Hardware Description Languages in Practical Design Flows

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Abstract

Modern design of digital microelectronics is unthinkable without hardware description languages (HDL). HDLs are used at several points in the design flow. Designs are typically captured in an HDL at the behavioral or at the register transfer (RTL) level. HDLs serve as the starting point for simulation, synthesis and formal verification. HDLs can also be utilized as an exchange format for net lists. Verilog and VHDL totally dominate the market.

This talk presents a typical practical design flow, focusing on the use of HDLs at the behavioral and the RTL (logic) levels. First, it reviews the characteristics of the languages used, e.g. subsets and interpretation necessary for particular applications, synthesis being usually the most restrictive application. Second, it focuses on the language processing steps such as compilation and language output. The presentation concludes with some practical data.