

Introduction to easyC[®] & Cortex[™]



Cortex™ Microcontroller



Cortex™ Joystick



VEXNet™ USB Keys and Tether Cable

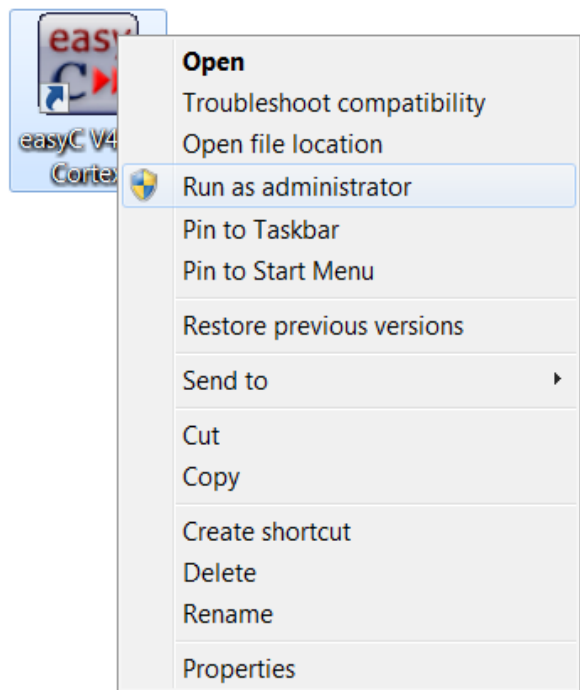


easyC® V4 Programming CD

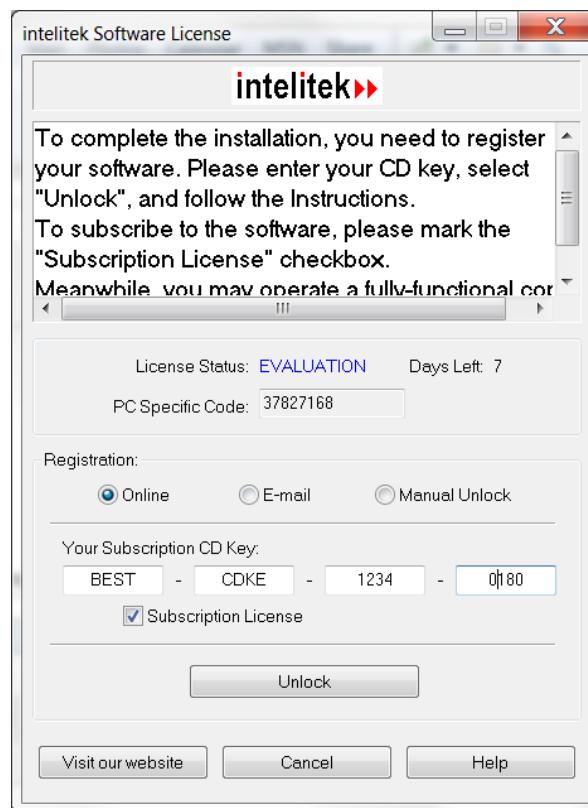


Unlocking easyC®

Right-Click the easyC Icon, Click
“Run as Administrator”

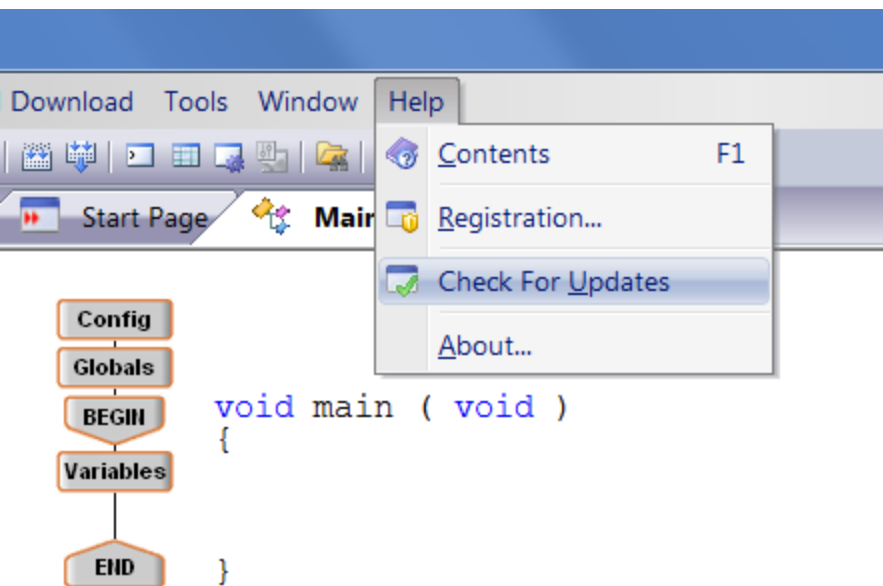


Type in you CD-Key and
Click Unlock



Updating easyC®

Go to Help -> Check For Updates, if the download site says to update download the latest version.



Download easyC v4 - 4.0.0.1

You are currently running version **4.0.0.0** of easyC v4, this is **not** the current version. Intelitek recommends you download version 4.0.0.1 of easyC Pro to experience the full benefit of all easyC has to offer.

New features include:

- *Release Version*
- *Requires Mastercode Update*
- *File extensions changed to .ECPX*
- *UI Improvements*
- *Math Functions*
- *Improved Direct Download*
- *Changed Program Structure*
- *XP/Vista/7, 256MB RAM, 200MB HDD, 1024x768 Display*

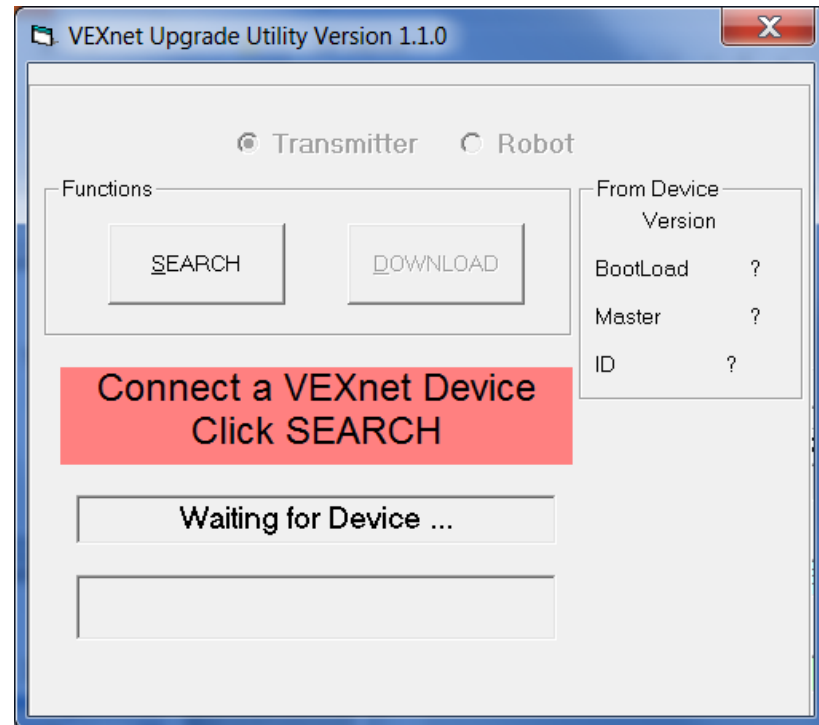
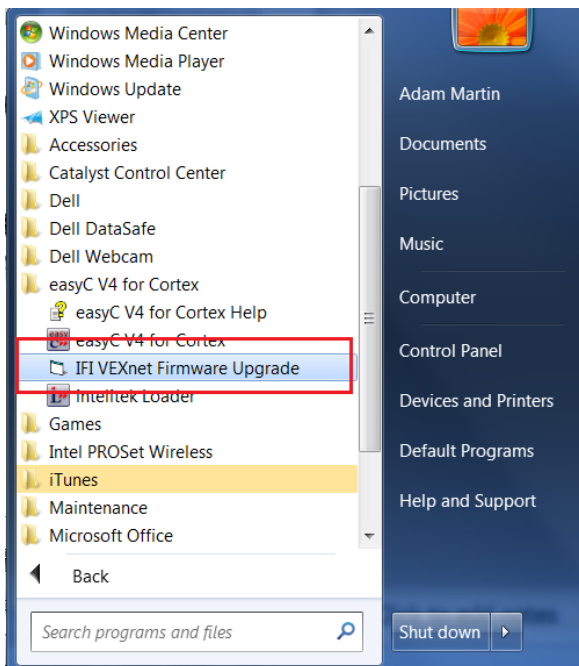
Updating Cortex™ Controller and Joystick

Remove the VEXNet™ key from the microcontroller and using the USB A-A cable connect the microcontroller to the computer. The LEDs should start flashing.



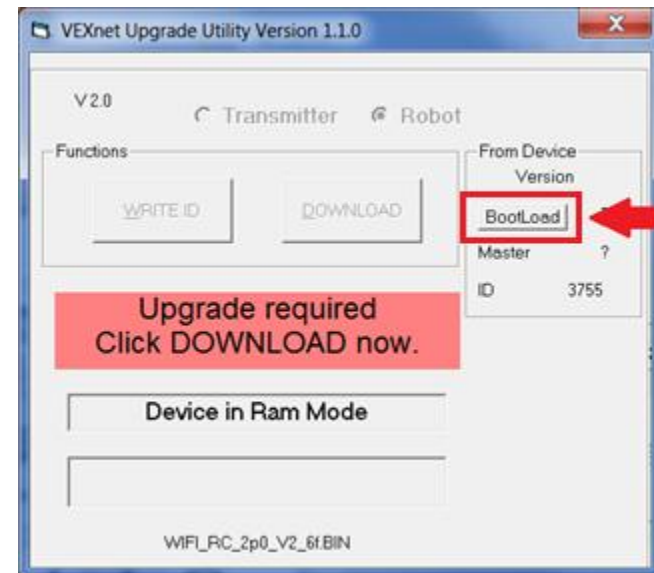
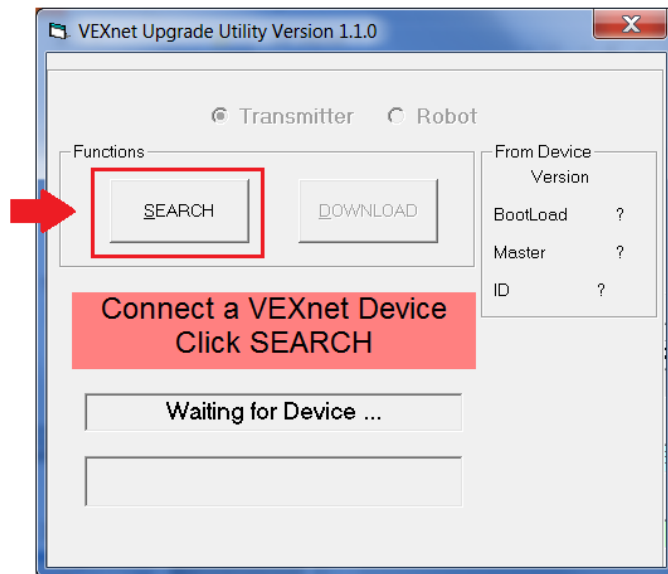
Updating Cortex™ Controller and Joystick

Goto -> Start -> All Programs -> easyC v4 For Cortex -> IFI VEXNet Firmware Utility



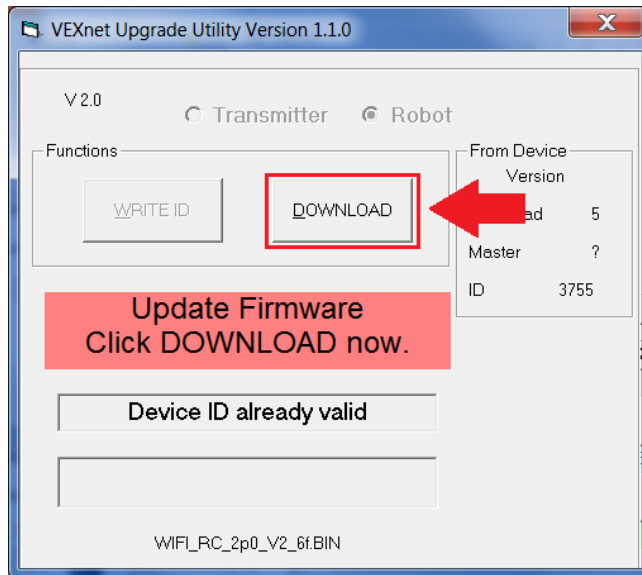
Updating Cortex™ Controller and Joystick

Select “SEARCH” if the response is (Upgrade required) then “BOOTLOAD” and YES

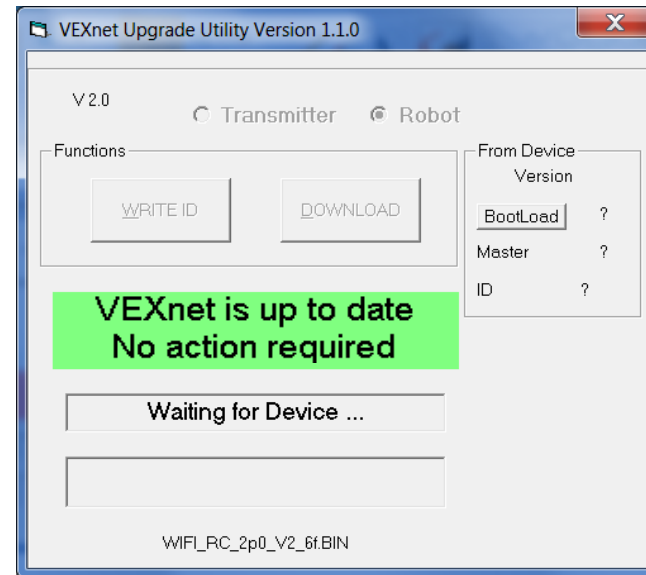


Updating Cortex™ Controller and Joystick

Then click “DOWNLOAD”



Afterward you should see



Updating Cortex™ Controller and Joystick

Now repeat the “SEARCH” -> “BootLoad” -> “DOWNLOAD” Process with the Joystick.

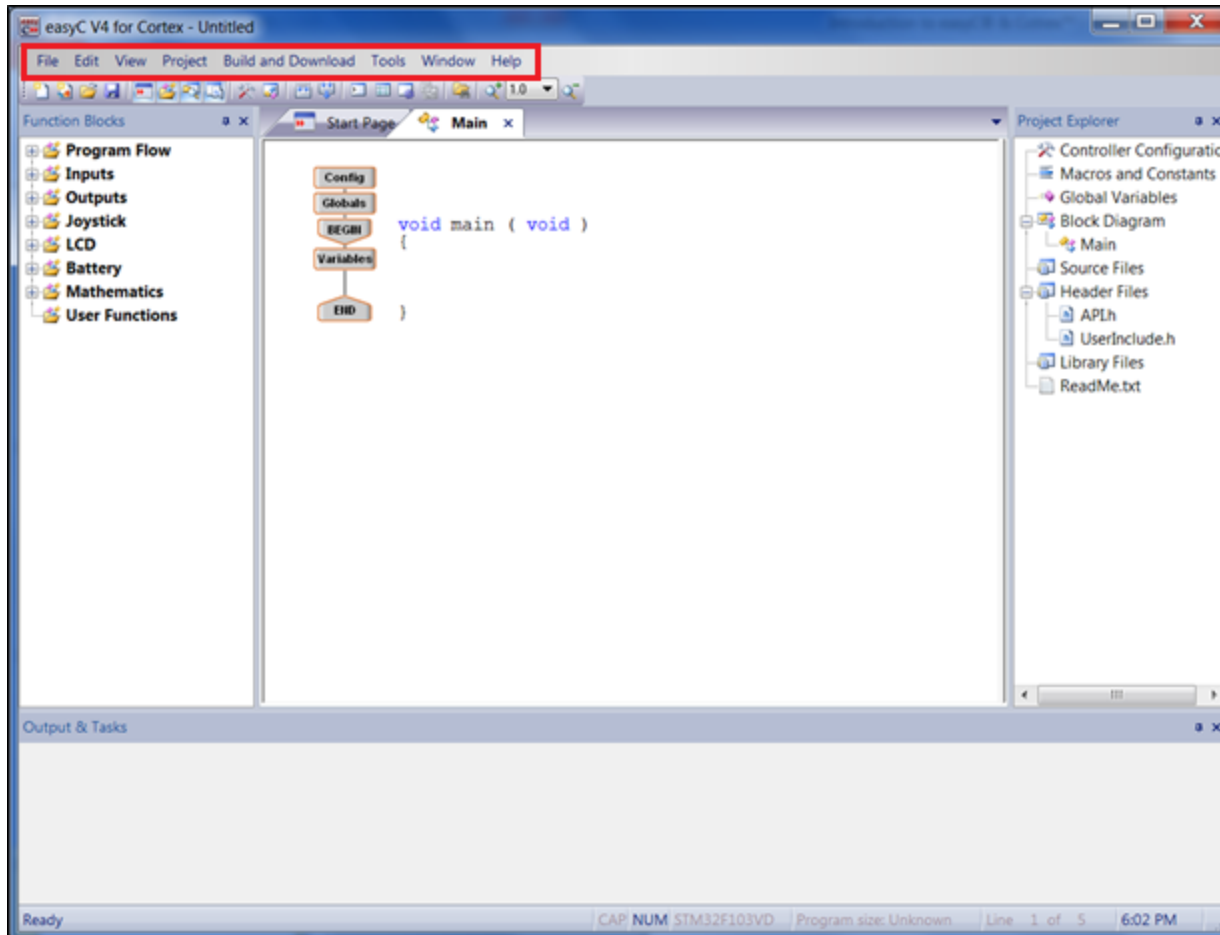


Tethering Cortex™ Controller and Joystick

After updating the firmware on the joystick and microcontroller both devices must be paired together. Connect the two devices together and then turn on the joystick or microcontroller. Wait until the VEXNet™ LED turns solid green.



easyC User Interface



Menu Usage:

File Menu

New Project, Open, Close, Print

Edit Menu

Undo, Edit, Copy, Paste, Find

Project Menu

Project Type, Add Function, Import Function, Library Import

Build and Download Menu

Compile, Build and Download, Reload Default IFI Code

Tools

Terminal Window, Download Window, On-Line Window

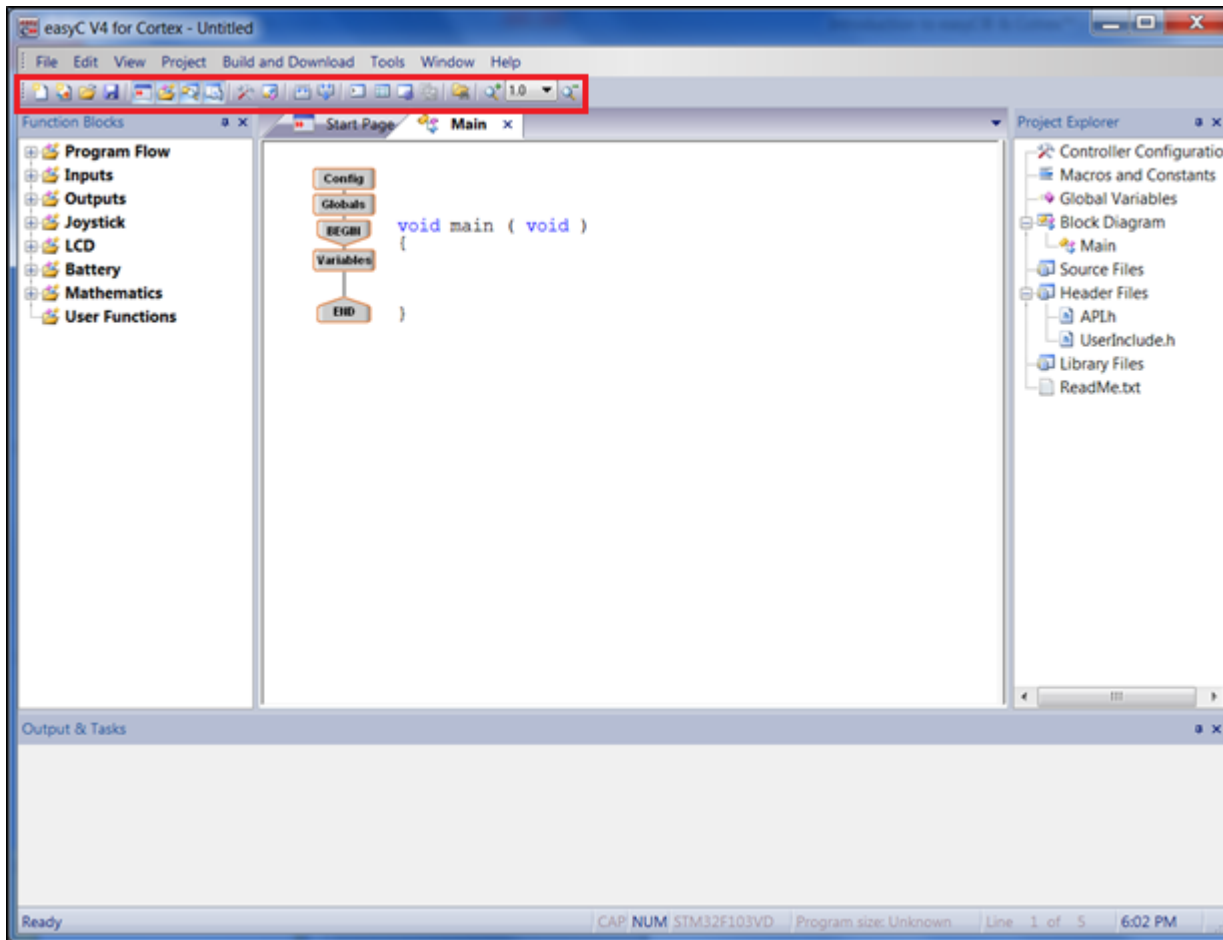
Window

Block Layout, Block & C Layout











Help Menu

Contents, Registration, Updates

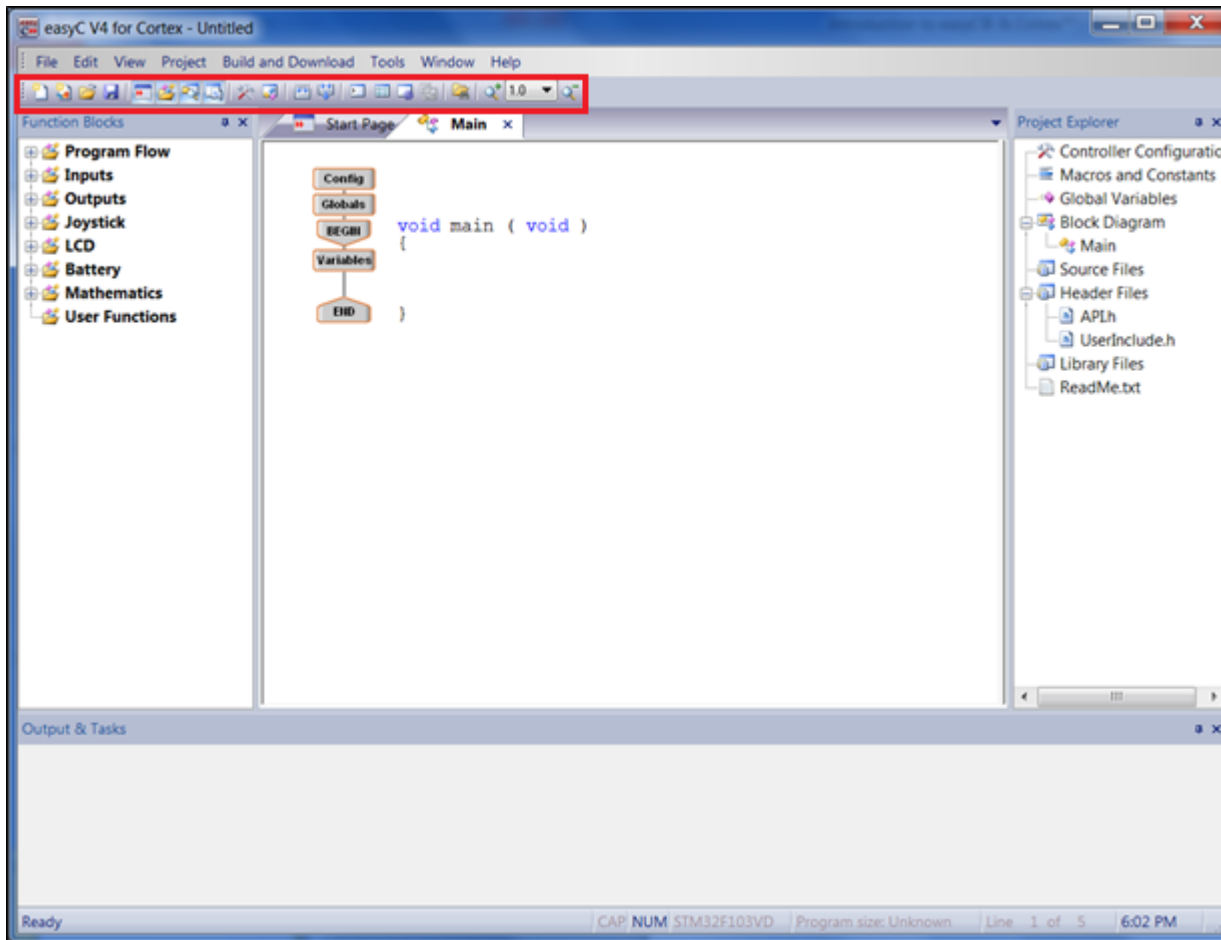
easyC User Interface



Icons

-  **New Project**
-  **New Competition Project**
-  **Open**
-  **Save**
-  **Start Page Enable**
-  **Function Blocks Enable**
-  **Project Explorer Enable**
-  **Output Panel Enable**
-  **Controller Configuration**
-  **Global Variables**

easyC User Interface



Icons

 **Compile**

 **Compile and Download**

 **Terminal Window**

 **Graphic Display**

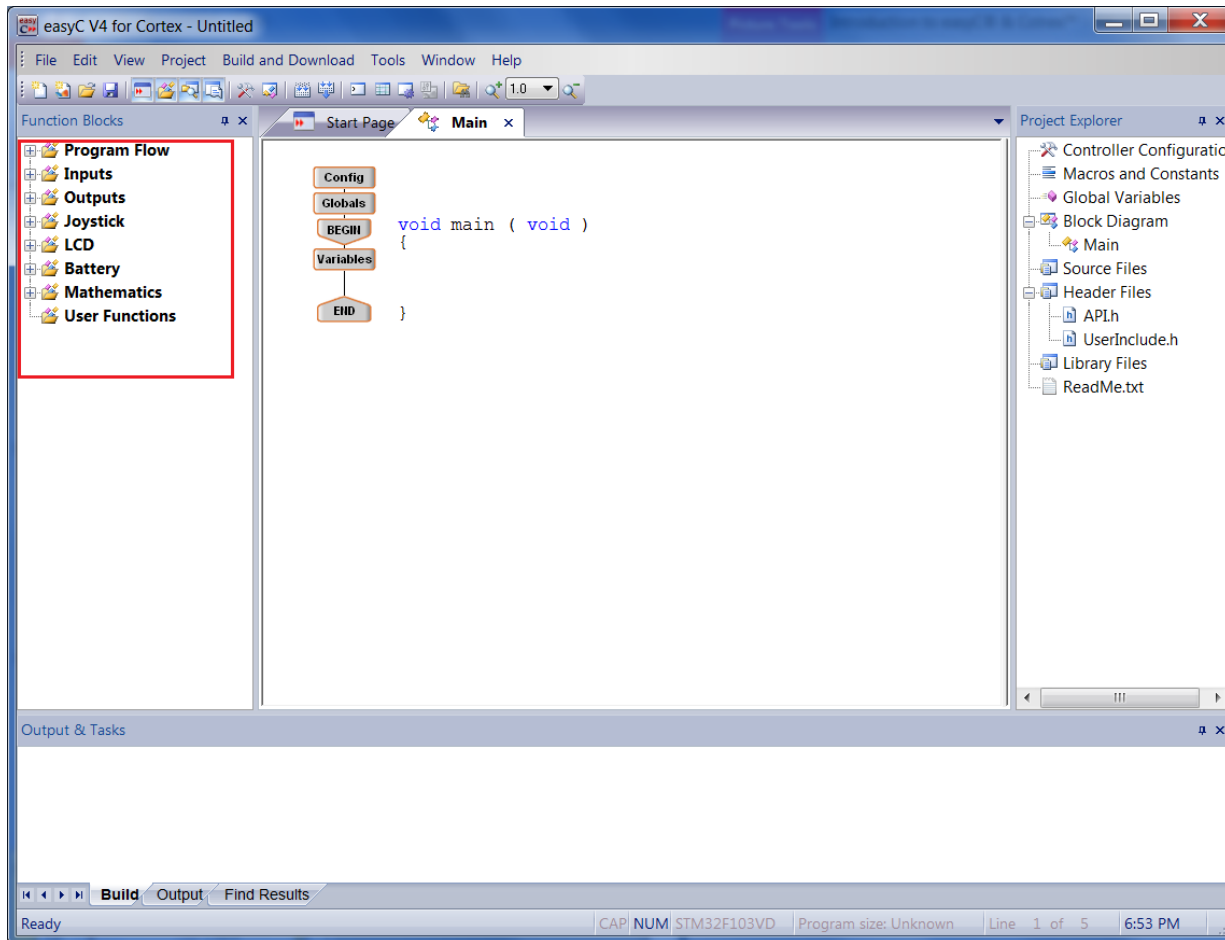
 **On-line Window**

 **Find**

Zoom



easyC User Interface



Function Blocks

Program Flow

Wait, If, Else, While, Timer, Assignment

Inputs

Limit Switch, Digital Input, Analog Input, Potentiometer

Outputs

Motor / Servo Module, Digital Output

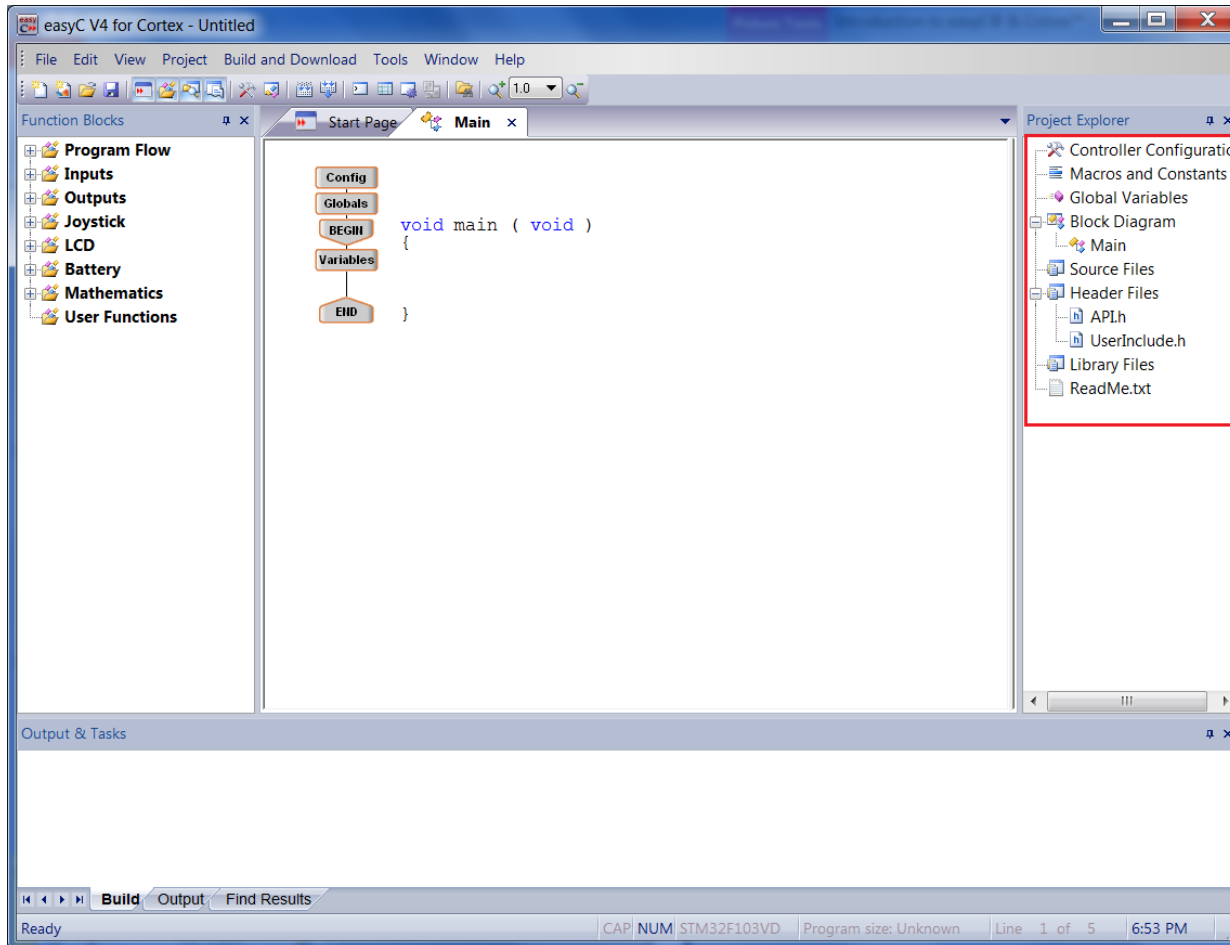
Joystick

Tank (2 Stick) , Arcade (Single Stick), Motor to Joystick, Motor to Digital (Button), Get Digital, Get Joystick

Mathematics

SIN, COS, TAN, Power, Random

easyC User Interface



Project Explorer

Controller Configuration

Change Inputs and Output, Label Ports

Macros and Constants

Create Definitions (aka C #define)

Global Variables

Variable with Global Program Scope

Block Diagram

Select Between Functions

Source & Header Files

Create or Import .c and .h files, Write C-Code Freehand

Library Files


Import a easyC® library

easyC On-Line Window

On-Line Control (Enabled) ✕

Main Battery Voltage:
 Backup Battery Voltage:

Motors:



	Value:	Set Group:	Invert Direction:
#1:	<input type="text" value="0"/>	None	N/A
#2:	<input type="text" value="0"/>	None	N/A
#3:	<input type="text" value="0"/>	None	N/A
#4:	<input type="text" value="0"/>	None	N/A
#5:	<input type="text" value="0"/>	None	N/A
#6:	<input type="text" value="0"/>	None	N/A
#7:	<input type="text" value="0"/>	None	N/A
#8:	<input type="text" value="0"/>	None	N/A
#9:	<input type="text" value="0"/>	None	N/A
#10:	<input type="text" value="0"/>	None	N/A

Digital I/O:

#1:	<input type="checkbox"/>	#5:	<input type="checkbox"/>	#9:	<input type="checkbox"/>
#2:	<input type="checkbox"/>	#6:	<input type="checkbox"/>	#10:	<input type="checkbox"/>
#3:	<input type="checkbox"/>	#7:	<input type="checkbox"/>	#11:	<input type="checkbox"/>
#4:	<input type="checkbox"/>	#8:	<input type="checkbox"/>	#12:	<input type="checkbox"/>

Analog Inputs:

#1:	<input type="text" value="64"/>	#5:	<input type="text" value="63"/>
#2:	<input type="text" value="63"/>	#6:	<input type="text" value="64"/>
#3:	<input type="text" value="64"/>	#7:	<input type="text" value="63"/>
#4:	<input type="text" value="65"/>	#8:	<input type="text" value="64"/>

#	Description
ANALOG INPUTS	
1	
2	
3	
4	
5	
6	
7	
8	
DIGITAL IN/OUT	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
MOTORS	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

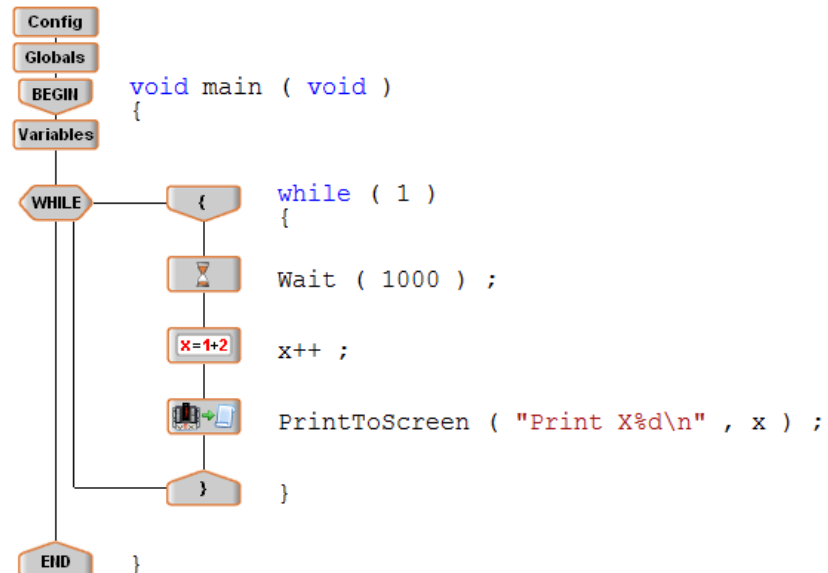
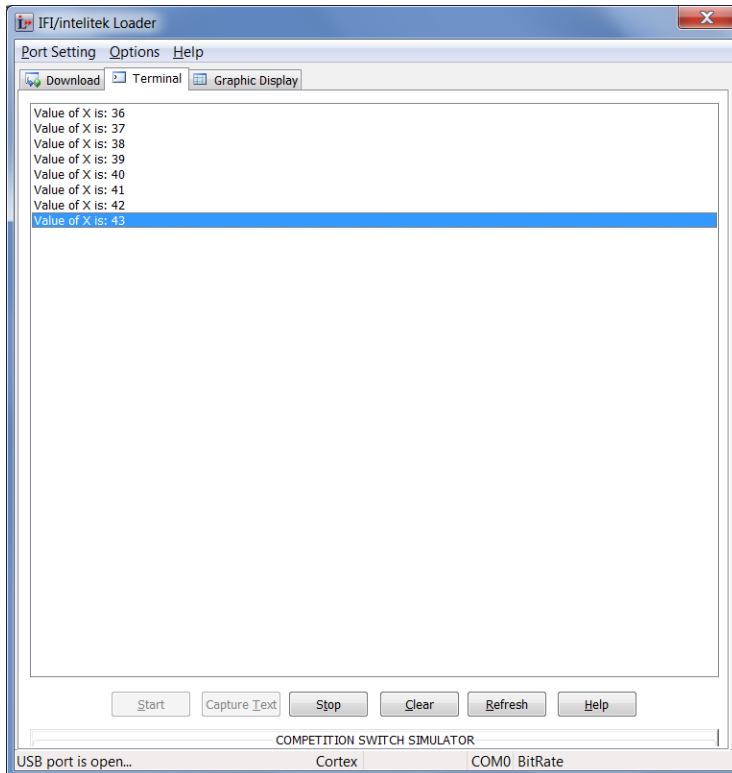
Descriptions:

The easyC® On-Line Window allows the user to see and control motors and sensors attached to the robot in real time. This can be enabled at any time.

Note: The On-Line Window requires a program, even blank be downloaded after updating the master firmware.

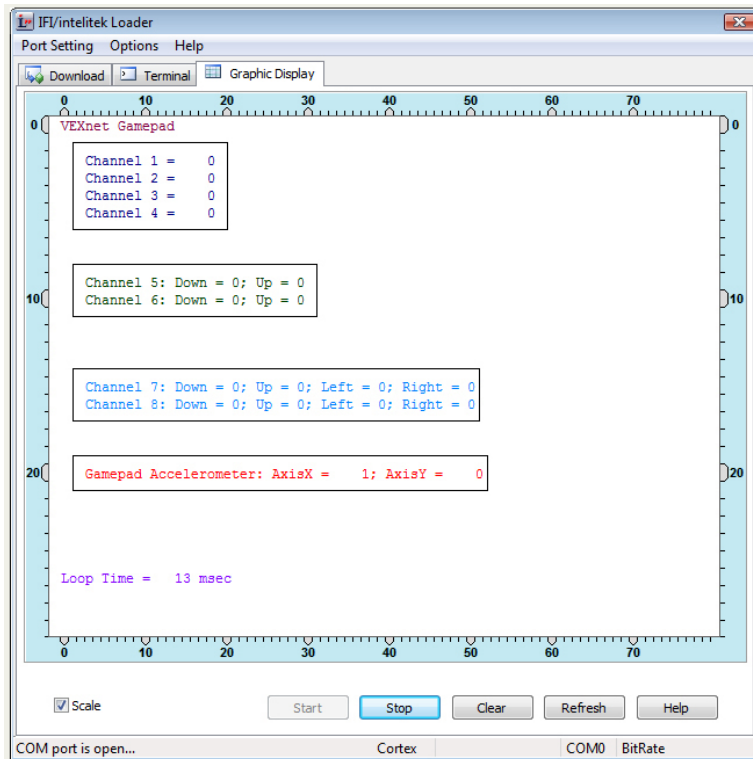
easyC Terminal Window

The easyC allows users to see output from PrintToScreen calls form within their program while the program is running on the Microcontroller.



easyC Terminal Window

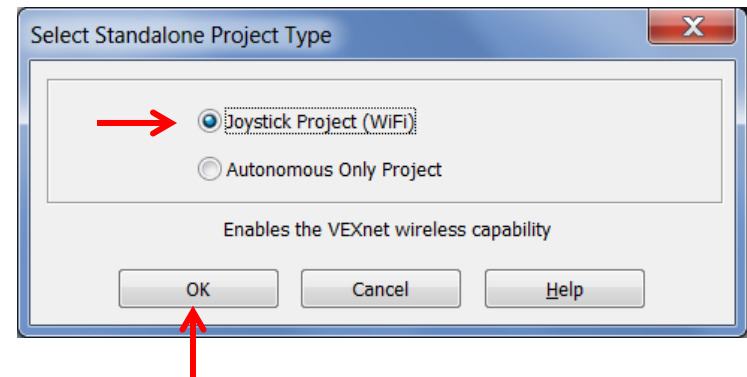
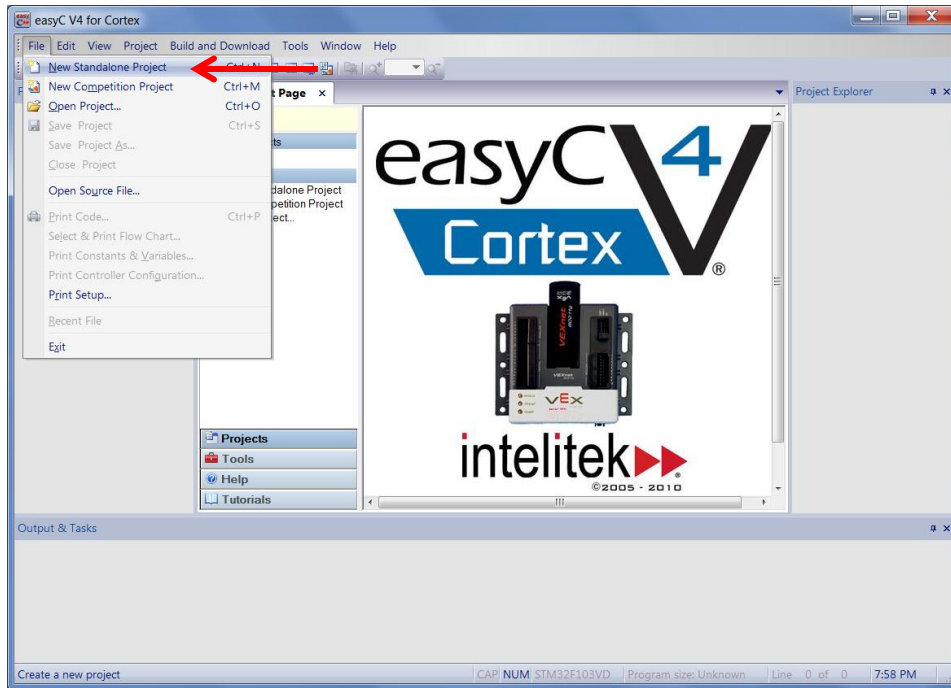
The easyC allows users to see output from GraphicDisplay calls from within their program while the program is running on the Microcontroller. The Graphic Display is a more advanced type of feedback that allows values to be placed on grid instead of scrolling.



See Samples → “Graphic Display Joystick Test” for code.

Creating a New Program

1. Goto File -> New Standalone Project
2. Select Joystick Project (Wifi)
3. Click OK



Simple Tank (2-Stick) Drive Example

This simple program would drive a robot with motors connected to motor ports 2(left) and 3(right). Using joystick channels 2(right stick) and 3(left stick)

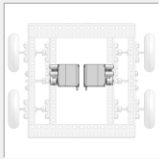
Tank - 2 motor [X]

Transmitter:
Joystick #: 1 (Value Range: 1..2)

Transmitter Channel:
Left Channel: 3 (Value Range: 1..4)
Right Channel: 2 (Value Range: 1..4)

Motor Number (Value Range: 1..10) and Invert Direction (Value Range: 0 - default, 1 - invert):

Left Motor 2 Invert Direction 0	Right Motor 3 Invert Direction 0
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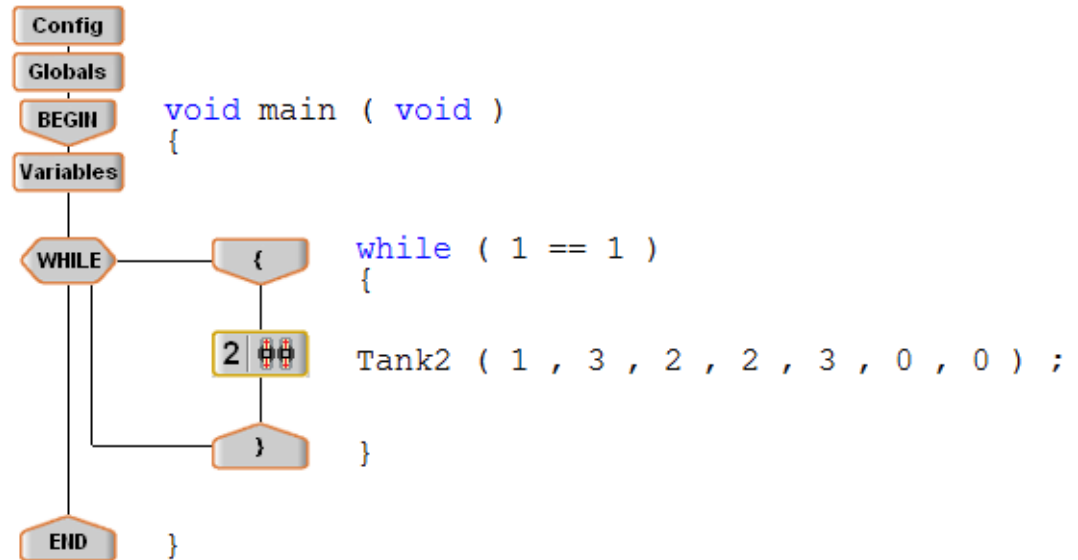


Code:
Tank2 (1 , 3 , 2 , 2 , 3 , 0 , 0);

Comment:

F6 - Globals and Constants Ctrl + F6 - Local Variables

OK Cancel Help



Simple Arcade (1-Stick) Drive Example

This simple program would drive a robot with motors connected to motor ports 2(left) and 3(right). Using joystick channels 2(left stick vertical) and 1(right stick horizontal)

