HOMEWORK 1

CS 444 Spring 2017 Team 11-06

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Abstract

This is the first group assignment of CS 344. We have started the project, but need to complete before abstract can be finished.

Contents

I. Assignment Description

II. Command Log and Descriptions

These commands were entered in the tcsh shell on the os-calss.engr.oregonstate.edu

```
1 mkdir 11-06
2 chmod 777
3 git clone git://git.yoctoproject.org/linux-yocto-3.14 to get the yocto build
4 chmd 777
5 git checkout 'v3.14.26'
6 cp .config /scratch/spring2017/files/config3.14.26-yocto-qemu .config
7 make menuconfig
8 cp /scratch/opt/environment-setup-i586-poky-linux setup\_env
9 source setup\_env
10 make -j4 all
```

Once our Kernel was built, we needed to test it by running it on our virtual machine.The command for launching the VM and our kernel was supplied to us in the assignment. The following command was used:

```
1 qemu-system-i386 -gdb tcp::6606 -S -nographic -kernel bzImage-qemux86.bin -drive file=core-
    image-lsb-sdk-qemux86.ext3,if=virtio -enable-kvm -net none -usb -localtime --no-reboot --
    append "root=/dev/vda rw console=ttyS0 debug".
```

- "qemu-system-i386" - This is the QEMU invocation command. According to the documentation the expected format of the invocation is "qemu-syste-i386 [options] [disk_image]" [1]
- Option 1 "-gdb tcp::6606 -S" - This option is to enable gdb(gdb is the "GNU Debugger") on the the specified device. The device in this case is a TCP port. The port for our team was determined by using the base port umber of 5500, as instructed, plut the value of our team number. Our team is 1106, this gives us the port number 6606. Fianlly the -S switch tells QEMU to not start teh CPU until it is told to, by the gdb console. [1]
- Option 2 "-nographic" - This option simply tells QEMU to run in command line mode(No Graphical User Interface).[1]
- Option 3 "-kernel bzImage-qemux86.bin -drive file=core-image-lsb-sdk-qemux86.ext3" - Indicates to QEMU that a bzimage will be loaded and indicates an open file pointer for the file to load. [1]
- Option 4 "if=virtio -enable-kvm" - This flag tells QEMU that if the virtio is set, to enable the KVM(Keyboard, Video and Mouse control) for the endpoint. [1]
- Option 5 "-net none" - This flag indicates that the QEMU instance does not need to enable network support for the VM[1]
- Option 6 "-usb" - This flag enables the VM's USB driver.[1]

- Option 7 ”-localtime” - Sets the VM to use local system time[1]
- Option 8 ”–no-reboot” - Tells QEMU to exit instead of rebooting[1]
- Option 9 ”–append ”root=/dev/vda rw console=ttyS0 debug”.” - The This tells QEMU to redirect the serial port adn QEMU monitor to the console.[1]

Once the virtual machine was running, we needed to connect to it with GDB in order to continue the halted process. We opened a new shell, connected to os-class, and ran:

```
gdb
target remote localhost:6606
continue
```

then the qemu shell resumes its operations. We login as root, and use the uname command to display the version number.

REFERENCES

[1] “Qemu emulator user documentation.” http://download.qemu-project.org/qemu-doc.html#QEMU-PC-System-emulator. Accessed: 4/13/2017.