Summary: Verilog Simulation Setup Using WSL on Windows

✅1. Installed WSL on Windows

WSL (Windows Subsystem for Linux) allows running a full Linux environment directly on Windows without a VM or dual-boot. Installed using:

```
wsl --install
```

This:

- Set up the WSL platform.
- Installed the Ubuntu distribution.
- Prompted to create a UNIX username (`keerthi`) and password.

✅2. Launched Ubuntu from WSL

Accessed the Linux terminal by launching Ubuntu from the Start Menu or by running `wsl` in PowerShell.

✅3. Created Verilog Project Directory

Inside the Linux terminal:

```
mkdir ~/verilog_sim
cd ~/verilog_sim
```

This created a working directory at `/home/keerthi/verilog_sim`.

✅4. Transferred Verilog Files

Moved the following files to the `verilog_sim` directory:

- `design.sv`
- `testbench.sv`
- `run.sh`

Files were copied using either:

- Windows Explorer via `\\wsl$\Ubuntu\home\keerthi\verilog_sim`

- Or Linux terminal access to Windows files (`/mnt/c/Users/...`)

✅5. Gave Execute Permission to run.sh

Initially failed due to Windows filesystem limitations:

```
chmod +x run.sh  # Failed with 'Operation not permitted'
```

Fixed by ensuring the script was in the Linux directory (`/home/keerthi/...`) and re-running:

```
chmod +x run.sh  # Worked
```

✅6. Ran Verilog Simulation

Executed the simulation using:

```
./run.sh
```

Script content:

```
iverilog -Wall -g2012 design.sv testbench.sv && vvp a.out
```

Also zipped the results after simulation.

✅7. Verified Simulation Output

Output format:

```
Date     Leap   N
01-01    0       1
01-03    0      60
01-03    1      61
19-07    1     201
```

Tested day-of-year (N) calculation, e.g., 20th July 2025.

This setup enables running and testing Verilog HDL code using open-source tools directly on Windows using Linux (Ubuntu) via WSL.