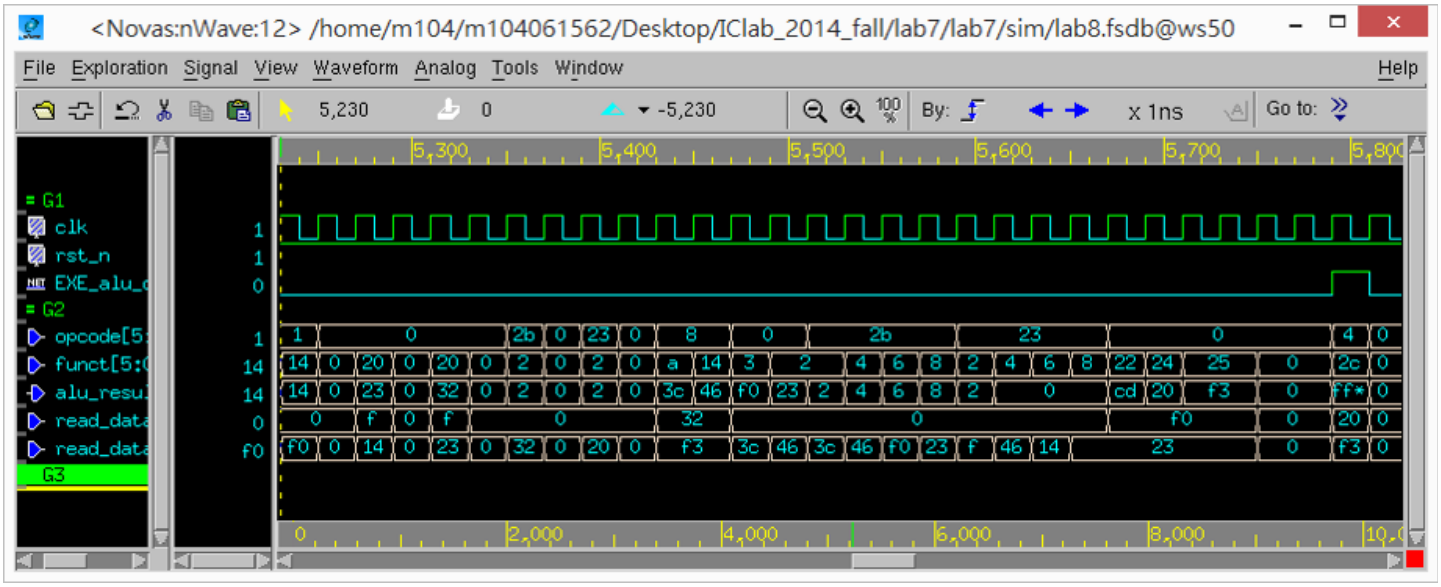
Verdi Interface





nWave

View the waveform generated by simulator like NCVerilog



Generate fsdb File

Add following line in testbench and re-run ncverilog

```
initial begin
  $fsdbDumpfile("filename.fsdb");
  $fsdbDumpvars;
end
```

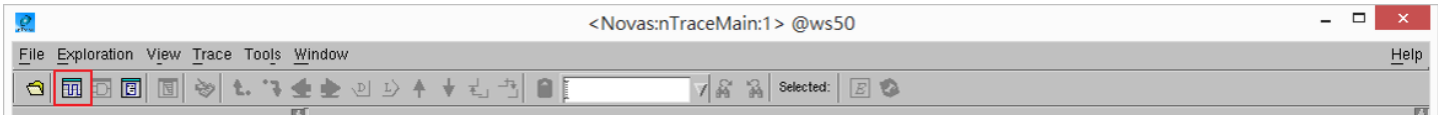
To View Multi-Dimension Array

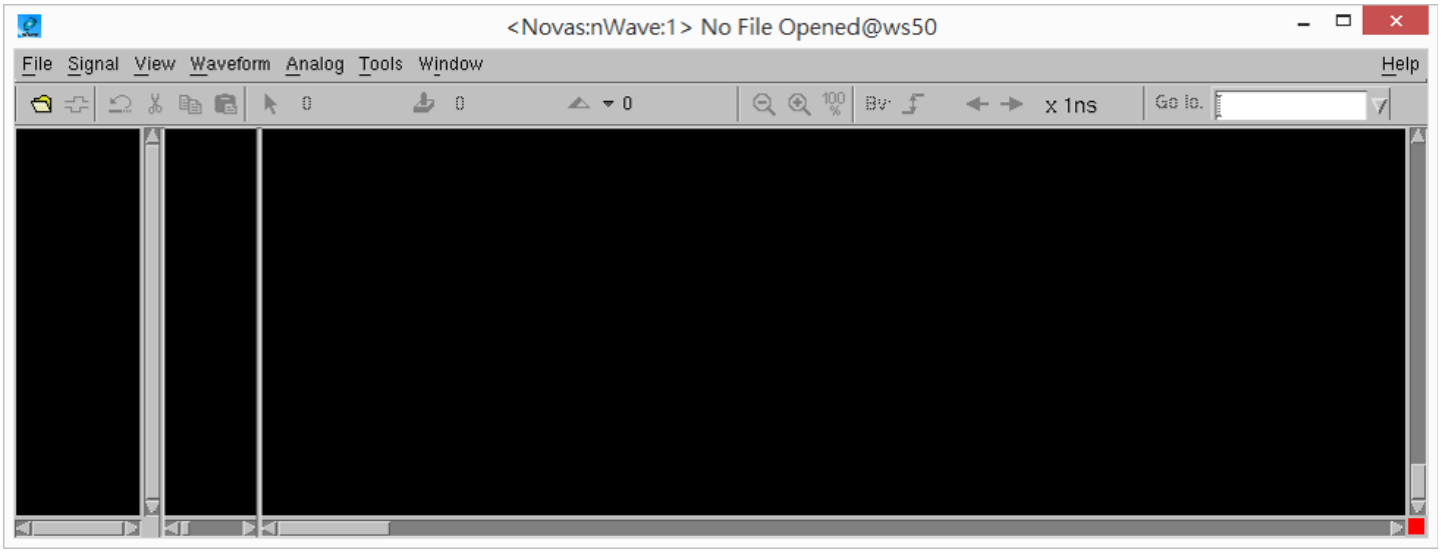
```
initial begin
  $fsdbDumpfile("filename.fsdb");
  $fsdbDumpvars(0, testbench, "+mda");
end
```

Start nWave

Type `nWave &` in the command line or Click

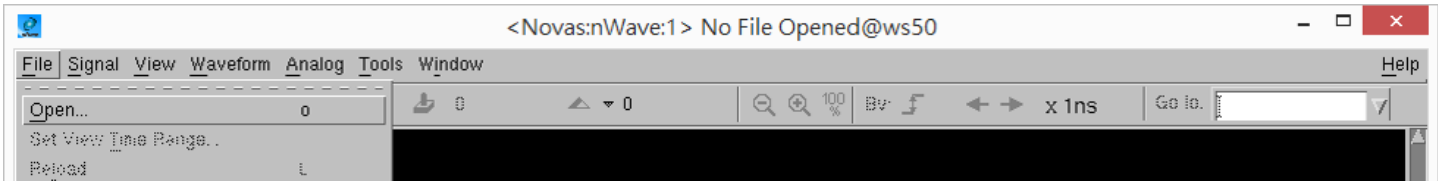
in Verdi



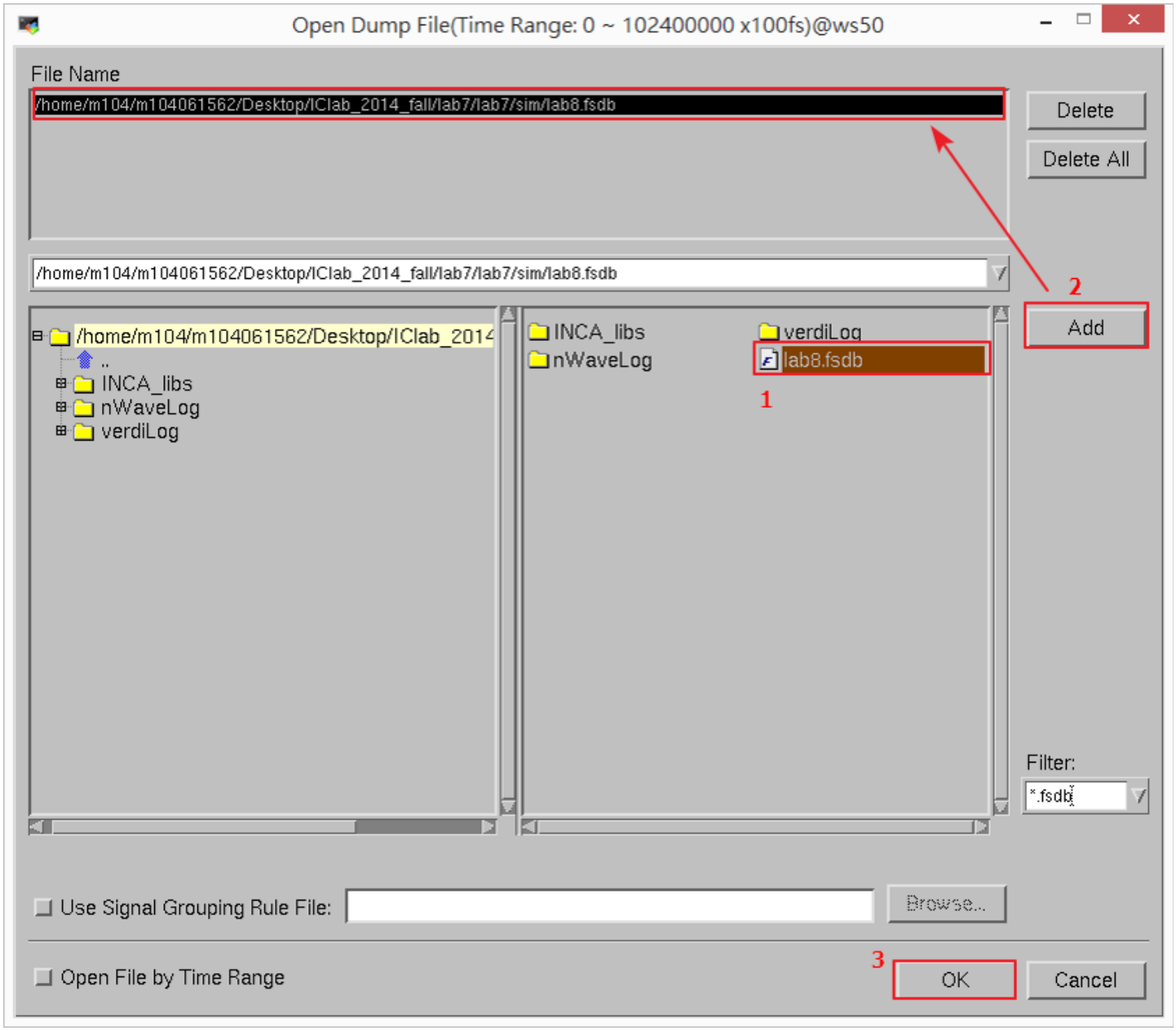


Open fsdb File

File > Open (or press 'o')

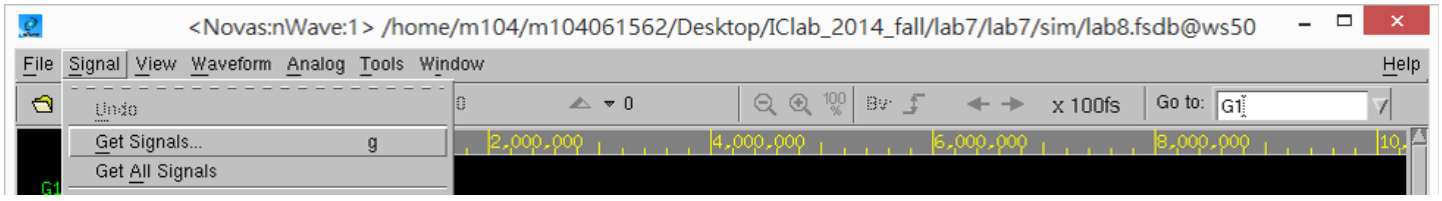


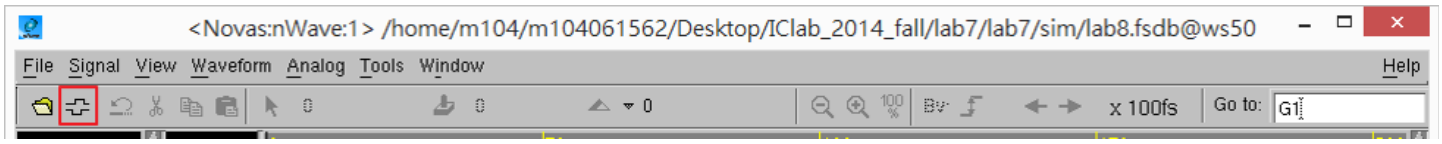
Click fsdb file -> Add -> OK



Get Signals

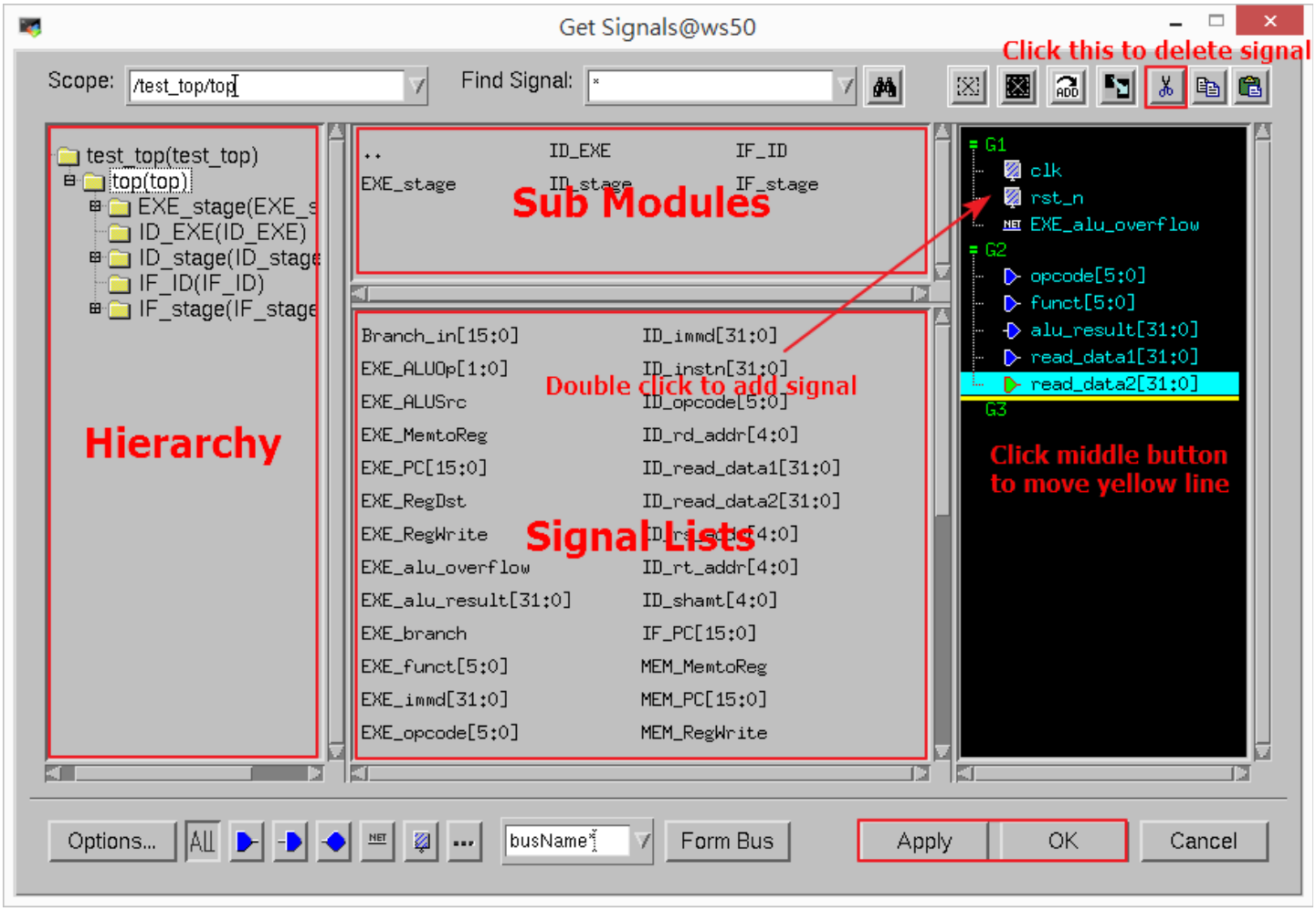
Signal > Get Signals (or press 'g') or Click



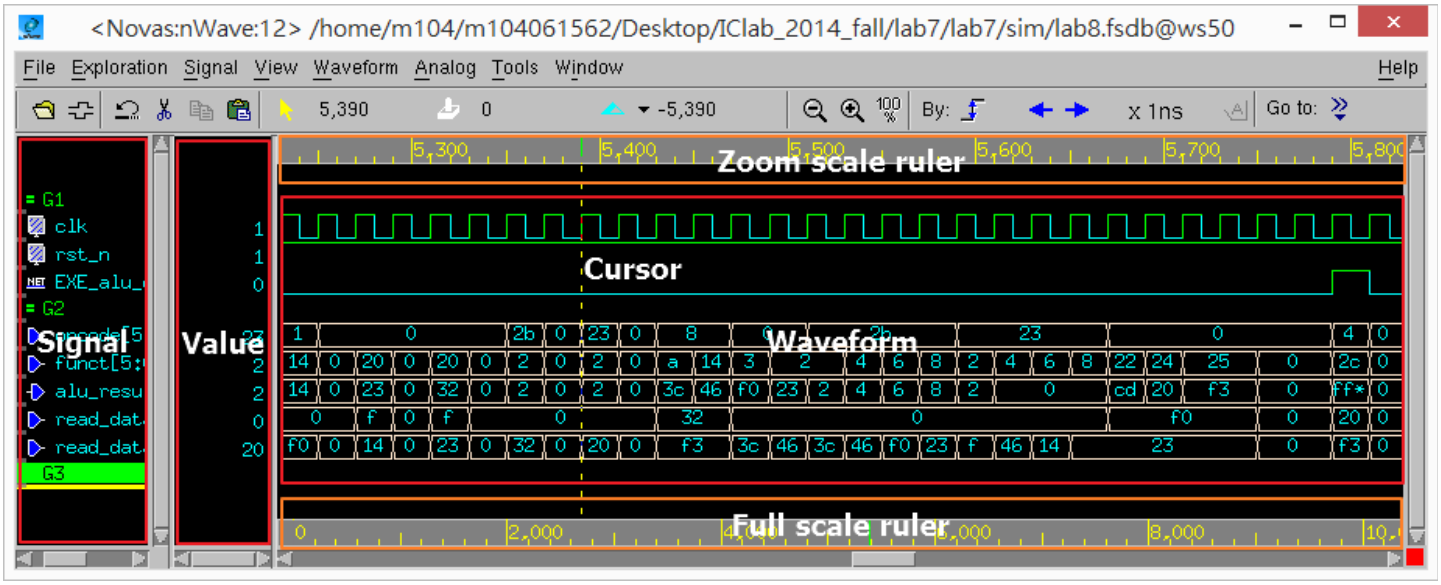


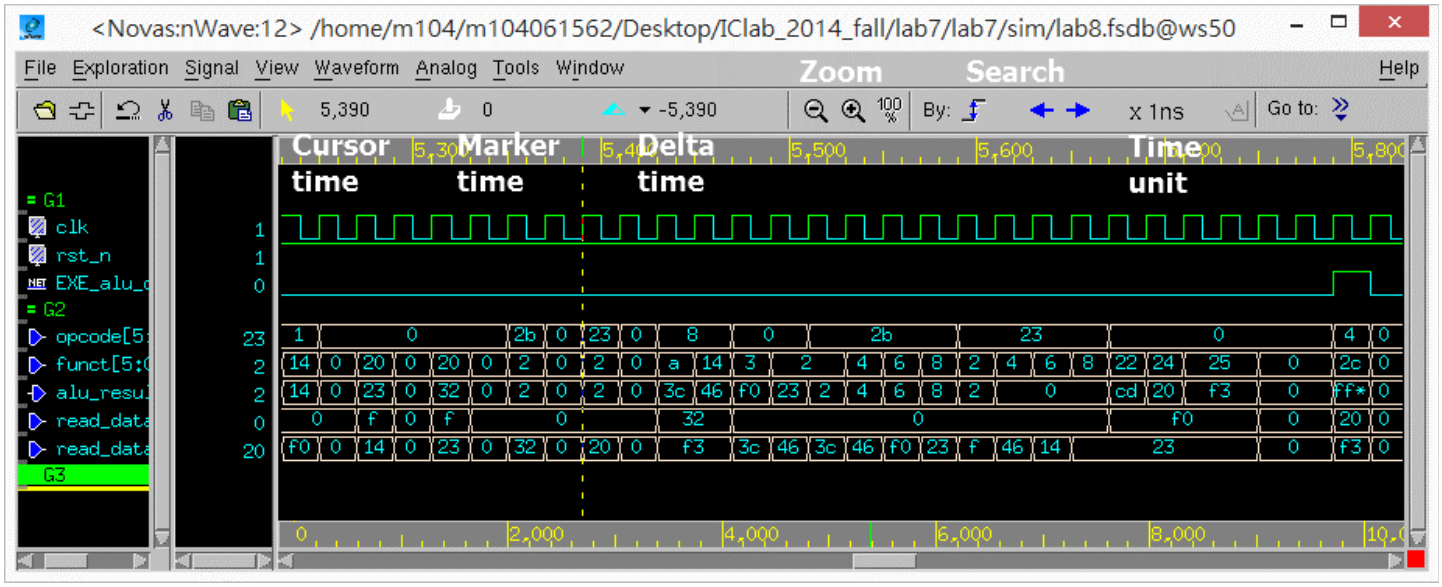
Click signals you want to watch > Apply > OK

Click middle button to move yellow line



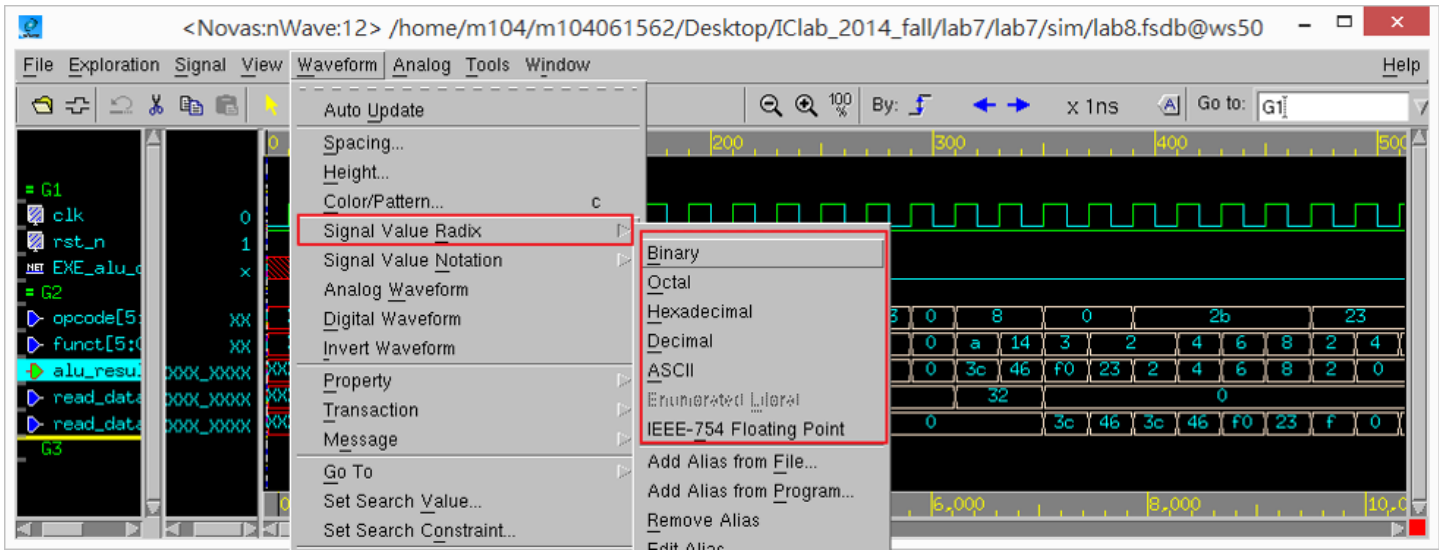
nWave Interface





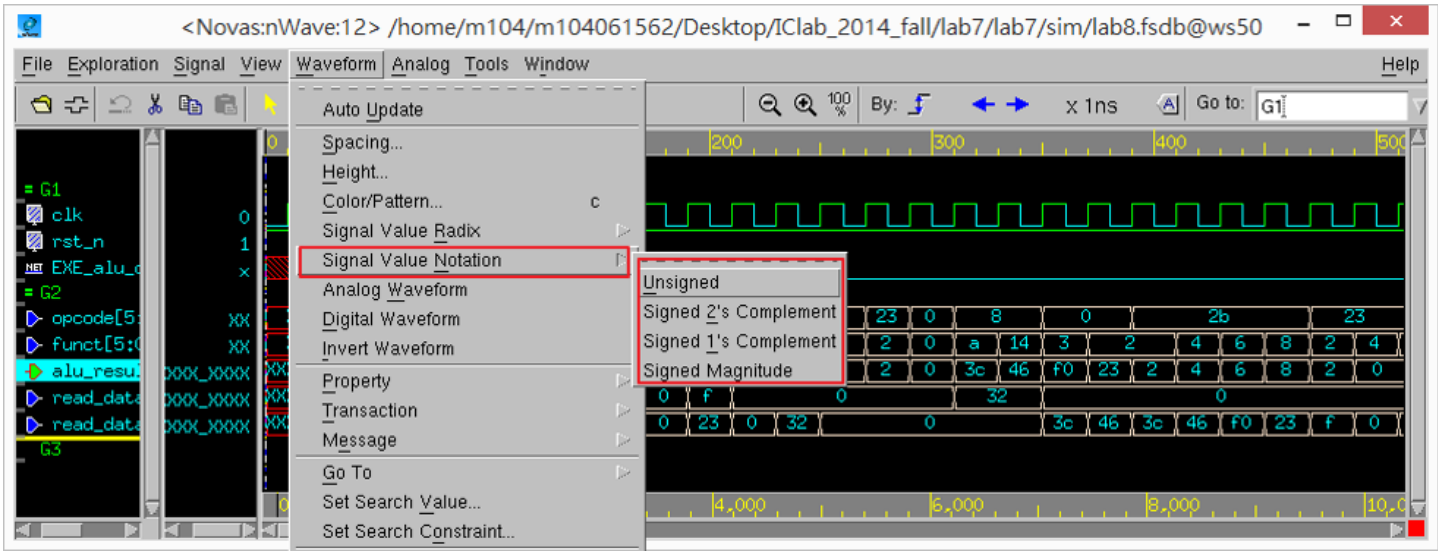
Change Radix

Select signals > Waveform > Signal Value Radix > Binary, Hexadecimal, Decimal, ASCII or Add Alias



Change Notation

Select signals > Waveform > Signal Value Notation > Unsigned, Signed 2's Complement and so on



Highlight Selected Signals

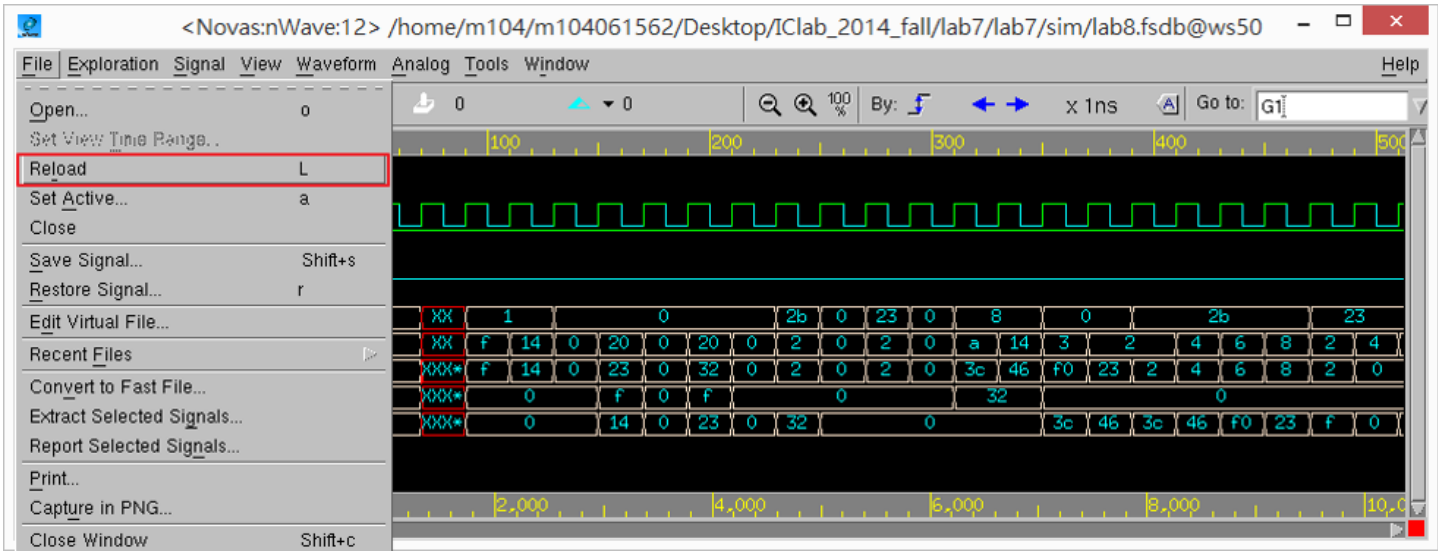
View > Highlight Selected Signals

Leading Zeros

View > Leading Zeros

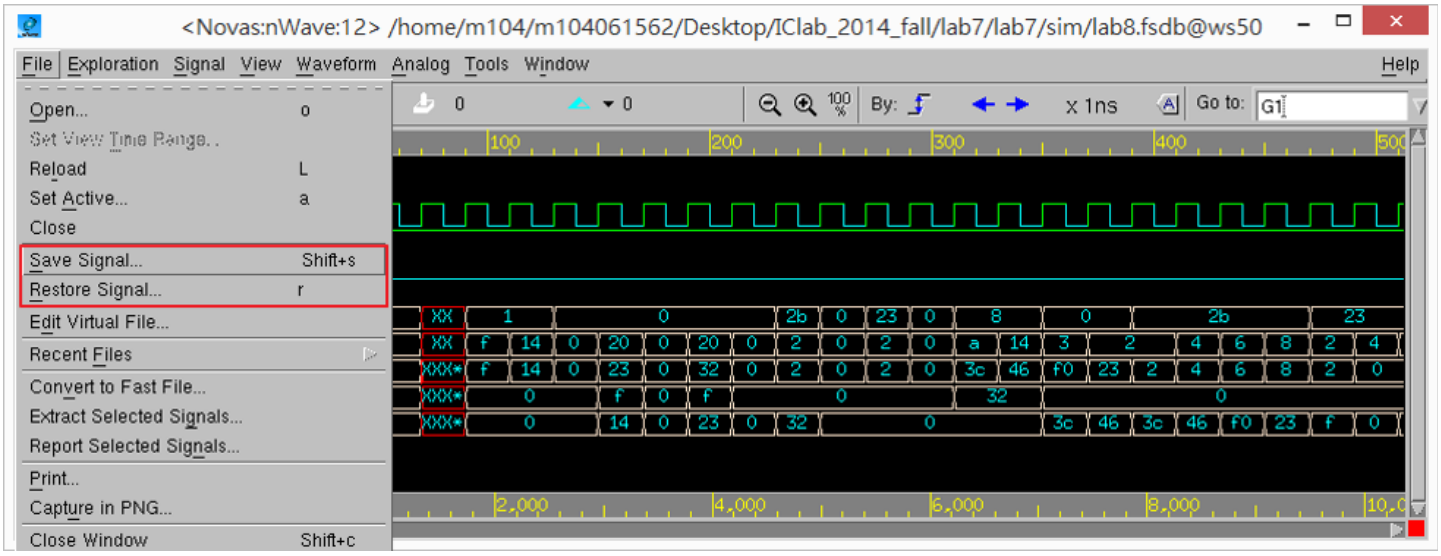
Reload fsdb

Reload fsdb after re-run simulation
File -> Reload (or press 'Shift+L')



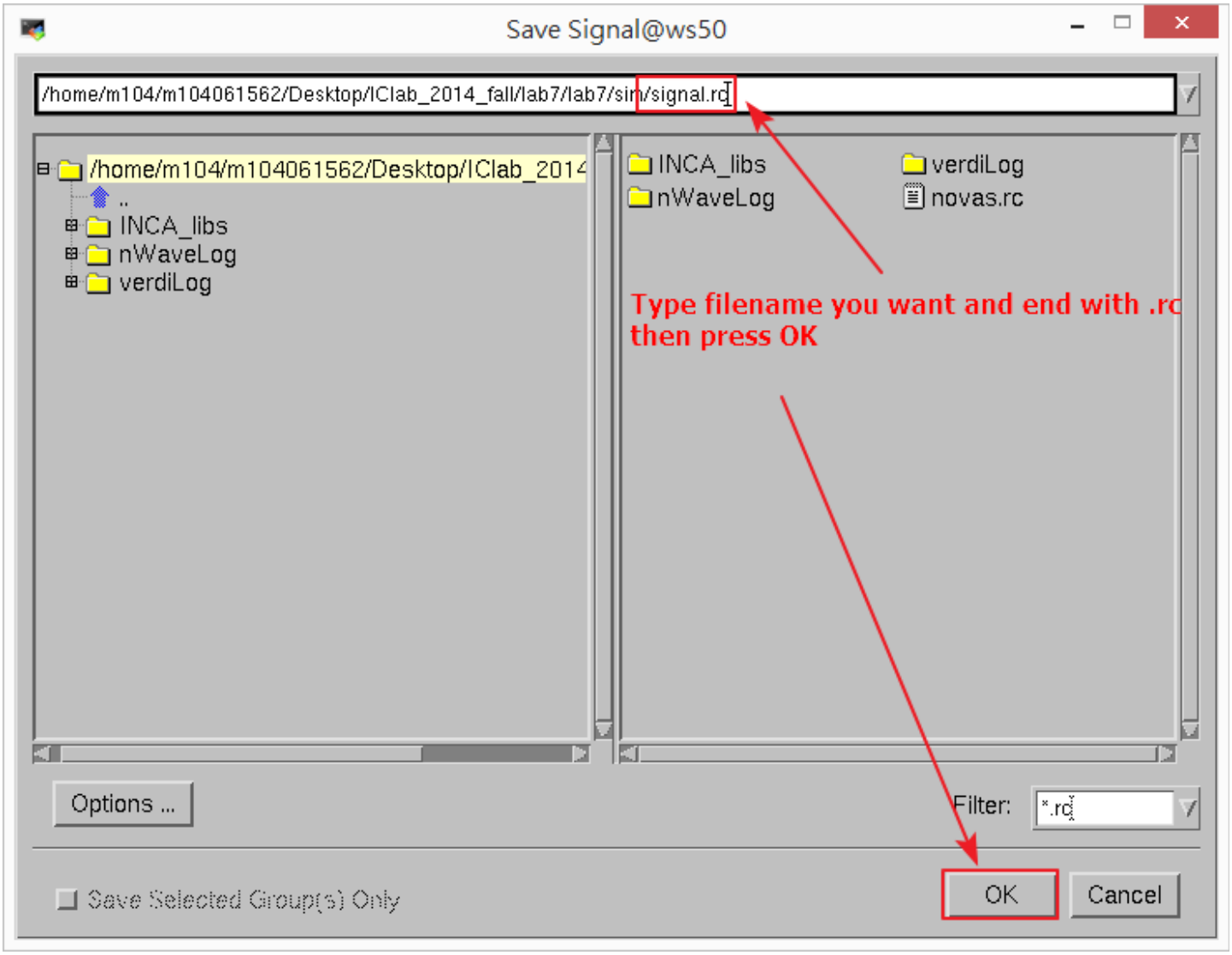
Signals List

Save signals list and restore it next time



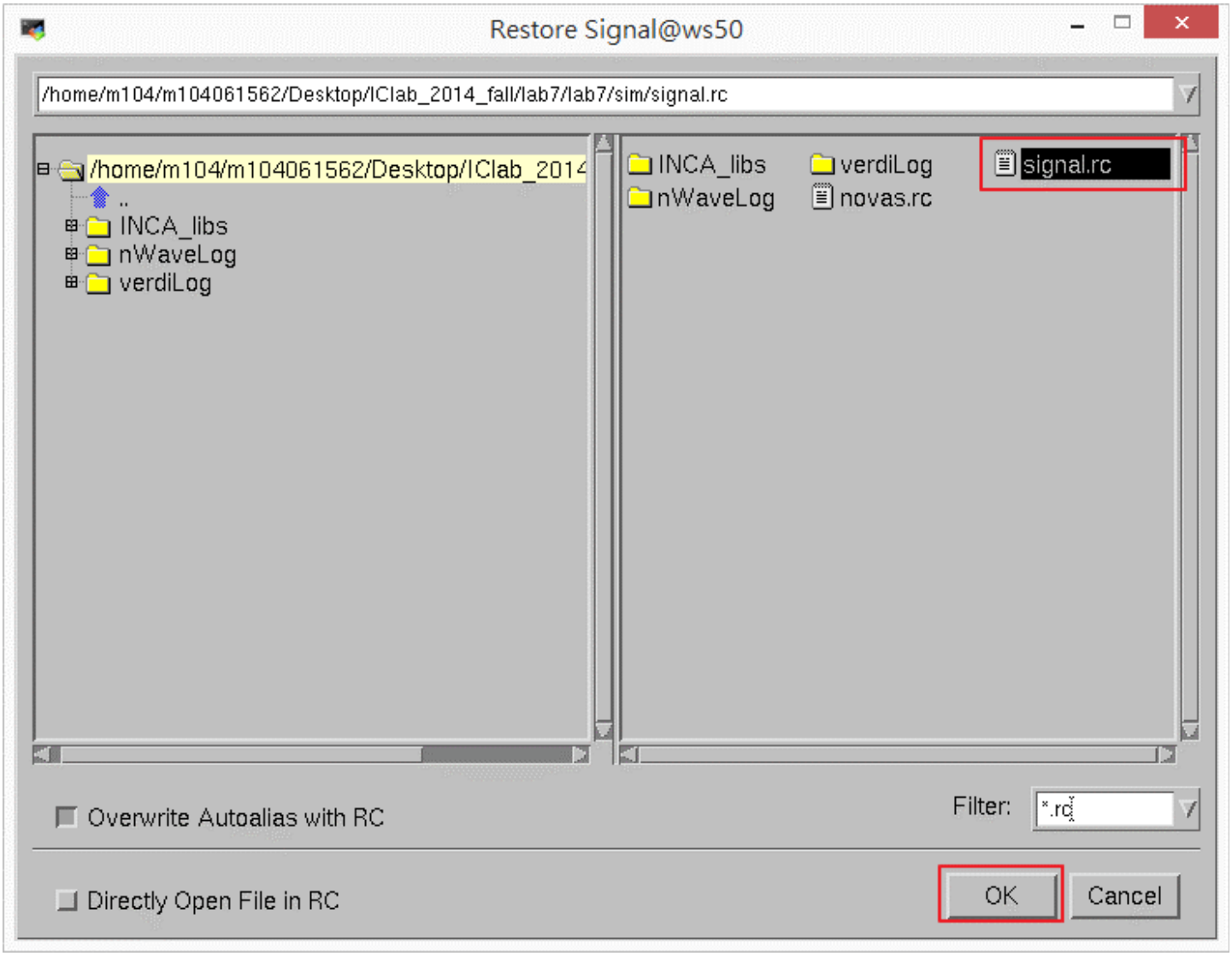
Save Signals List

File > Save Signal



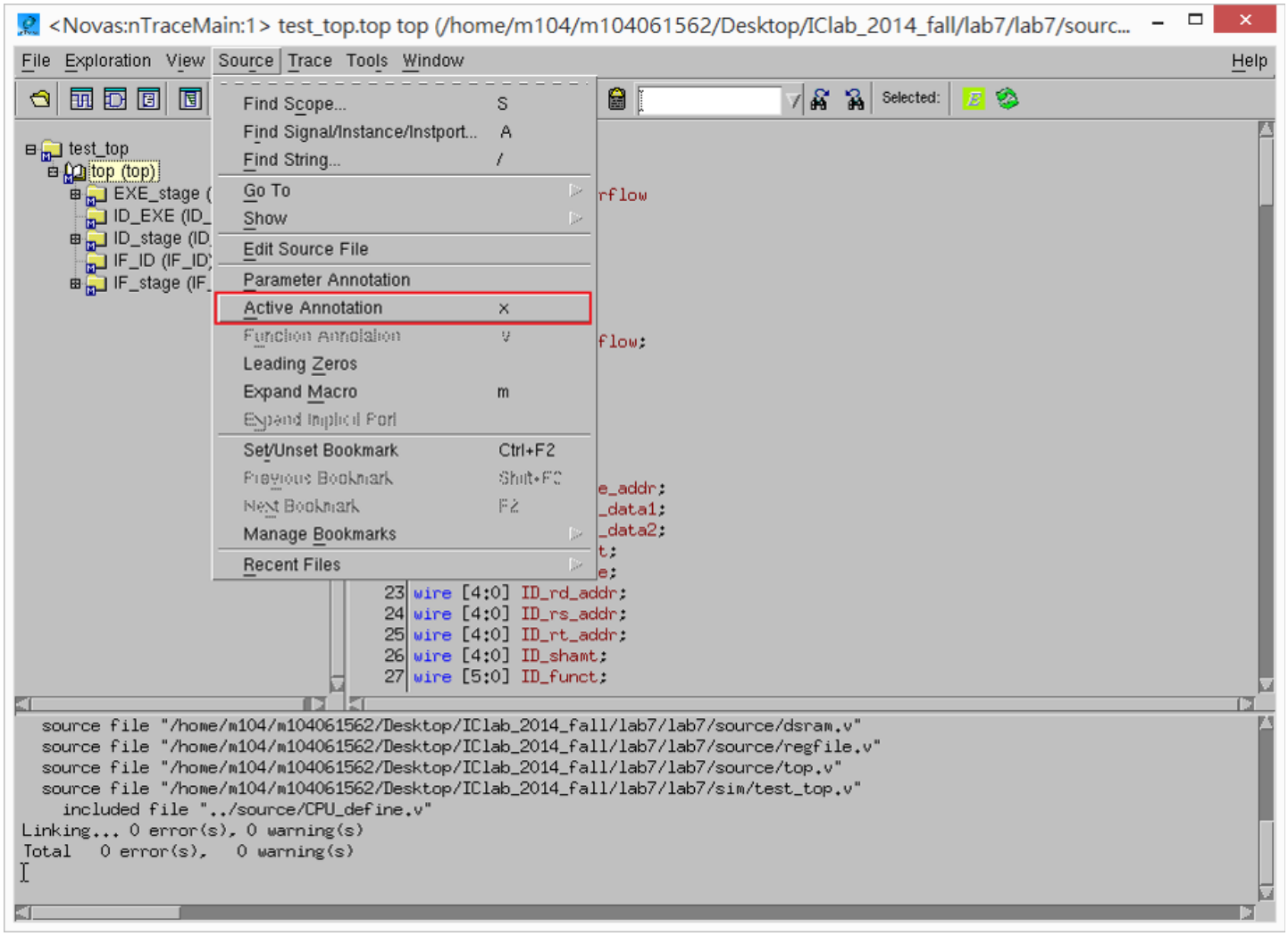
Restore Signals List

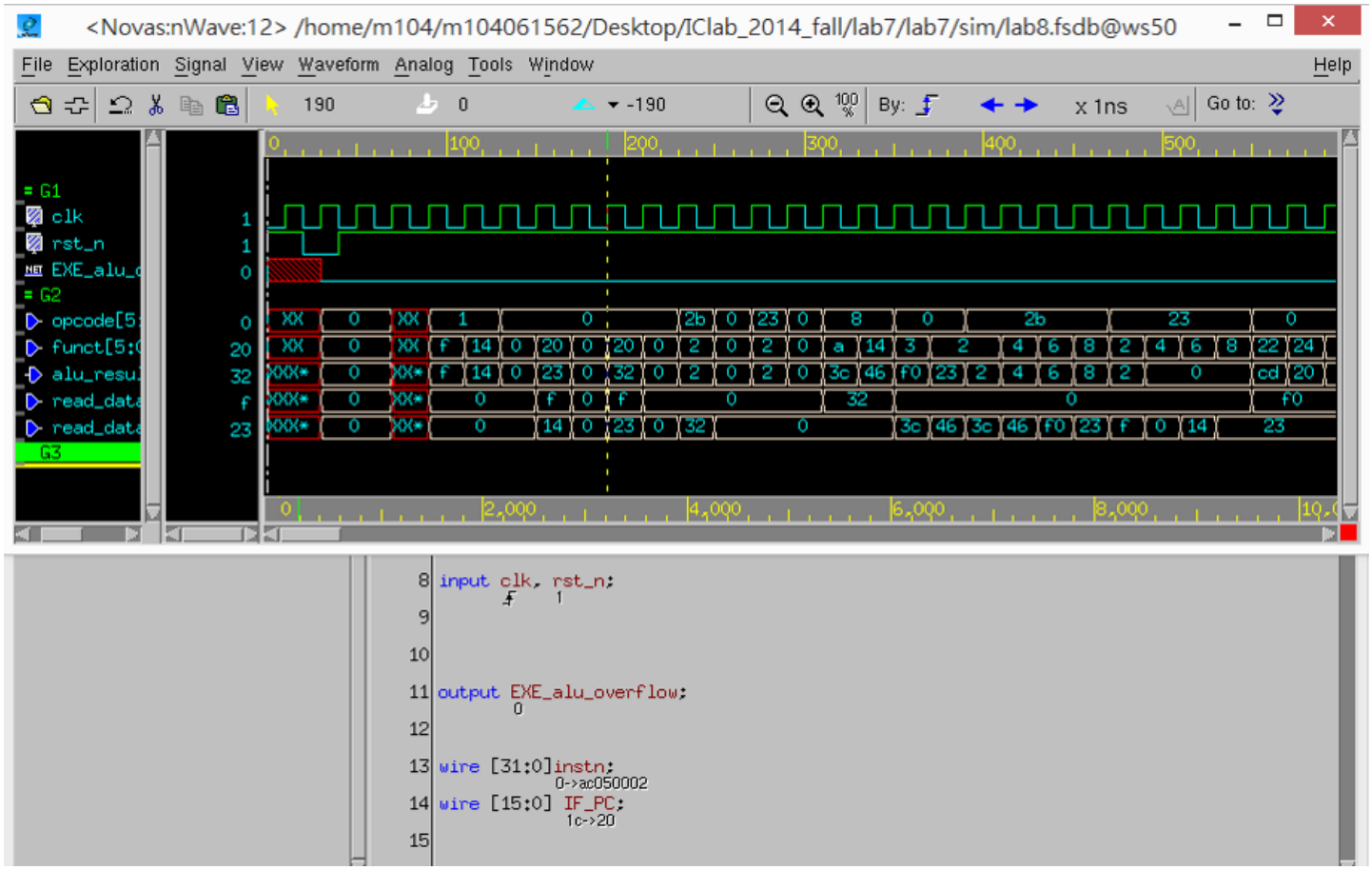
File > Restore Signal



Connect nTrace and nWave

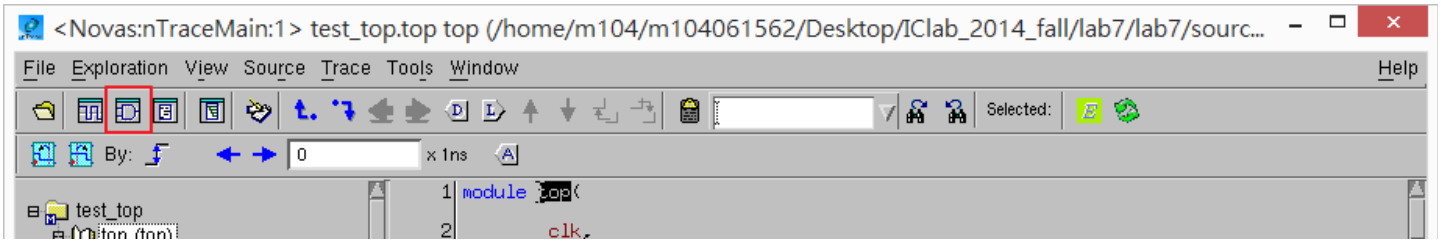
- Open Verdi and load file (include testbench)
- Open nWave from Verdi, load fsdb and get signal
- Source > Active Annotation in nTrace

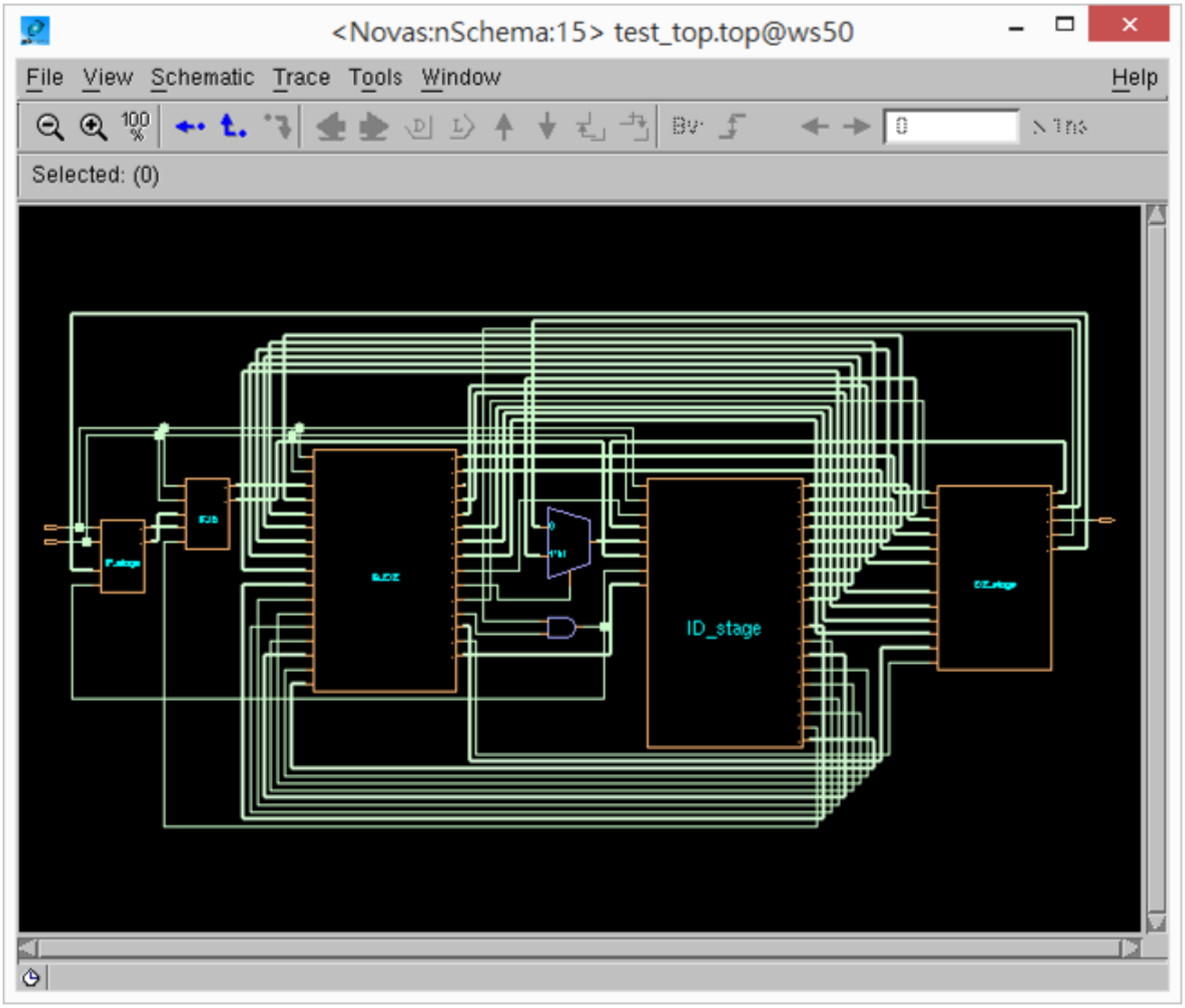

<Novas:nTraceMain:1> test_top.top top (/home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/sourc...
File Exploration View Source Trace Tools Window Help
Find Scope... S
Find Signal/Instance/Instport... A
Find String... /
Go To
Show
Edit Source File
Parameter Annotation
Active Annotation x
Function Annotation v
Leading Zeros
Expand Macro m
Expand Implicit Port
Set/Unset Bookmark Ctrl+F2
Previous Bookmark Shift+F2
Next Bookmark F2
Manage Bookmarks
Recent Files
Selected:
test_top
top (top)
EXE_stage (
ID_EXE (ID_
ID_stage (ID_
IF_ID (IF_ID)
IF_stage (IF_
rflow
flow;
e_addr;
_data1;
_data2;
t;
e;
23 wire [4:0] ID_rd_addr;
24 wire [4:0] ID_rs_addr;
25 wire [4:0] ID_rt_addr;
26 wire [4:0] ID_shamt;
27 wire [5:0] ID_funct;
source file "/home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/source/dsram.v"
source file "/home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/source/regfile.v"
source file "/home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/source/top.v"
source file "/home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/sim/test_top.v"
included file "../source/CPU_define.v"
Linking... 0 error(s), 0 warning(s)
Total 0 error(s), 0 warning(s)


<Novas:nWave:12> /home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/sim/lab8.fsdb@ws50
File Exploration Signal View Waveform Analog Tools Window Help
Go to:
G1
clk
rst_n
EXE_alu_
G2
opcode[5:
funct[5:0]
alu_resu
read_data
read_data
G3
8 input clk, rst_n;
11 output EXE_alu_overflow;
13 wire [31:0]instn;
0->ac050002
14 wire [15:0] IF_PC;
1c->20

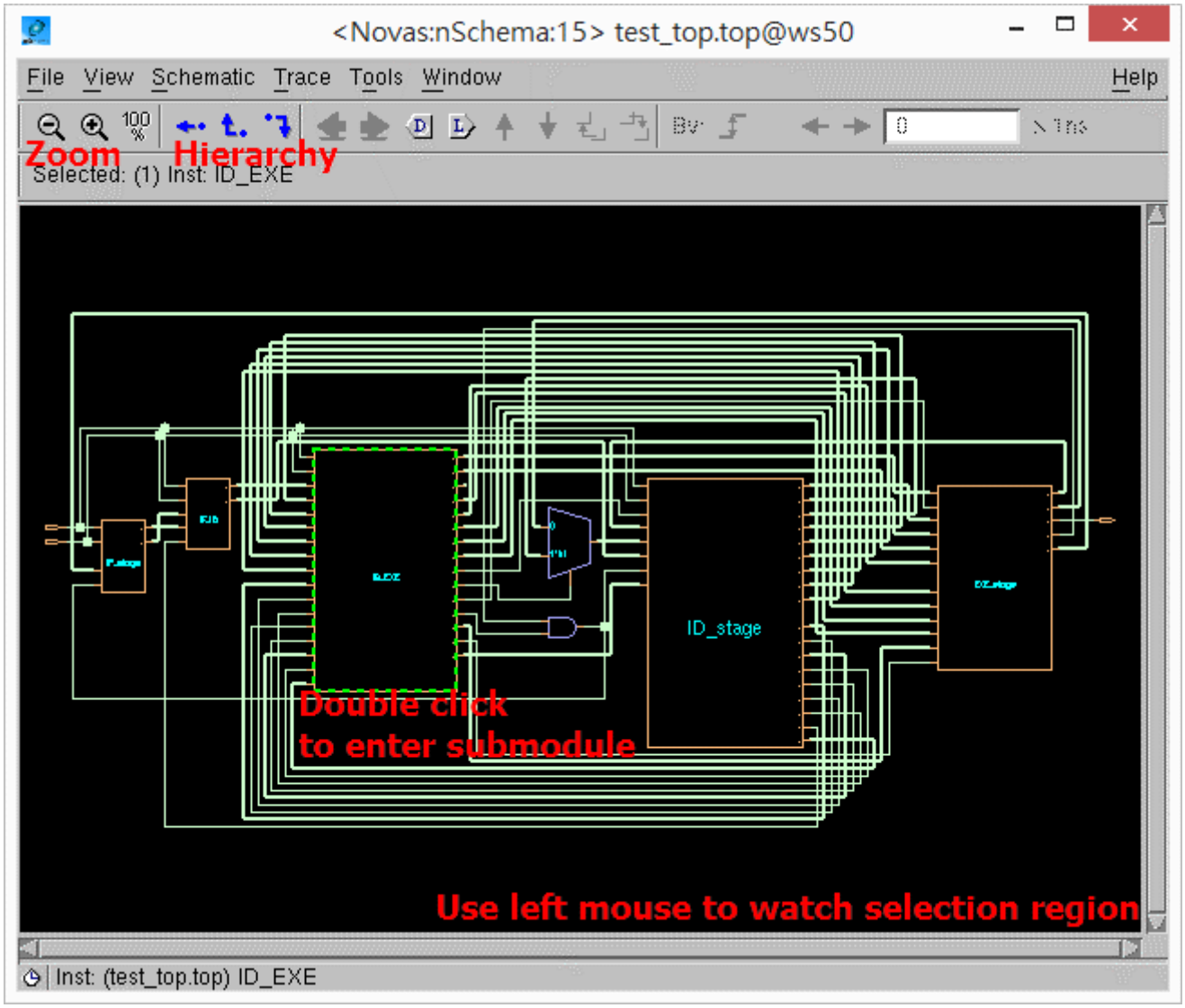
nSchema

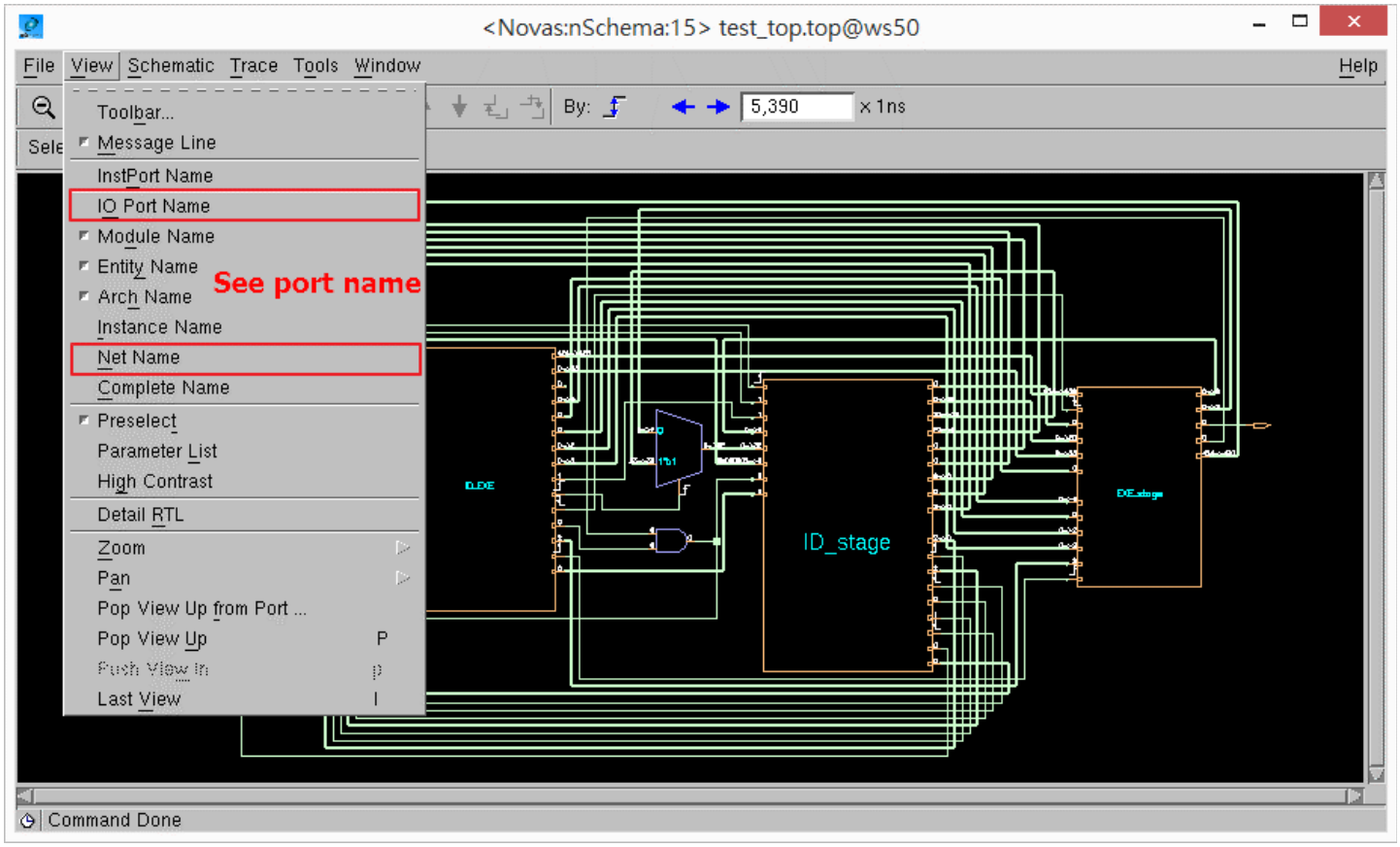
Draw Schematic





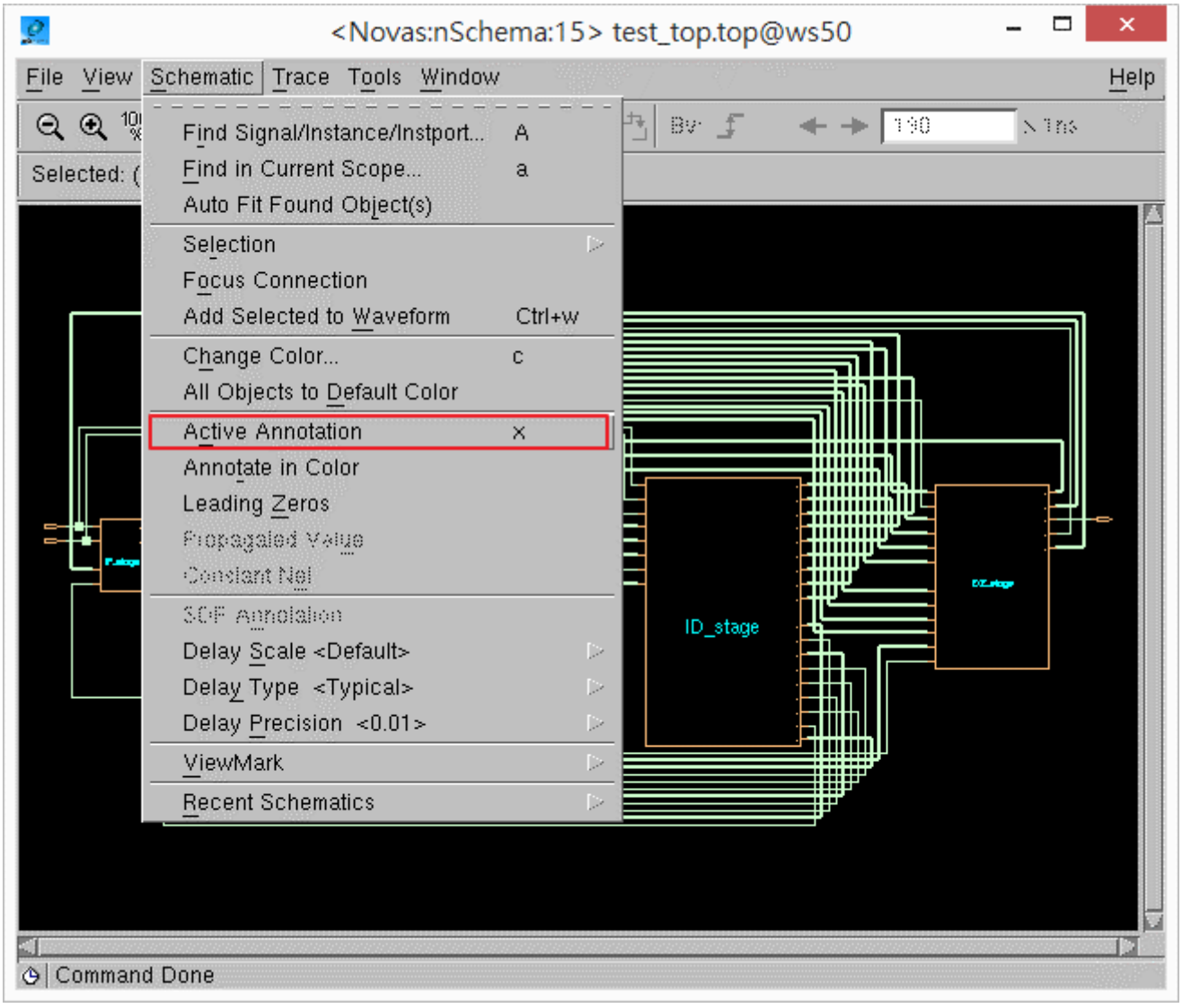
nSchema Interface

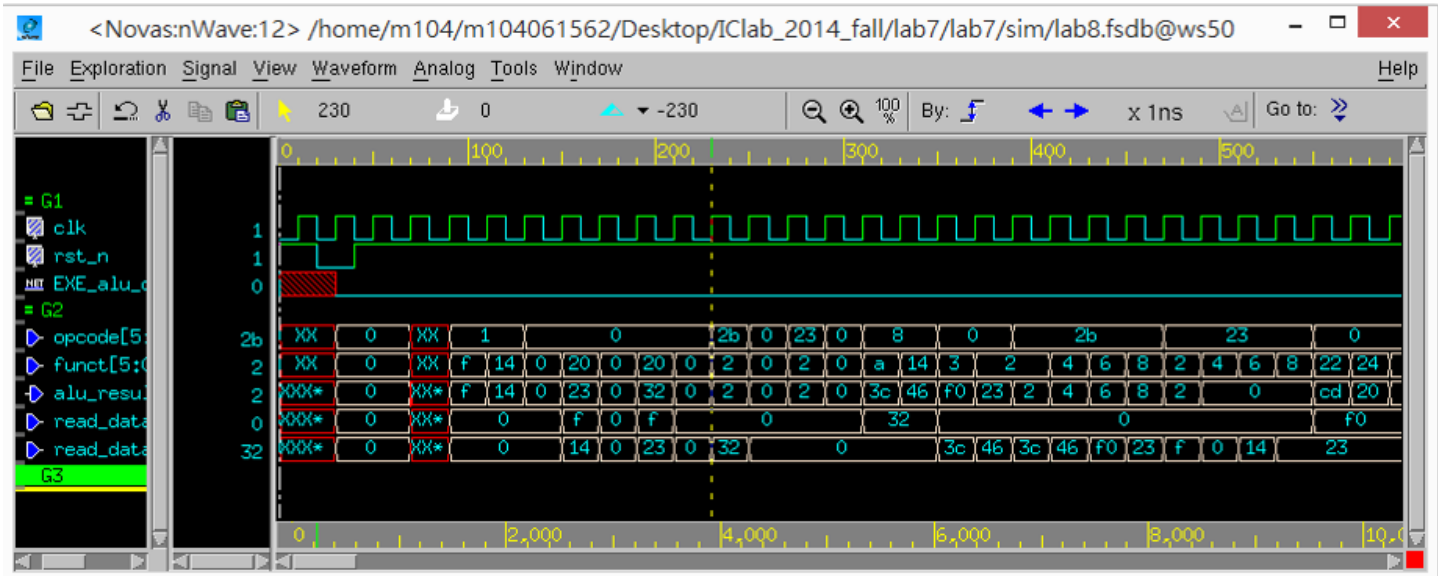

<Novas:nSchema:15> test_top.top@ws50
File View Schematic Trace Tools Window Help
Zoom
Hierarchy
Selected: (1) Inst: ID_EXE
ID_stage
Double click
to enter submodule
Use left mouse to watch selection region
Inst: (test_top.top) ID_EXE

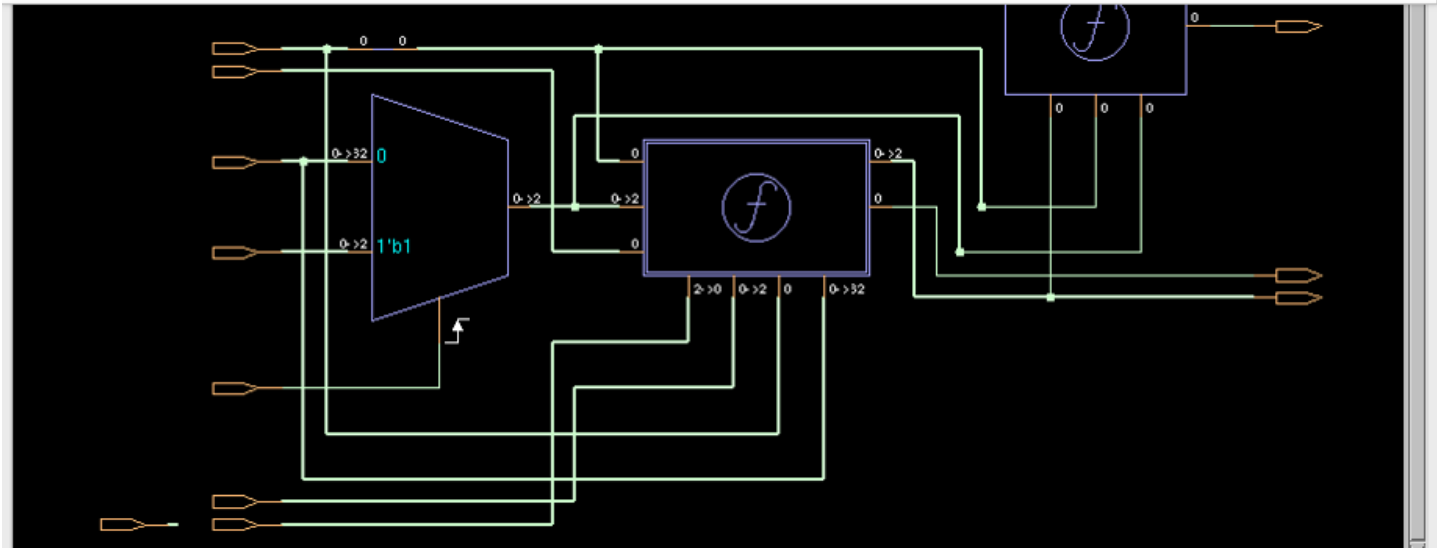

<Novas:nSchema:15> test_top.top@ws50
File View Schematic Trace Tools Window Help
Toolbar...
Message Line
InstPort Name
IO Port Name
Module Name
Entity Name
Arch Name
Instance Name
Net Name
Complete Name
Preselect
Parameter List
High Contrast
Detail RTL
Zoom
Pan
Pop View Up from Port ...
Pop View Up P
Push View In
Last View
See port name
By:
5,390
x 1ns
ID_stage
Command Done

Connect nSchema and nWave

- Open Verdi and load file (include testbench)
- Open nWave from Verdi, load fsdb and get signal
- Open nSchema from Verdi
- Schematic > Active Annotation in nSchema




<Novas:nWave:12> /home/m104/m104061562/Desktop/IClab_2014_fall/lab7/lab7/sim/lab8.fsdb@ws50
File Exploration Signal View Waveform Analog Tools Window Help
Go to:
G1
clk
rst_n
G2
opcode[5:
funct[5:0
alu_resu
read_data
read_data
G3


1'b1