Project Echo - Team 1153
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Echo is designed to allow everyone to have a fully functional autonomous code in minutes — granted the code is being written in Labview. After installing the package, generating autonomous modes is quick and easy. With the press of a button, one is able to turn movements done in tele-operated mode into movements the robot can do on its own.

INSTALLATION:

1. Download and unzip the package.

2. Open the project explorer of your code.

3. Drag and drop the Echo Project folder into your project explorer under "RT CompactRIO Target."

4. Expand Echo Project and Team Code.

5. Open "Periodic Tasks" VI under Team Code.

6. Drag and drop "Echo Periodic Tasks" VI in "Periodic Tasks" VI outside any while loops.

7. Open "Teleop" VI and open "Autonomous Independent" VI.

8. Copy and paste your "Teleop" VI code into "Autonomous Independent" VI inside a while loop.

9. Drag and drop "Echo Autonomous Independent" VI into "Autonomous Independent" VI inside the same while loop.

10. Delete everything related to joystick outputs from "Autonomous Independent" VI and replace them with outputs from "Echo Autonomous Independent" VI (In order to use Boolean, you must use the Number to Boolean Array VI found in the Boolean pallet, and then use the Index Array VI found in the Array pallet, with an index of 0).

11. Drag and drop “Echo Global Data” VI into “Teleop” VI in order to create a global variable.

12. Connect all joystick outputs to “Echo Recorded Data” global variables corresponding with those used in “Autonomous Independent” VI (click on “Echo Recorded Data 01” and using the drop down menu to choice a different variable). Connect buttons by using Boolean to (0,1) VI found in Boolean pallet before connecting to global variable.

13. Open “Disabled” VI.

14. Drag and drop “Echo Disabled” VI into “Disabled” VI.

15. In “Echo Disabled” VI, pick the joystick USB port used and the joystick buttons to use for scrolling through recorded autonomous modes on the dashboard.

RECORDING:

1. Run the newly changed code.

2. Open front panel of “Echo Periodic Tasks” VI.

3. Under file name control, enter the name of the file you wish to create (it should have the form “C:\file_name_here.xml”).

4. Enable the robot.

5. Read these next three instructions before proceeding:

    I. Click on record.
    II. Do what you want to record.
    III. Click on record again.

6. Repeat step 3 through 5 for all sub-routines in an autonomous mode (use different file names of each sub-routine; if the file name is not changed, it will be over-written).

CREATING A FULL AUTONOMOUS MODE:

1. Open front panel of “Echo Periodic Tasks” VI.

2. Under array “Files,” enter the names of the file paths for individual sub-routines in the order you want them to execute.

3. Click “Read” once.

4. Switch modes to “Autonomous” on the driver station and enable the robot.

CREATING SELECTABLE AUTONOMOUS MODES ON DASHBOARD:

1. Open block diagram for “Echo Disabled” VI.

2. Open true case of inner case structure on right.

3. Input name of autonomous mode into string.

4. Input file paths in the array of file paths below the string (0 being the first file, 1 being the second, etc.).

5. Make sure the Boolean constant is set to true to allow the mode to be selectable.

6. In order to create multiple modes, right click the case structure where it says “0, Default,” select duplicate case, and repeat steps 1 - 5.