ABSTRACT

Hardware description language (HDL) such as VHDL have made it possible for circuit and board designs to be done without resorting to paper, allowing computers to manage the design database and automate the translation between various representation of the system.

Although VHDL modeling can provide a bonanza of benefits, VHDL models must be used effectively to reduce overall development costs. VHDL developers need to understand all of VHDL modeling theory including syntax and language structures to develop an electronic component. A tool to translate designed component diagram to synthesizable VHDL code is needed to solve this problem.

In this research study, the primary focus of this thesis is to develop a tool which is used to generate VHDL code based on given parameters and can be directly analyzed and synthesized. This tool provides a graphical user interface that allows the user to select a digital component, customize their parameter and generate the VHDL code.

**Keyword:** VHDL Code Generator, synthesizable VHDL Code, component diagram, JAVA, GUI, web-based application