ABSTRACT

Programmable Logic Controller (PLC) is a popular device used in the industrial world for controlling appliances and machinery is more resistant to noise and vibration in the factory environment than a regular computer. In programming, each type of PLC use Ladder Diagram as a programming language. However, Ladder Diagram programming has its own rules and different ways, depending on the type of PLC used. The reason, each PLC has different specifications, so the system requires different programming Ladder Diagram.

Ladder Diagram is a commonly used programming languages PLC. Ladder diagram consists of artificial logic functions directly as a mechanical relay. In this final project will be designed a programming software that is Ladder Diagram, which can support the PLC programming using the Java programming language assistance. The reason to use Java because Java is suitable for programming on any platform including the Windows operating system, Linux, or Android.

The results of this final project is developing a graphical interface between the PLC with its user in terms of programming and designing of Ladder Diagram along the display and input-output instructions as PLC control system using the STM32 microcontroller. The development includes the conversion of the compiler system or a system that executes Ladder Diagram from the compiler output in the form of Hexadecimal opcode that will be processed by the core STM32.

Keywords: *Programmable Logic Controller* (PLC), *Ladder Diagram*, *Java*, STM32.