A Guide on Getting JTAG and the USB Programmer to work on Linux

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I have tested this on Xubuntu 18.04 with Quartus 18.1. This fix works for error code 89: "Failure to scan JTAG chain" and similar, where the programmer can detect the USB Blaster but fails to push the program to the CPLD.

1) First, test the programmer by plugging in the MAX V board and USB Blaster and ensuring all connections are secure. Then, get the `portTester.pof` program file [here](). Make sure to remove the .txt suffix from the filename after you download it.

   a) Open a terminal, and set up the programming environment by running nios2_command_shell.sh under the nios2eds directory under your Quartus installation directory.

   ```
   ./nios2_command_shell.sh
   ```

   This should give you a splash screen saying `"Altera Nios2 Command Shell"` in your terminal, and then a new command prompt.

   b) Run the command

   ```
   quartus_pgm --auto
   ```

   This should list all the programming devices attached to your computer, and you should see something like "Info (213045): Using programming cable "USB-Blaster [3-2]."

   Errors will be shown in red

   c) Run the command

   ```
   quartus_pgm -m jtag -o "p;/path/to/portTester.pof"
   ```
   This will attempt to program the MAX V with the .pof file whose path you have specified.

   If you receive an error here, continue onwards, otherwise, you should receive a light show from the MAX V and be good to go.

2) Open a text editor, and insert the following WITH NO LINE BREAKS.

   ```
   SUBSYSTEM=="usb", ATTRS{idVendor}=="09fb",
   ATTRS{idProduct}=="6001", GROUP="plugdev", MODE="0666",
   SYMLINK+="usbblaster"
   ```

Save the file as `37-usbblaster.rules`

3) Copy the file to `/etc/udev/rules.d` as superuser.
   ```
   sudo cp -n -t /path/to/37-usbblaster.rules /etc/udev/rules.d
   ```

a) Run the below command to force the udev rules to refresh.

```
sudo service udev restart
```

4) Unplug and replug your USB blaster and CPLD, and attempt Step 1 again. Hopefully, you should be successful in programming the board and be treated to the light show.

a) If this doesn't work, run `dmesg` and check to make sure the `idVendor` and `idProduct` values in `37-usbblaster.rules` match the ones you got from `dmesg`.

Note: Now that you've done this, using the Quartus GUI to program the board also works.
Acknowledgement: Eli Billauer provided an excellent reference on how to program CPLDs from CLI.