Lesson 4

VHDL Intro and IDE

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What is VHDL

- VHDL stands for VHSIC Hardware Description Language
- VHSIC = Very High Speed IC

What is VHDL

- First we need to know what is a hardware description language (HDL) and why it was used in the first place.
- A few reasons to use HDLs are:

  1. Time needed for a digital circuit design reduces dramatically.
  2. Its painful to draw schematic diagrams.
  3. No need of optimization using Karnaugh Maps etc.
  4. Design is portable.
  5. TECHNOLOGY INDEPENDENT.

- VHDL is a HDL/programming language to build digital electronic circuits.
- We can write VHDL codes to create digital circuits, for example, from simple ripple-carry adder to complicated processor.

Level of Abstraction

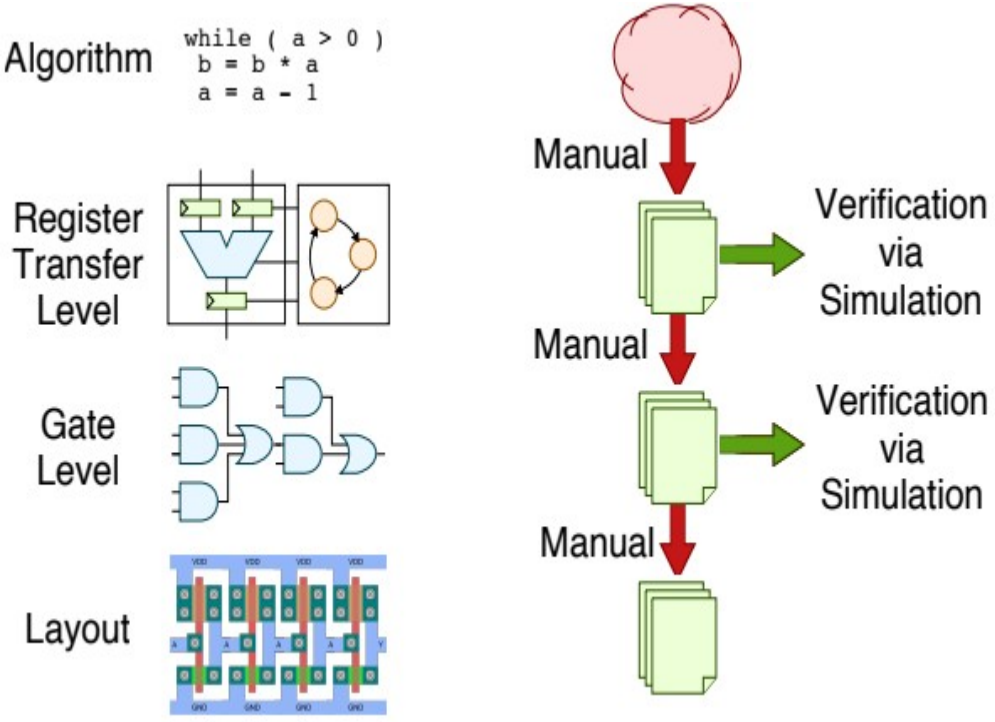
- Its important to understand in which abstraction level are we gonna use VHDL.
- The typical level of abstractions for any design is:

  1. Algorithmic level
  2. System level.
  3. Register Transfer level.
  4. Gate level.
  5. Transistor level.

- We are going to use RTL level designs in this tutorial site, Where exactly are we going to design can be explained by some nice diagram drawn by Professor Christopher Batten

Level of Abstraction

- Originally designers used manual translation and breadboards for verification
- Hardware description languages enabled gate-level verification via simulation
- Designers began to use HDLs for RTL level verification and design exploration



Tools

- Modelsim for simulation
- Vivado for synthesis on xilink fpga

Thank You