Thesis Title	Design and Implementation of Microcontroller Using FPGA
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ABSTRACT

This thesis presents a microcontroller design by using FPGA (Field Programmable Gate Array). The architecture of microcontroller specification is as follows : 8-bits microcontroller, that has the Harvard architecture, a 14-bit wide instruction word, 36 instruction sets which are executed in a single-cycled except for program branches that require 2 cycles, 8-bit ALU (Arithmetic Logic Unit), 4 data addressing mode (Immediate, Direct, Indirect, Relative), 8K x 14 EPROM (Ultraviolet - Erasable Programmable Read Only Memory) external program memory and 7 special registers, 8-level deep stack registers, it use RAM as file registers that have 32x8 bytes and 2 input/output ports (port A 5 bits, port B 8 bits). The design will uses "Top-Down Design" which uses VHDL language for modeling, simulation, debugging and synthesis to schematic diagram. At the gate level, it can be placed and routed on the FPGA in order to implement the real working digital system.