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Making ModelSim ALTERA STARTER EDITION vsim 10.1d work on Ubuntu 14.04

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[WARNING: Some people are reporting that following the steps for them does not fix the problem. I am working on trying to find out what the issue is.]

Trying to get a version of ModelSim running on a very modern version of Linux often presents challenges. Luckily I had lots of helpful information on the internet (major sources linked below) to get it going. This article mostly adapts the work done by the Arch Linux crew.

Problem number one: The free version of ModelSim Altera Edition is 32 bit only while the normal Linux PC will be 64 bit.

On Linux this requires us to install the 32 bit versions of the libraries that it depends on. Luckily this is fully supported on a modern Linux like Ubuntu 14.

```
sudo dpkg --add-architecture i386
sudo apt-get update
```

```
sudo apt-get install build-essential
```

```
sudo apt-get install gcc-multilib g++-multilib \
lib32z1 lib32stdc++6 lib32gcc1 \
expat:i386 fontconfig:i386 libfreetype6:i386 libexpat1:i386 libc6:i386
 libgtk-3-0:i386 \
libcanberra0:i386 libpng12-0:i386 libice6:i386 libsm6:i386 libncurses5:i386
 zlib1g:i386 \
libx11-6:i386 libxau6:i386 libxdmcp6:i386 libxext6:i386 libxft2:i386
 libxrender1:i386 \
libxt6:i386 libxtst6:i386
```

Problem number two: If you have the following error when running `vsim`:

```
** Fatal: Read failure in vlm process (0,0)
Segmentation fault (core dumped)
```

```

```

Then you probably need to build a new version of freetype, a font setting library and modify ModelSim to use it. For an unknown reason ModelSim has an issue with modern versions shipping in Arch and Ubuntu 14.04. First download the source code of freetype 2.4.12:

http://download.savannah.gnu.org/releases/freetype/freetype-2.4.12.tar.bz2

Now install the build dependencies needed for libfreetype6, extract the source (using tar) and configure and build libfreetype:

```
sudo apt-get build-dep -a i386 libfreetype6
```

```
tar -xjvf freetype-2.4.12.tar.bz2
cd freetype-2.4.12
./configure --build=i686-pc-linux-gnu "CFLAGS=-m32" "CXXFLAGS=-m32"
 "LDFLAGS=-m32"
make -j8
```

The finished libraries are now available inside the "`objs/.libs`" directory. As they are necessary to run ModelSim we need to copy them into the install directory so they don't get lost and then modify ModelSim's vsim script to use the new libraries instead of the system wide versions. Change directory to the directory where you installed ModelSim, `/opt/altera/13.1/modelsim_ase/` on my system. Note you may need to edit the directory paths to match those used on your system.

```
sudo mkdir lib32
sudo cp ~/Downloads/freetype-2.4.12/objs/.libs/libfreetype.so* ./lib32
```

Now we need to edit the vsim launch script to ensure the new freetype libraries are used:

```
sudo vim bin/vsim
```

Search for the following line:

```
dir=`dirname $arg0`
```

and underneath add the following new line:

```
export LD_LIBRARY_PATH=${dir}/lib32
```

```

```

Test by running `vsim` and hopefully you will be greeted by the ModelSim GUI.

[Tested on fresh install of Ubuntu 14.04]

Sources:

1. https://wiki.archlinux.org/index.php/Altera_Design_Software
2. http://stackoverflow.com/questions/3261909/build-32 bit-on-64-bit-linux-using-a-configure
3. https://wiki.debian.org/Multiarch/CrossDependencies

Re: Quartus USB-Blaster setting help!

> I also had similar problems with the DE2 board on Ubuntu 10.04, using Quartus II version 9.1.
>
> I found this thread on the topic which solved it for me:
>
> http://www.alteraforum.com/forum/showthread.php?t=22481
>
> This is what I did:
> Code:
>
> ```
> $ sudo mount --bind /dev/bus /proc/bus
> $ sudo ln -s /sys/kernel/debug/usb/devices /proc/bus/usb/devices
> $ sudo <quartus_directory>/bin/jtagd
> $ sudo <quartus_directory>/bin/jtagconfig
> $ <quartus_directory>/bin/quartus
> ```

"Insufficient permissions" or "permission denied" or whatever relating to not having permissions on *nix *usually* means you must run the command as user `root` (or as another user who has the permissions, but `root` has all of them).

So run `jtagconfig` as `root`:

```
$ sudo jtagconfig
```

Alternatively, as root, put this in a new file `/etc/udev/rules.d/51-altera-usb-blaster.rules`

```
SUBSYSTEM=="usb", ATTR{idVendor}=="09fb", ATTR{idProduct}=="6001", MODE="0666"
SUBSYSTEM=="usb", ATTR{idVendor}=="09fb", ATTR{idProduct}=="6002", MODE="0666"
SUBSYSTEM=="usb", ATTR{idVendor}=="09fb", ATTR{idProduct}=="6003", MODE="0666"
SUBSYSTEM=="usb", ATTR{idVendor}=="09fb", ATTR{idProduct}=="6010", MODE="0666"
SUBSYSTEM=="usb", ATTR{idVendor}=="09fb", ATTR{idProduct}=="6810", MODE="0666"
```

and then, run:

```
$ sudo udevadm control --reload
```

This should change the permission of your USB-Blaster Download Cable device so that any user may access it (if this is what you want), so you should be able to issue `jtagconfig` without `sudo`. Those five `idProduct`s are all the known USB-Blaster Download Cable USB product IDs (for the Altera vendor ID, `0x09fb`).

I wrote a fairly complete Arch Linux wiki page about Altera softwares on Linux if you want more details.

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