Using Icarus Verilog + GTKWave

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Installation

1. Ubuntu
   1. sudo apt update
   2. sudo apt install -y iverilog gtkwave
2. macOS
   1. Install [Homebrew](https://brew.sh)
   2. brew install icarus-verilog; brew cask install gtkwave
   3. echo ‘export PATH=/Applications/gtkwave.app/Contents/Resources/bin/:$PATH’ >> .zshrc

[For older Macs using bash, substitute .zshrc with .bashrc]

1. Windows
2. <https://bleyer.org/icarus/> Download iverilog-v11. Icarus Verilog packages compiled with the MinGW toolchain for the Windows environment. GTKWave for Win32 is also included in the iverilog-v11 release.
3. Check the box to make it as a Path variable. If not then add ../iverilog/bin and ../iverilog/gtkwave/bin to the Path variables ( Environmental Variables).
4. To check if it is correctly installed and added to the path variable. In windows cmd (Windows PowerShell might give error)
   1. iverilog = it should give no source file found
   2. gtkwave = GTKwave GUI will open.
5. For Verilog code editor install Atom text editor and add **language-verilog** package in Atom.

Compiling a simple full adder program using iverilog:

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\* demo.v

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*module* f\_adder(a, b, cin, sum, carry);

parameter size = 4;

input signed [size-1:0] a, b, cin;

output signed [size-1:0] sum;

output carry;

assign {carry, sum} = a+b+cin;

*endmodule*

*module* testbench;

parameter size = 4;

reg signed [size-1:0] a;

reg signed [size-1:0] b;

reg signed [size-1:0] cin;

wire carry;

wire [size-1:0] sum;

initial begin

a = 4'd0;

b = 4'd0;

cin = 4'd0;

*$dumpfile*("f\_adder.vcd");

*$dumpvars*(0, fadd);

#10 a = 4'b0010; b = 4'b1011;

#10 a = 4'b0110; b = 4'b0001;

#10 a = 4'b1100; b = 4'b0011;

#10 *$finish*;

end

f\_adder fadd(a, b, cin, sum, carry);

*endmodule*

$ iverilog -o full\_adder.vvp demo.v

$ vvp full\_adder.vvp

$ gtkwave f\_adder.vcd &

You can also refer to <https://iverilog.fandom.com/wiki/GTKWAVE>

