ICARUS Installation and Compilation Guide

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Icarus Verilog Installation Guide

Windows Installation

The Windows version can be directly downloaded from the following link, which includes both `iverilog` and `gtkwave`:

- http://bleyer.org/icarus/

Linux Installation

- **Download URL**: ftp://icarus.com/pub/eda/verilog/v10/verilog-10.1.tar.gz
- **Prerequisites**:
  - For Ubuntu,run the following command to install the necessary dependencies:

```
sudo apt-get install build-essential bison flex gpref
readline-common libncurses5-dev build-dep nmon autoconf
```

Installation Steps:

1. Download the Verilog source package from the provided URL.
2. Extract the package using the following command:

```
tar -xvzf verilog-10.1.tar.gz
```

3. Navigate to the Verilog directory:

```
cd verilog-10.1
```

4. Run the `configure` script to prepare the build environment:

```
./configure --prefix=/usr
```

5. Compile and install Verilog by running:

```
make check
sudo make install
```

To View the Digital Waveform of Signals

To install **GTKWave** on Ubuntu, use the following command:

```
sudo apt-get install gtkwave
```

1. Write the Verilog Module

Create the Verilog module `and_gate.v`:

```
module and_gate (z, x, y);
    input x, y;
    output z;
    assign z = x & y;
endmodule
```

2. Write the Test Bench

Create the test bench `and_gate_tb.v`:

```
module and_gate_tb;
    reg t_x, t_y;
    wire t_z;
    and_gate ckt ( t_z, t_x, t_y );
    initial begin
        $dumpfile("and_gate.vcd");
        $dumpvars(0, and_gate_tb);
        $monitor(t_x, t_y, t_z);
        t_x = 0; t_y = 0; #5;
        t_x = 0; t_y = 1; #5;
        t_x = 1; t_y = 0; #5;
        t_x = 1; t_y = 1;
    end
endmodule
```

3. Compile Using `iverilog`

To compile the Verilog files, use the following command:

```
iverilog -o and_gate_example and_gate.v and_gate_tb.v
```

4. Run the Simulation

Run the compiled simulation with:

```
vvp and_gate_example
```

5. Display the Waveform

To view the waveform, use:

```
gtkwave and_gate.vcd
```

Setting PATH Environment Variable in Windows

1. Open **System Properties** ¿ **Advanced** ¿ **Environment Variables**.
2. Edit **Path** under **System Variables** and add:
    - `C:\iverilog\bin`
    - `C:\iverilog\gtkwave\bin`
3. Click **OK** to save.