Compiling C++ Code for the Omega

What you will need:

1. Linux Environment – most likely the vdi file given to you
2. Optional (Windows Users) - PuTTy – get from putty.org

1 Compiling the program – Using Only Standard Libraries

What you will Need:

1. A sample .cpp file, such as HelloWorld.cpp

The goal now is to compile this .cpp for the mips architecture so it can run on the omega, this is done by running the cross compiler for c++ code with your .cpp file, which can be found here:

- ~/source/staging_dir/toolchain-mipsel_24kc_gcc-5.4.0_musl/bin/mipsel-openwrt-linux-g++

The Full command to compile your .cpp file is the following:

$ *~/source/staging_dir/toolchain-mipsel_24kc_gcc-5.4.0_musl/bin/mipsel-openwrt-linux-g++ <file> -o <output file>*

At this point there should be an executable file in the directory that your .cpp file is in.

2 Compiling the program – Using Non-Standard Libraries

What you will Need:

1. A sample .cpp file using external libraries, such as gpioread.cpp which can be found in the folder c-cross-compile-example as gpioread.c, simply rename the file to gpioread.cpp

To compile to mips architecture with cpp code we will need to make a couple changes to the makefile in the c-cross-compile-example folder.

- open the makefile for editing
- change the line that says: CC := gcc to CXX := g++
- change the line starting with TARGET1 := gpioread to TARGET1 := <filename>, where the <filename> is replaced with the name of your .cpp file
- change the line starting with $(CC) to start with $(CXX)
- change the extension on the same line after $(TARGET1) to .cpp

Now to compile your program run the following command (assuming the xCompile.sh script is in your directory with the makefile and .cpp file):

$ *sh xCompile.sh -buildroot /root/source/ -lib <put Libraries Here>*

At this point there should be an executable file with the same name as your .cpp in the directory that your .cpp file is in.

3 Getting the file to your omega – Using a USB-Stick

What you will need:

1. A .exe file that has been cross compiled
2. a USB stick formatted to either exFat or Fat32

- Turn on drag and drop for your virtual machine. to do this go to the settings in virtual box, and in the general menu go to the advanced sub-menu and change the drag'n'drop item to 'bidirectional'. this will allow you to drag and drop files between your regular OS and the virtual machine, you may need to restart the virtual machine for this to take effect.
- drag the executable from the virtual machine onto the desktop of your regular OS
- put this file onto your USB-Stick
- put the USB-Stick into the Omega 2 dock
- SSH to the omega, look at section 5 if unaware of how to do this

  $ cd /tmp/mounts/USB-A1

  * If this does not work go to section 6 for troubleshooting then continue

  $ ./<executable file>

4 Getting the file to your Omega – Using scp

- Turn on drag and drop for your virtual machine. to do this go to the settings in virtual box, and in the general menu go to the advanced sub-menu and change the drag'n'drop item to 'bidirectional'. this will allow you to drag and drop files between your regular OS and the virtual machine, you may need to restart the virtual machine for this to take effect.
- drag the executable from the virtual machine onto the desktop of your regular OS
- connect to your omegas wifi (password is 12345678 by default)

4.1 Mac or Linux Users

- Open terminal and cd into the directory where your exe is

  $ scp <local file> root@192.168.3.1:/tmp

4.2 Windows Users

Note: to do this you must have PuTTy installed

- Open command prompt and cd into the directory where your exe is

  $ pscp <local file> root@192.168.3.1: /tmp

4.3 Running The File

SSH to the omega, look at section 5 if unaware of how to do this

$ cd /tmp

$ ./<executable file>

5 SSH to the omega

What you will need

- connect to your omegas wifi (password is 12345678 by default)

5.1 Mac or Linux Users

- Open terminal

  $ ssh root@192.168.3.1

  – password is: onioneer by default

5.2 Windows Users

Note: to do this you must have PuTTy installed

- Open PuTTy
- Under host name or ip address put 192.168.3.1 and then press Open
- username is: root
- password is: onioneer by default

The filesystem on the omega is within the folder '/' to get there run this command:

```
$ cd /
```

6 Troubleshooting USB-Stick

SSH to the omega
Make sure it is formatted to either exFat or Fat32

- If /tmp/mounts does not exit:

  ```
  $ ls /dev
  ```

- At this point you should see something similar to sda1 in the directory if so follow the rest of this

  ```
  $ mkdir /usb
  $ mount /dev/sda1 /usb
  ```

- This will mount the usb drive to the folder /usb which we have just made

  ```
  $ cd /usb
  $ ls
  ```

- you should see the contents of your usb stick here