Autonomous Competition Programming Guidelines

www.VexRobotics.com

Programming for Autonomous Competition

For all Official Vex & intelitek technical support, refer to www.vexforum.com.
For all Official ROBOTC support refer to www.ROBOTC.net

Note: There is a set of Vex "Autonomous Files" which are the companion to this guide.
These files are available for download from www.VexRobotics.com on the programming page.

To utilize the Vex Robotics Design system without Autonomous Programming or robot sensors, there is no extra software required. The system works fine "out of the box" for general robot operation. It will also work with the Vex Field Controller "out of the box".

However, to use the system with sensor interaction, custom programs are required.
Furthermore, when programming a Vex Robot for autonomous competition, extra software files are required to ensure the proper transition between "autonomous mode" and "operator control mode" during each match.

Overall, to utilize the Vex Robotics Design System for Autonomous Competition, one needs three main things:

The first thing needed is the Vex Programming Module which interfaces between the computer and Vex robot and allows code to be downloaded into the Vex Microcontroller.

The programming module is available from www.VexRobotics.com as a stand-alone item, and also with bundled programming software.

The second thing you need is the software to interface with the Vex microcontroller. This software is the "IFI_Loader" software. This comes pre-bundled with easyC, ROBOTC and is also available as part of the MPLAB section of the Vex Autonomous Files.

The third thing you need is software to write the code which will be used by the robot. There are currently three main options which can be used for programming a robot for competition usage. You can program your robot using one of the following:

1. easyC v 2 (or newer) by intelitek
2. C Language (using MPLAB and the C18 compiler) by MicroChip
3. ROBOTC by the CMU Robotics Academy

Each team will need to pick one of these three options for their programming. For more information and the guidelines for competition usage for each of these options refer below.

http://www.intelitek.com

easyC is designed to be a bridge between pure object-oriented block-style programming, and the actual 'C' language. Programming is done with a drag-and-drop interface which allows the user to create flow-chart type programs. As these flow charts are created, the easyC software will generate the corresponding C-code real time; this allows users to get a taste of the actual C-language while they program in easyC.

If a team wishes to program in easyC they need the following:
1. easyC version 2.0 or newer (available from www.VexRobotics.com)
2. The newest version of the Vex Master Code.
    a. This is available as part of the Vex Autonomous Files.
3. The newest, correct easyC Competition Template:
    a. The most recent version of "easyC Autonomous Template 20-120.ECT" is available as part of the Autonomous Files.

The competition template is essential, as it allows the robot to correctly transition from disabled to autonomous to driver controlled to disabled as the competition match progresses.

Once all the required components are obtained, follow the instructions in the "easyC Autonomous Programming Guide" which is included in the Autonomous Files.

MPLAB by MicroChip

www.microchip.com

MPLAB is a true C environment, where users can write actual C code.

If a team wishes to program using MPLAB they need the following:
1. MPLAB IDE (6.62 or newer) with the C18 compiler.
   This is available for purchase from www.VexRobotics.com

2. The most recent Vex Master Project File.
   a. This includes:
      i. The latest version of the Vex Master Code
         1. version 7 - "VEX_MASTER_V7.BIN"
      ii. The correct library files.
   b. This project file is available in the Autonomous Files.

Once all the required components are obtained, follow the instructions in the "MPLAB Autonomous Programming Guide" which is available in the Autonomous Files

ROBOTC by the CMU Robotics Academy

www.robotc.net

ROBOTC is designed for engineering, programming, and robotics education. It provides users with the opportunity to utilize standard C-language while also offering many integrated support features. These support features include the ability to real-time monitor motor and sensor values while stepping through the code. This debug helps users understand how their code is interacting with the robot itself.

If a team wishes to program using ROBOTC they need the following:
1. ROBOTC (v 1.08 or greater)
    c. This is available as a free 30-day trial for download from www.ROBOTC.net
        i. This is also included in the Autonomous Files provided.
        ii. A full license is available for purchase.
    d. ROBOTC is available from www.VexRobotics.com

Once all the required components are obtained, follow the instructions in the "ROBOTC Competition Programming Guide" which is available in the Autonomous Files