

1. INTRODUCTION

A Hardware Description Language (HDL) is a specialized computer language used to describe the structure and behavior of digital logic circuits. It allows for the synthesis of a HDL into a netlist, which can then be synthesized, placed and routed to produce the set of masks used to create an integrated circuit.

2. PROJECTS

- .1. module_definitions
 - .1.1. module_items
 - .1.1.1. data_type_declarations
 - .1.1.2. module_instances
 - .1.1.3. primitive_instances
 - .1.1.4. generate_blocks
 - .1.1.5. procedural_blocks
 - .1.1.6. continuous_assignments
 - .1.1.7. task_definitions
 - .1.1.8. function_definitions
 - .1.1.9. specify_blocks
 - .1.2. port_declarations
- .2. data_type_declarations
 - .2.1. net_data_types
 - .2.2. variable_data_types
 - .2.3. other_data_types
 - .2.4. vector_bit_selects_and_part_selects
 - .2.5. array_selects
 - .2.6. reading_and_writing_arrays
- .3. module_instances
- .4. primitive_instances
- .5. generate_blocks
- .6. procedural_blocks
 - .6.1. procedural_time_controls
 - .6.2. sensitivity_lists
 - .6.3. procedural_assignment_statements (=continuous_assignments)
 - .6.4. procedural_programming_statements
 - .6.4.1. if_part
 - .6.4.2. case_part
 - .6.4.3. casex_part
 - .6.4.4. casez_part
 - .6.4.5. for_part
 - .6.4.6. while_part
 - .6.4.7. repeat_part
 - .6.4.8. forever_part

- .6.4.9. disable_part
- .7. continuous_assignments
- .8. operators
- .9. task_definitions
- .10. function_definitions
- .11. specify_blocks
- .11.1. pin_to_pin_path_delays
- .11.2. path_pulse_detection
- .11.3. timing_constraint_checks
- .12. user_defined_primitives
- .13. common_system_tasks_and_functions
- .14. common_compiler_directives
- .15. configurations
- .16. synthesis_supported_constructs

3. WORKFLOW

```
source INSTALL-IT
```

```
cd test
```

```
source TEST-MSP430-IT
```

```
source TEST-RISCV-IT
```

4. CONCLUSION

4.1. FOR WINDOWS USERS!

1. Settings → Apps → Apps & features → Related settings, Programs and Features → Turn Windows features on or off → Windows Subsystem for Linux
2. Microsoft Store → INSTALL UBUNTU

Library type:

```
sudo apt update
```

```
sudo apt upgrade
```

```
sudo apt install bison cmake flex freeglut3-dev libcairo2-dev libgsl-dev \
libncurses-dev libx11-dev m4 python-tk python3-tk swig tcl tcl-dev tk-dev tcsh
```

4.1.1. Front-End

type:

```
sudo apt install verilator
sudo apt install iverilog
sudo apt install ghdl
```

```
cd /mnt/c/../../sim/verilog/regression/wb/iverilog
source SIMULATE-IT
```

```
sudo apt install yosys
```

```
cd /mnt/c/../../synthesis/yosys
source SYNTHESIZE-IT
```

4.1.2. Back-End

type:

```
mkdir qflow
cd qflow
```

```
git clone https://github.com/RTimothyEdwards/magic
git clone https://github.com/rubund/graywolf
git clone https://github.com/The-OpenROAD-Project/OpenSTA
git clone https://github.com/RTimothyEdwards/qrouter
git clone https://github.com/RTimothyEdwards/irsim
git clone https://github.com/RTimothyEdwards/netgen
git clone https://github.com/RTimothyEdwards/qflow

cd /mnt/c/../../synthesis/qflow
source FLOW-IT
```