iVerilog and GTKWave

Installation

In my laptop, I have Ubuntu OS, so I need to install everything via the terminal. The main command for the installation is:

sudo apt install iverilog gtkwave

After the installation, you will be able to use the platform.

How to Use

Step 1: Write Verilog Code

First, write your Verilog code in any text editor and save it with the `.v` extension (e.g., `count.v`). This is necessary for the conversion of the Verilog code.

Step 2: Organize Files

After completing the coding and saving the file, allocate a separate folder for the file. This makes accessing and managing it easier.

Step 3: Navigate to File Directory

Open the terminal and locate the directory where the file is saved. You can navigate to the directory by using the `cd` command or drag and drop the file into the terminal.

cd <Path Directory of the file>

Step 4: Compile the Verilog Code

Use the `iverilog` command to compile your Verilog file:

iverilog <file name>

Example:

iverilog count.v

If there are any errors in the code, the terminal will indicate the errors with the corresponding line numbers. This helps you debug effectively.

Step 5: Execute the Output File

After compilation, an output file (e.g., `a.out`) will be created in the same folder. To execute the file, run the following command:

vvp a.out

This will generate a new file in the folder with the `.vcd` extension (e.g., `dumpfile.vcd`).

> **Note:** If the `.vcd` file is not generated, it means the required commands for GTKWave were not included in the Verilog code.

Step 6: Add Testbench Code for GTKWave

To use GTKWave, you must include the following testbench syntax in your Verilog code:

```
initial begin
   $dumpfile("dumpfile.vcd");
   $dumpvars(0, Testbench);
end
```

Use the open code in verilog

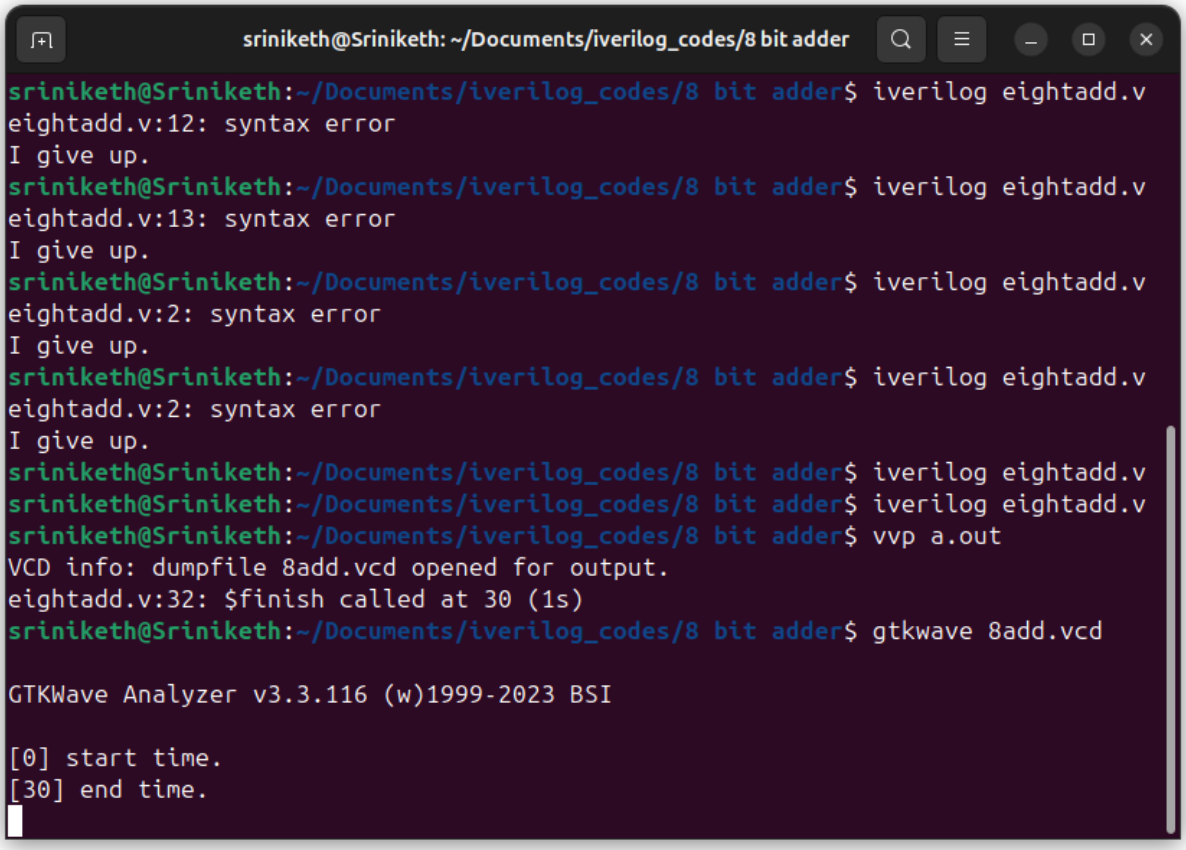
The `$dumpfile` directive specifies the `.vcd` file name, and `$dumpvars` initializes the waveform variables for the testbench.

Step 7: Open the Waveform in GTKWave

Once the `.vcd` file is generated, open it using GTKWave:

gtkwave dumpfile.vcd

GTKWave will launch, allowing you to analyze the input and output waveforms. Verify the output using the testbench results.



The above picture shows the trial and error method of the process