Retargetable Ladder Logic Diagrams Tool

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Abstract

Programmable Logic Controllers are used to control sequential event systems. The control programs used by these PLCs are created by users with Integrated Development Environment created by the PLC vendor, for their brand of PLC. These Integrated Development Environments restrict the user to only manufacturer specified components, the consequence of this being, users are unable to take advantage of the widely available low cost targets and cannot optimally match thier control algorithm implementation resource requirements with the manufacturer specified target. This thesis aims to present a solution to these problems. These aims can be stated concisely as: To develop a ladder diagram tool that will: Facilitate another approach of rapid prototyping Process Control with Programmable Logic Controllers. Support, as much as possible, embedded controller platforms or commercial Programmable Logic Controllers. Present a cross-platform tool that uses Ladder Logic Diagrams. A cross platform tool was created using the java programming language. This tool currently supports two embedded platforms, the Rabbit2000 and the ATMEL2313 micro-controller. The tool enables users to created Ladder Logic Diagrams and generates equivalent C code for any one of the supported platforms. This code can then be easily compiled by using the existing compilers for either of the supported platforms. Additionally the tool permits a new approach to developing control programs for PLC controlled systems.