Embedded System Design Techniques™

Building Your Own Internet Connected PLC

Class 4: PLC Software Design Part 2

April 26th , 2018

Jacob Beningo

Presented by: CEC CONTINUING EDUCATION CENTER Digi-Key ELECTRONICS

Course Overview

Topics:

- PLC Fundamentals
- Designing a PLC
- PLC Software Design Part 1
- **PLC Software Design Part 2**
- PLC Application Design

Session Overview

- Connecting to the PLC
- Creating a Project
- A First Application

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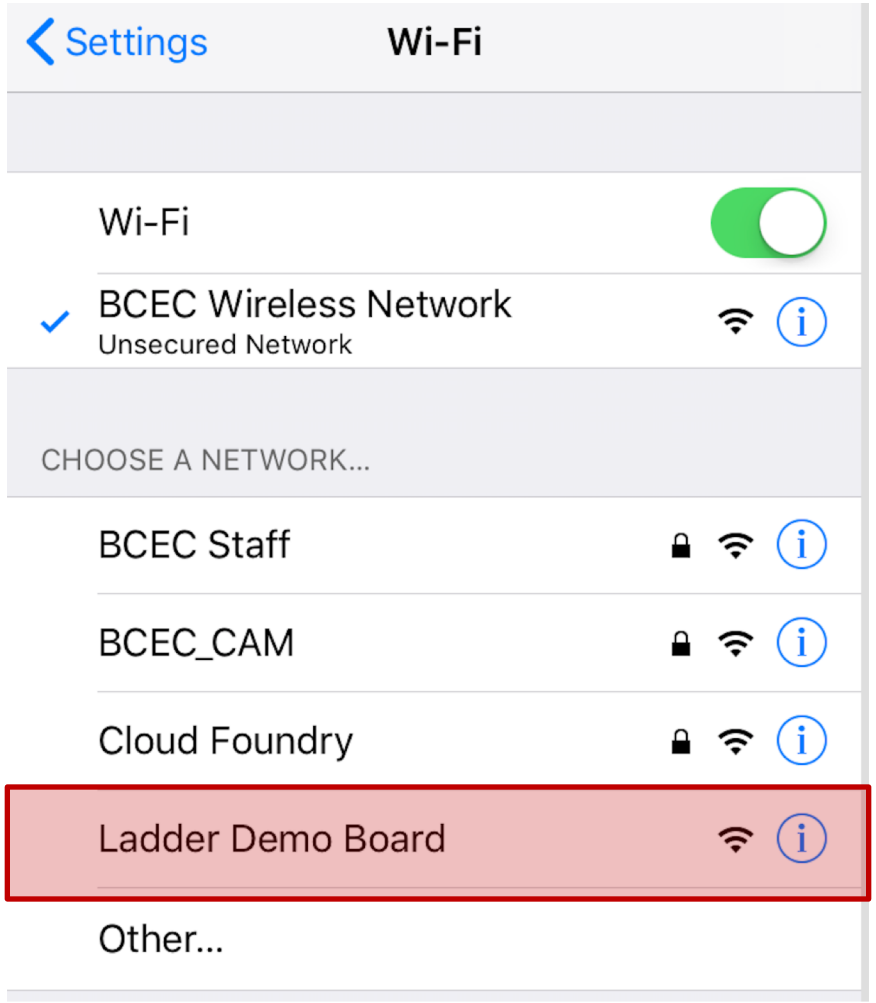
Connecting to the PLC

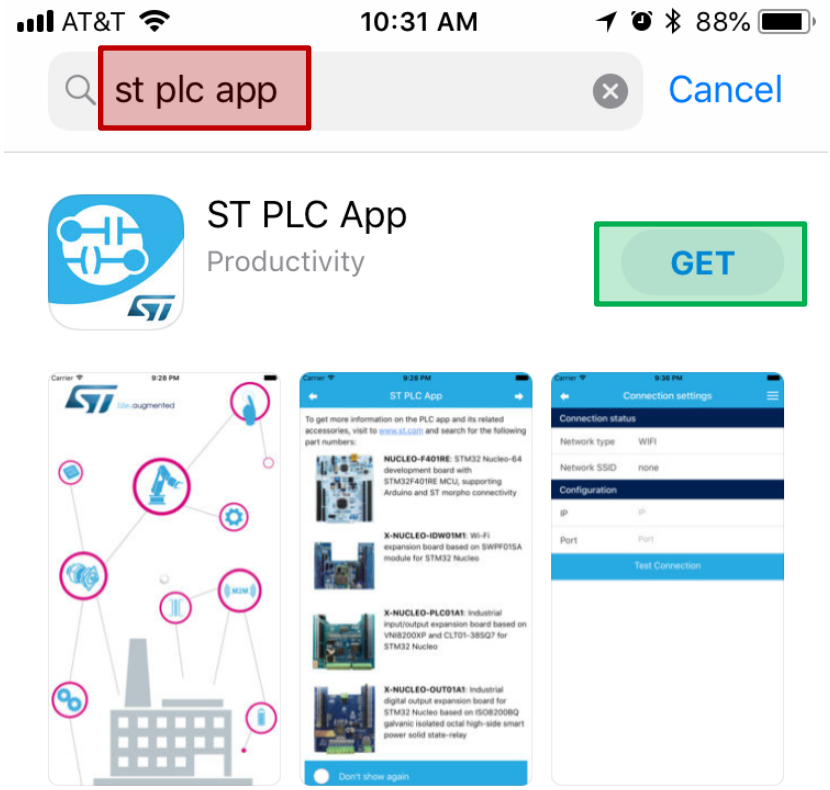
The PLC acts as a wireless access point. In order to connect to program the PLC application:

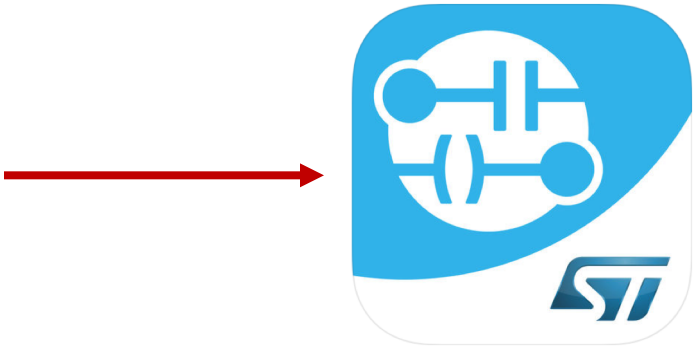
- Make sure that the PLC firmware is programmed and running
- Open your mobile devices wireless settings
- Select the “Ladder Demo Board” SSID

Connecting to the PLC



Connecting to the PLC





DesignNews

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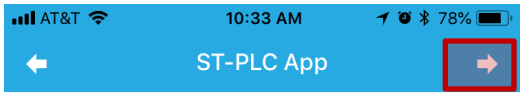
Connecting to the PLC

life.augmented

PLC programming: never been so easy

This powerful app lets you manage a PLC (Programmable Logic Controller) via Wi-Fi thanks to the capabilities of an STM32 Nucleo board. All you need is an STM32 Nucleo board Nucleo-F401RE, an Industrial I/O expansion board (X-NUCLEO-PLC01A1) and a Wi-Fi expansion board (X-NUCLEO-IDW01M1). With these boards you have full control and can access the industrial devices for IO management at 24 V as well as timers and counters.

The industrial I/Os are managed on the input side by a high-speed digital input current limiter (CLT01-38SQ7) that provides an 8-line protected termination and an octal high-side smart-power solid-state relay with serial/parallel selectable on-chip interface (VNI8200XP), for the output. For getting started in the Smart Industry domain, a Wi-Fi connection is provided for the PLC using the dedicated X-NUCLEO-IDW01M1 expansion board. You can further explore PLC applications using our X-NUCLEO-OUT01A1 expansion board that includes a galvanic isolated intelligent power switch (ISO8200BQ) capable of driving 8 different loads and delivered in a compact QFN



To get more information on the ST-PLC App and its related accessories, visit to www.st.com and search for the following part numbers:

NUCLEO-F401RE: STM32 Nucleo-64 development board with STM32F401RE MCU, supporting Arduino and ST morpho connectivity

X-NUCLEO-IDW01M1: Wi-Fi expansion board based on SWPF01SA module for STM32 Nucleo

X-NUCLEO-PLC01A1: Industrial input/output expansion board based on VNI8200XP and CLT01-38SQ7 for STM32 Nucleo

X-NUCLEO-OUT01A1: Industrial digital output expansion board for STM32 Nucleo based on ISO8200BQ galvanic isolated octal high-side smart power solid state relay

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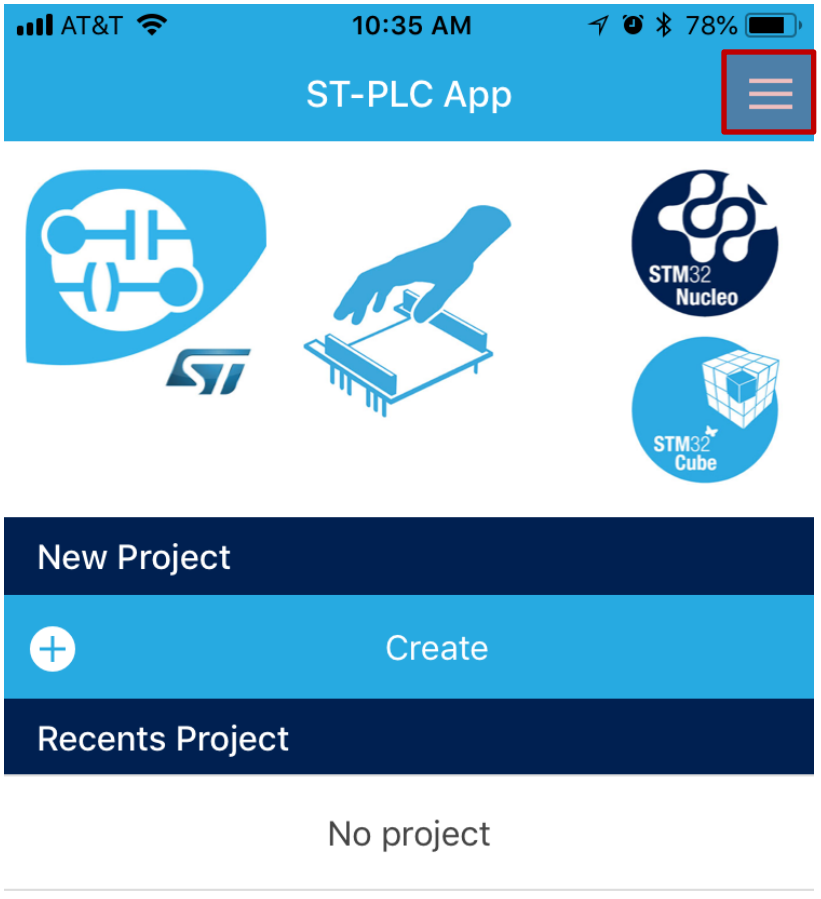
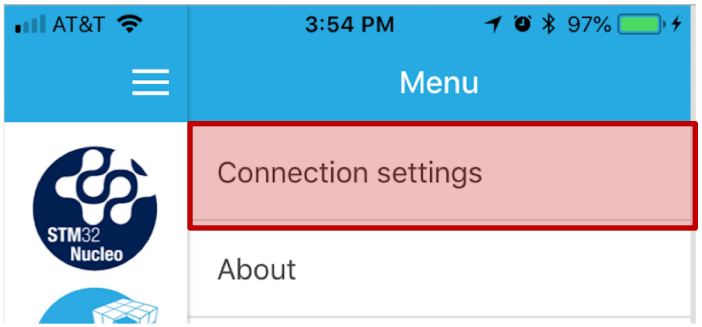
Connecting to the PLC





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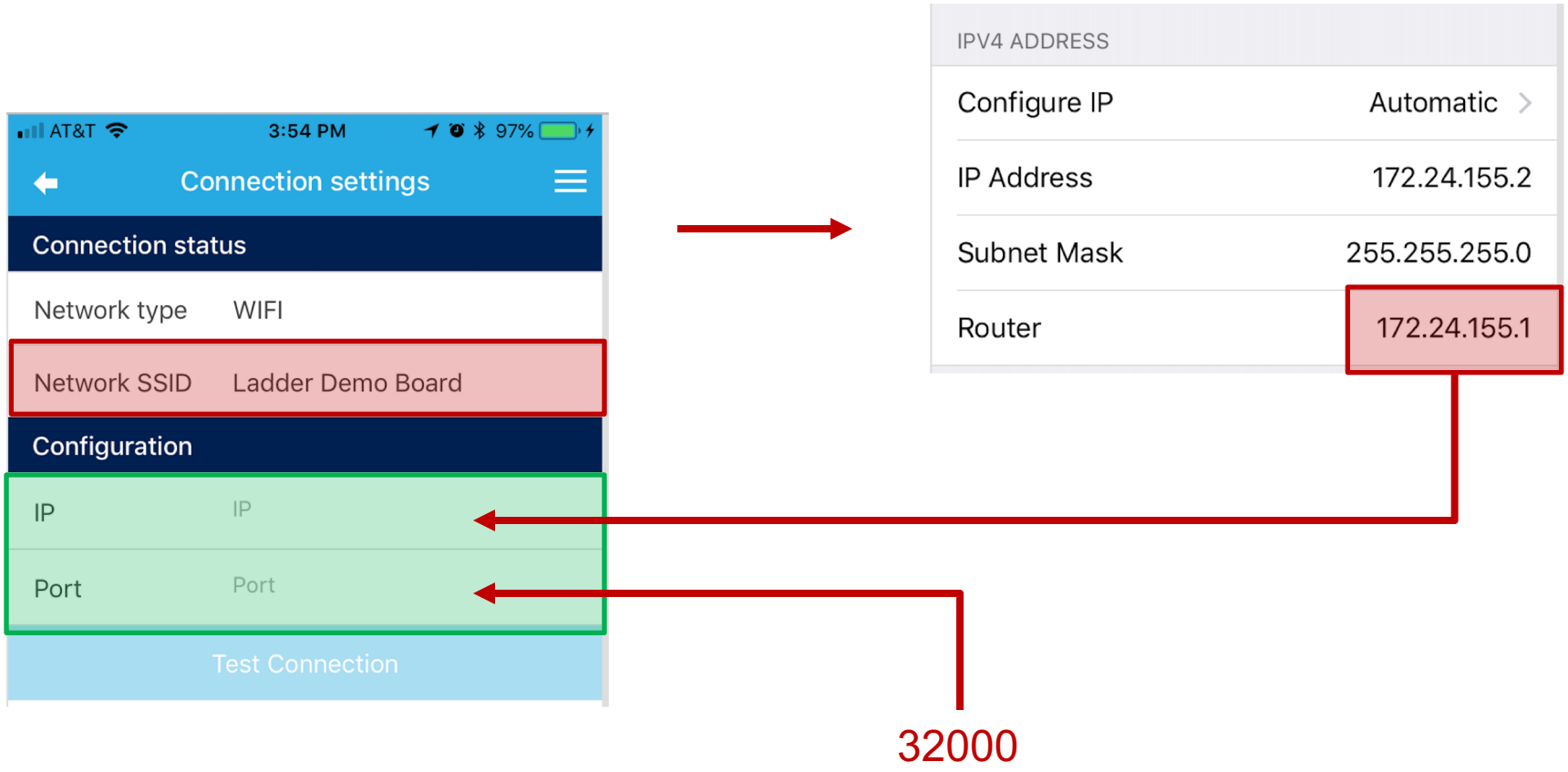

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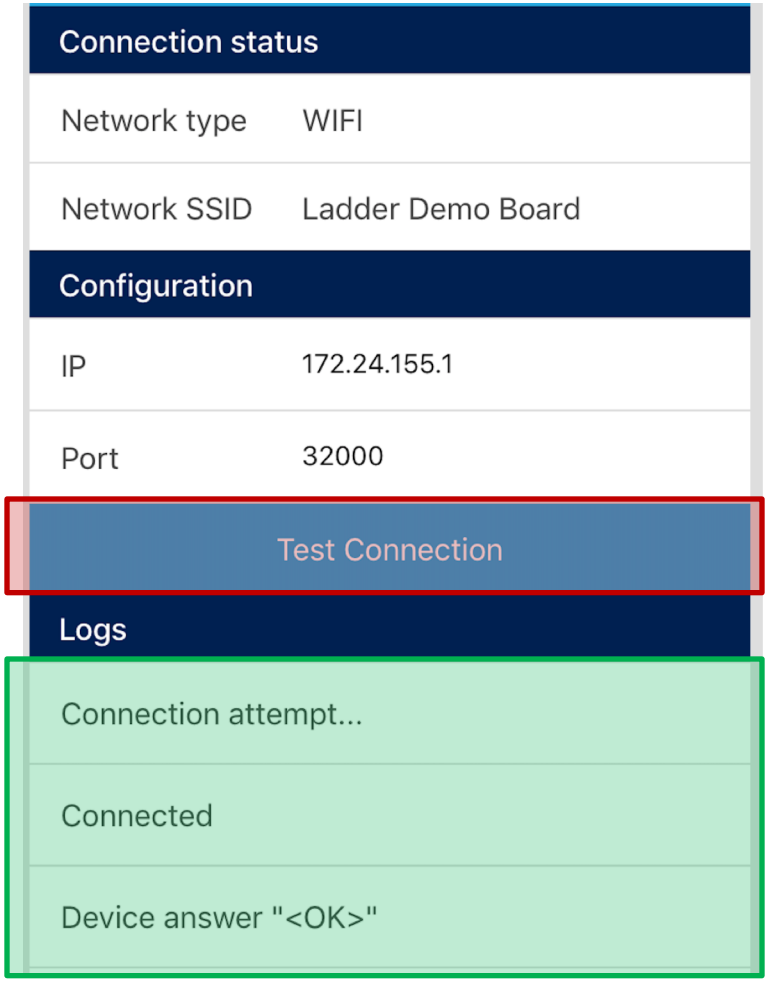
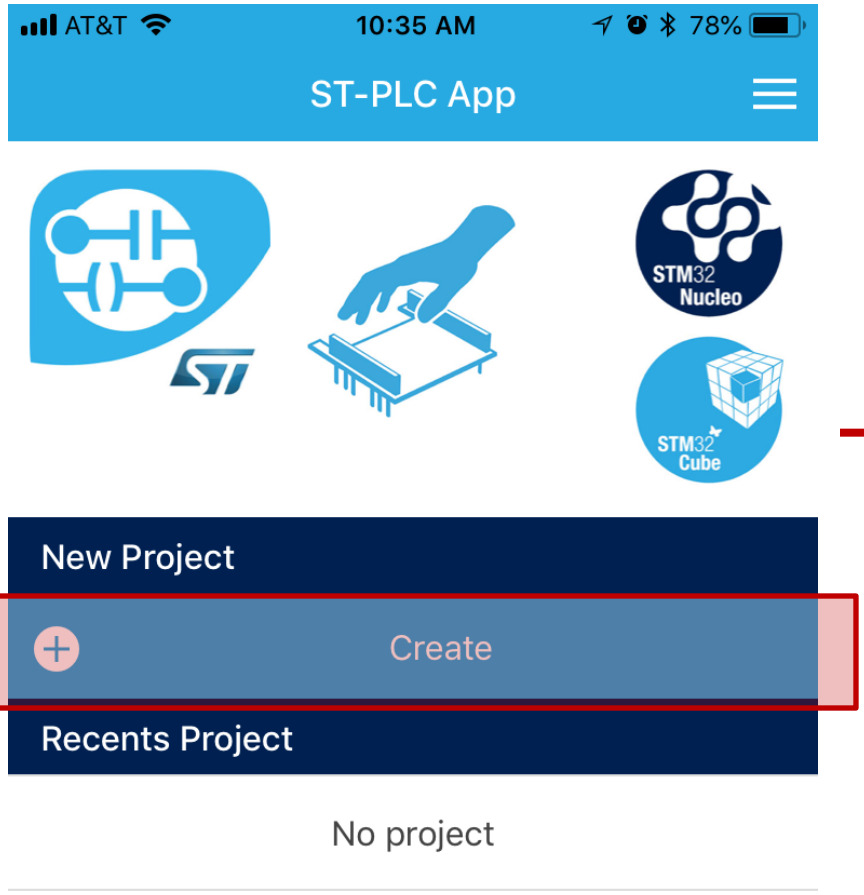
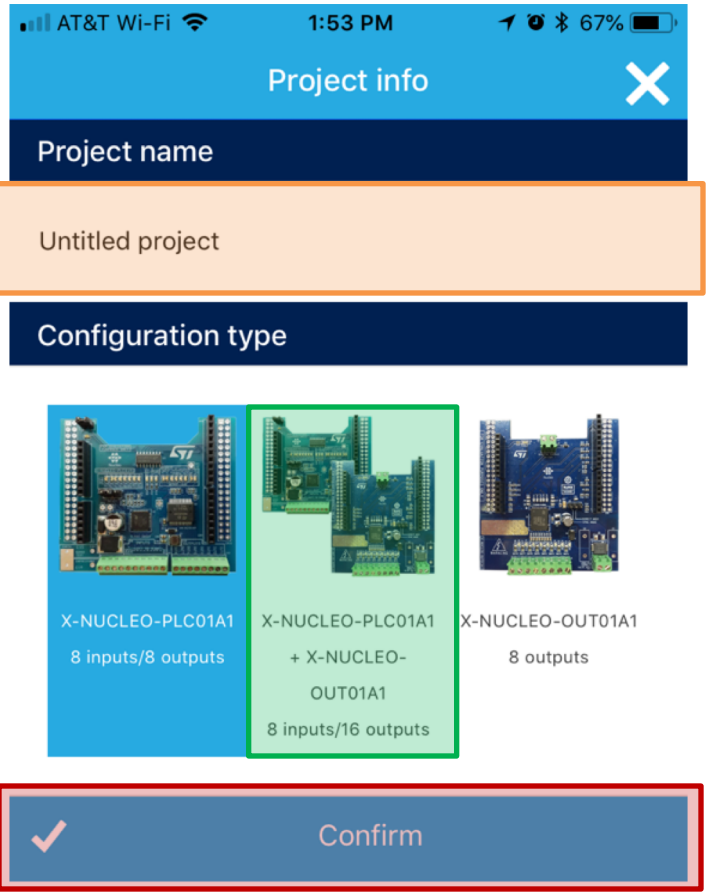
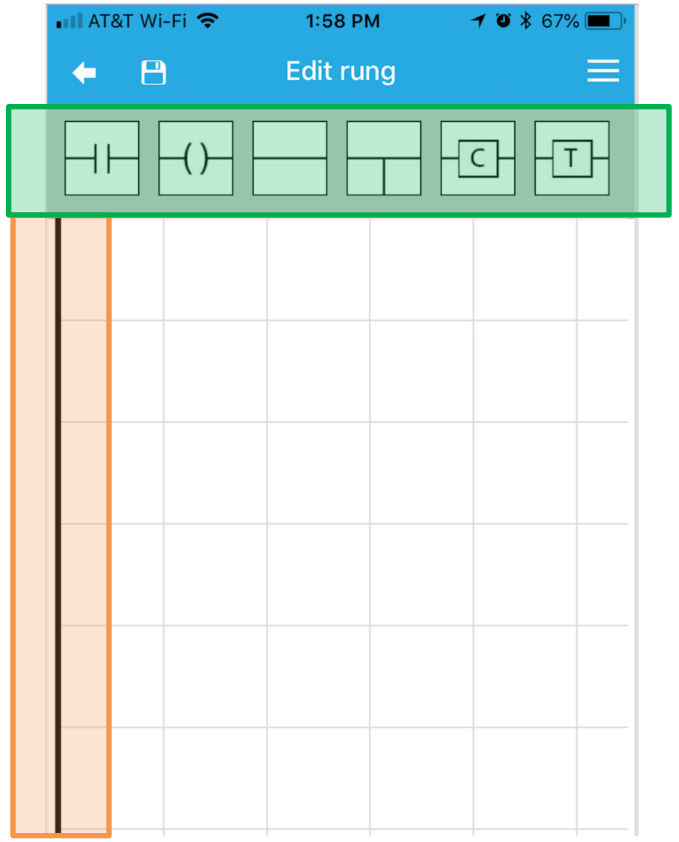


Creating a Project





A First Application



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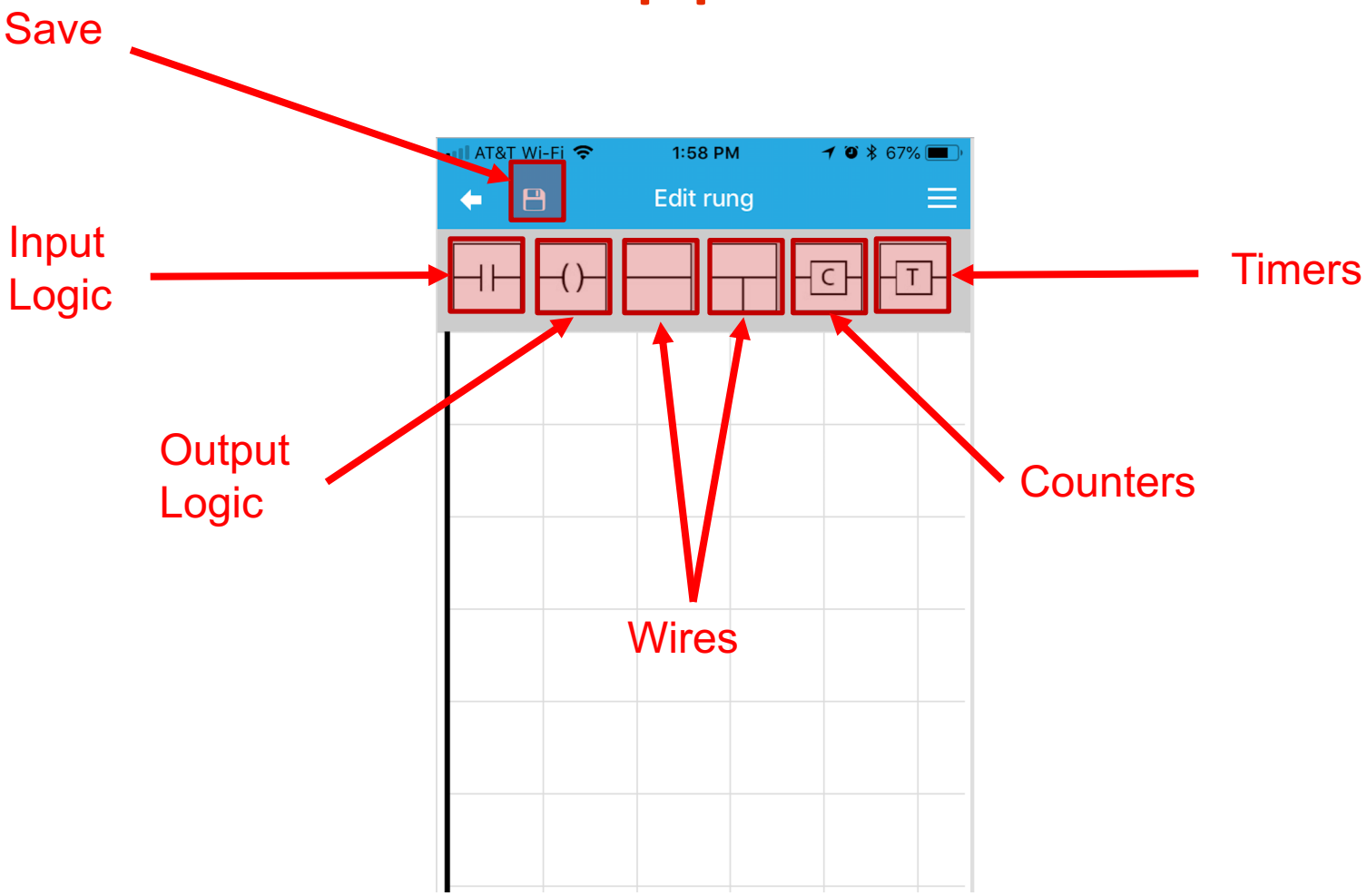

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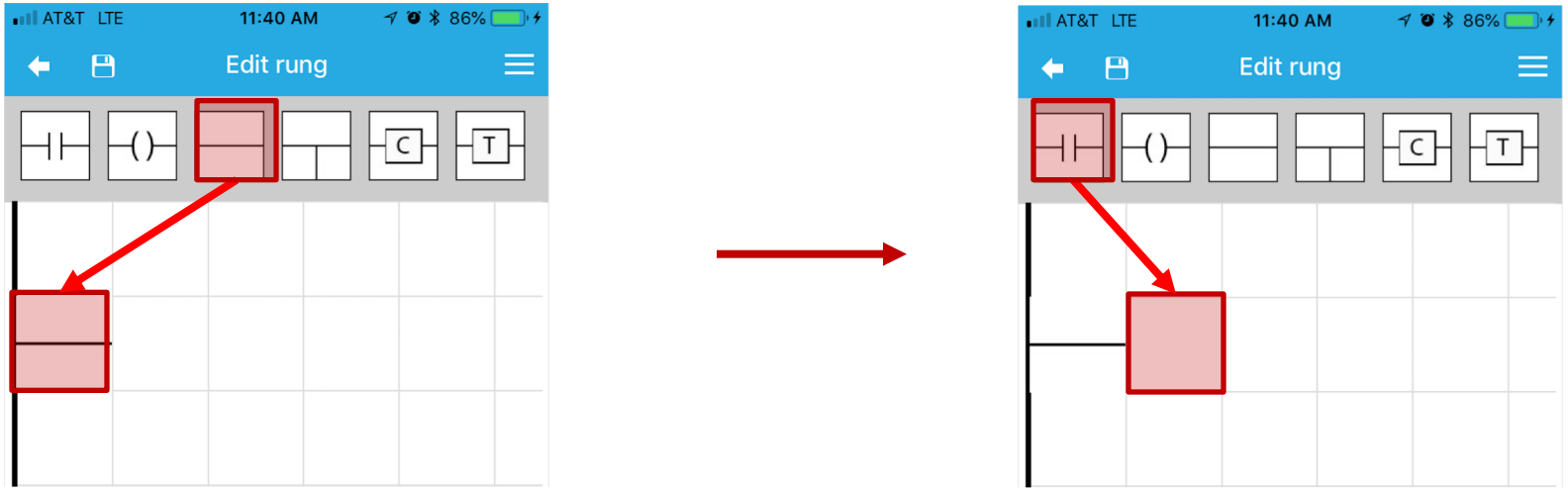

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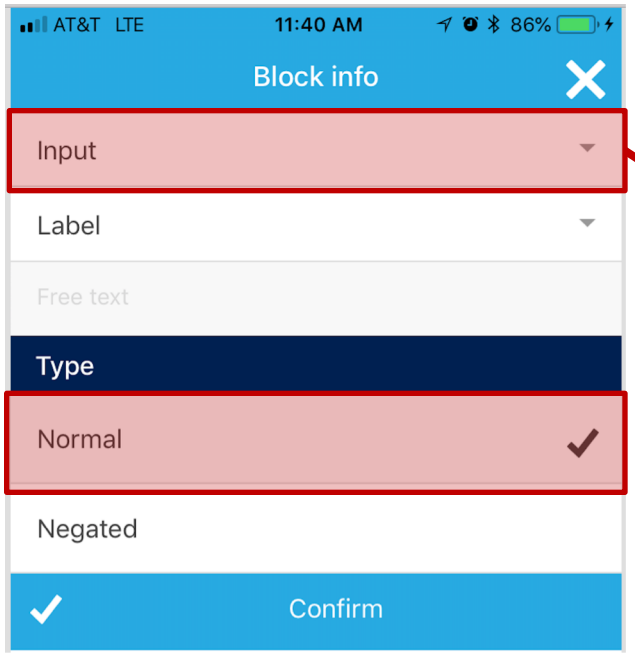

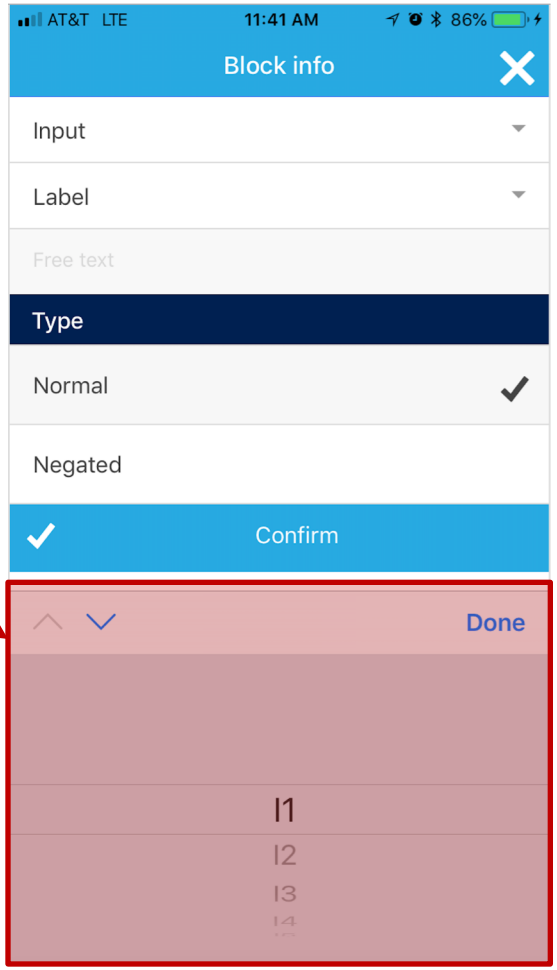

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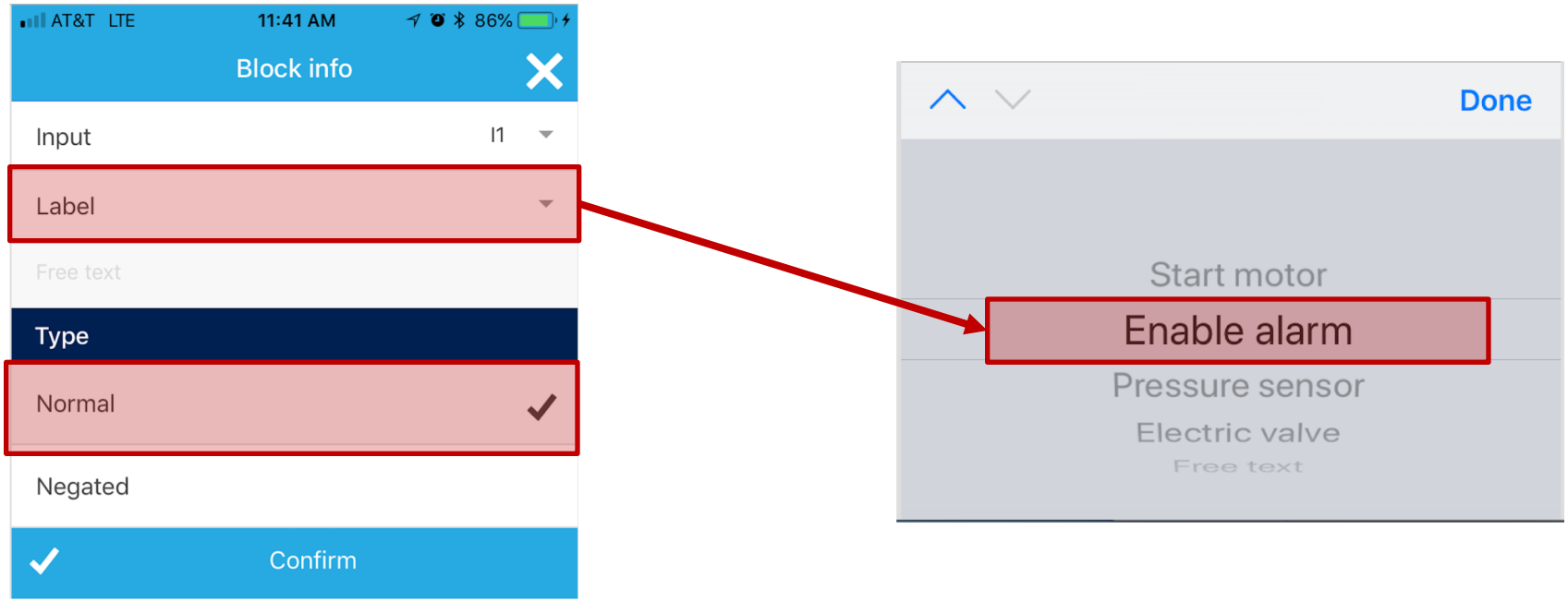

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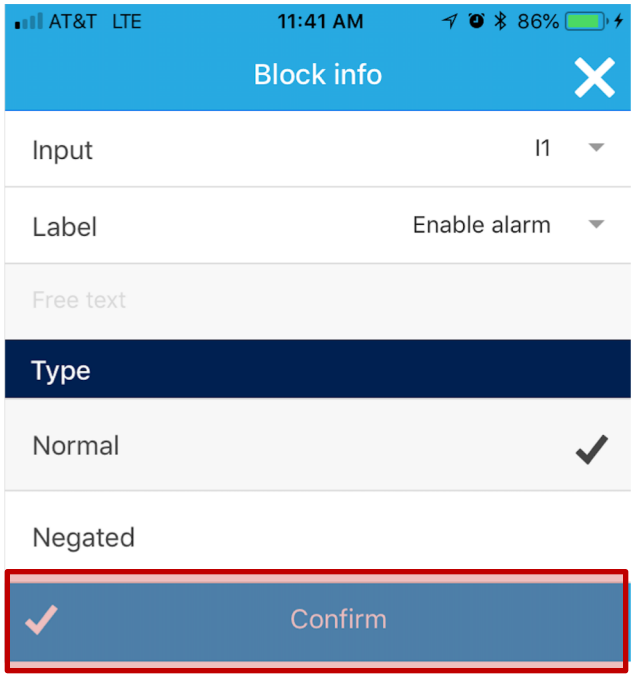

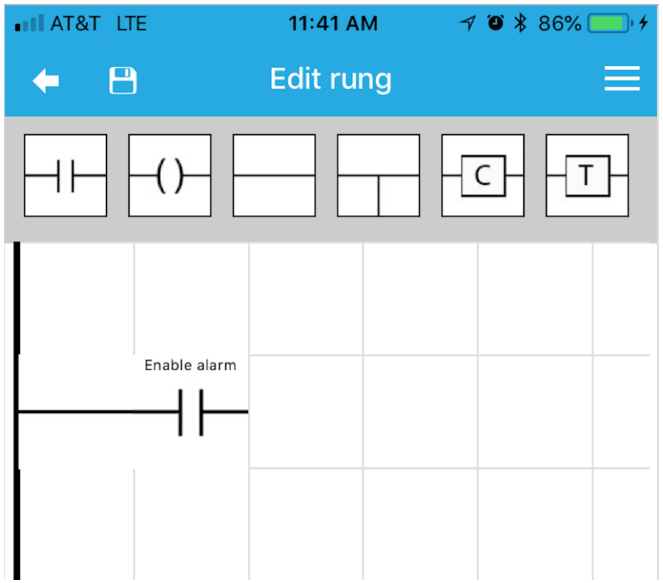

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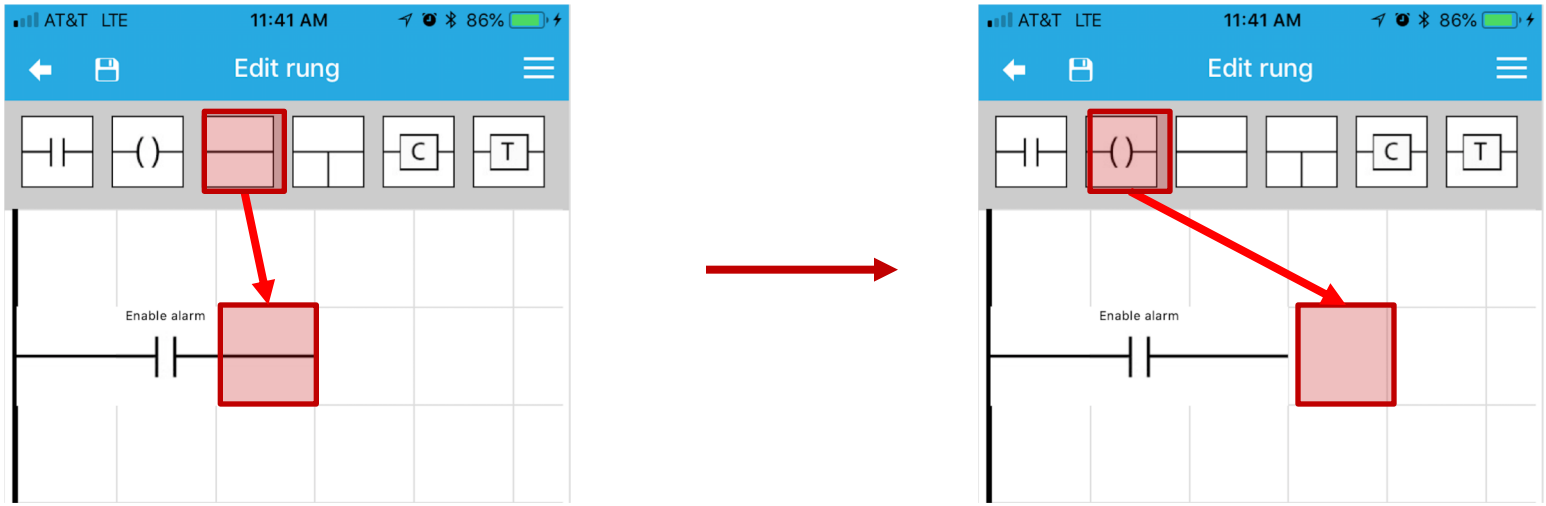

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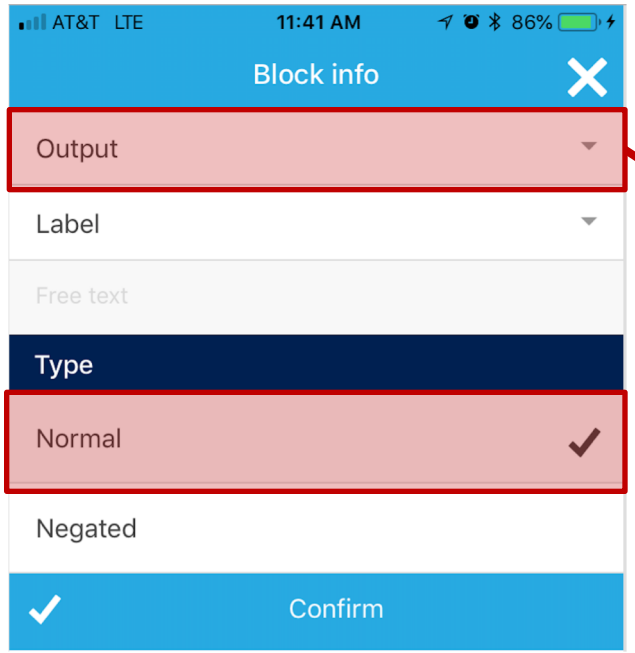

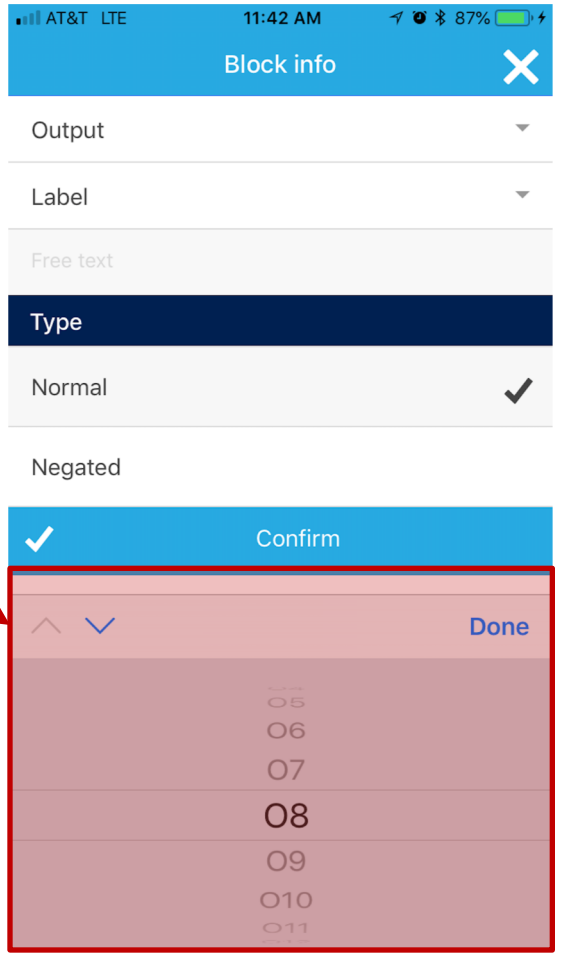

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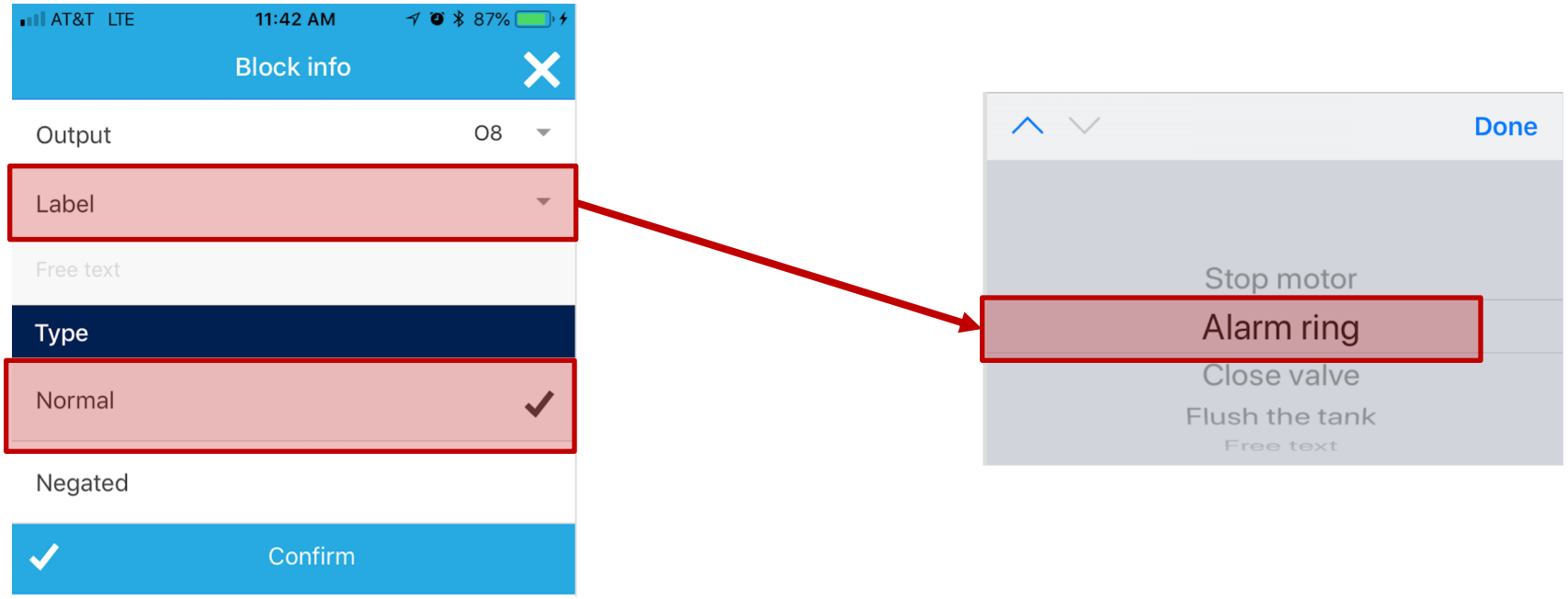

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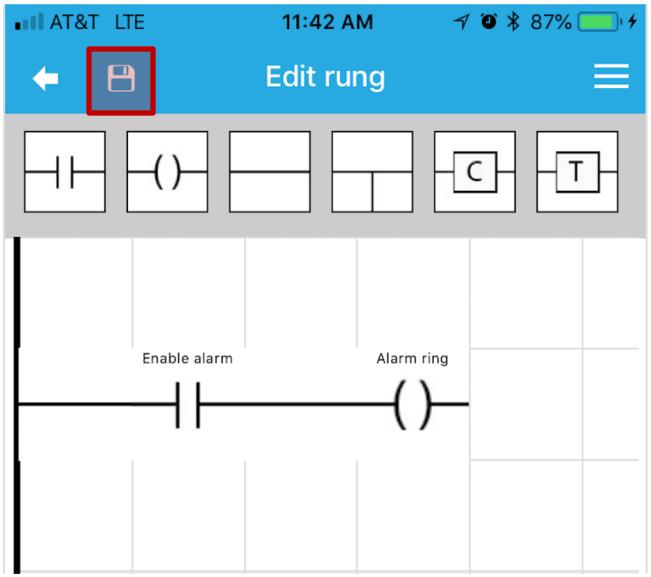

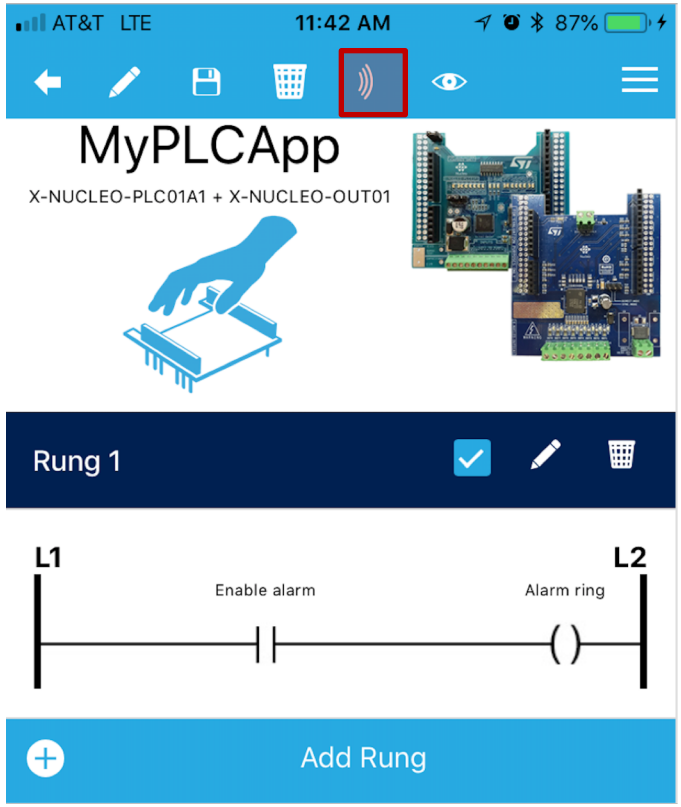

Additional Resources

- Download Course Material for
  - C/C++ Doxygen Templates
  - Example source code
  - Blog
  - YouTube Videos
- Embedded Bytes Newsletter
  - http://bit.ly/1BAHYXm

From www.beningo.com under

- Blog > CEC – Building Your own Internet Connected PLC