CS 1550

Week 4 – Setting up environment

for Project 2

Setting up environment for Project 2

- Last time we set the environment for **xv6** and compiled the code from source
- Now we will compile a **Linux** distro from source

Setting up environment for Project 2

1. First log to your **thoth.cs.pitt.edu** account
   - Command line
   - Terminal
   - PowerShell

Setting up environment for Project 2

1. First log to your **thoth.cs.pitt.edu** account
   - Command line
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   - PowerShell
2. Navigate to **/u/OSLab/**username
   - Copy linux source from /u/OSLab/original/linux-2.6.23.1.tar.bz2
     - **Run** cp /u/OSLab/original/linux-2.6.23.1.tar.bz2 .

Setting up environment for Project 2

3. Extract files locally
   - Run tar xfj linux-2.6.23.1.tar.bz2

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   - Run tar xfj linux-2.6.23.1.tar.bz2
4. Move into **linux-2.6.23.1/**
   - Run cd linux-2.6.23.1

Setting up environment for Project 2

3. Extract files locally
   - Run tar xfj linux-2.6.23.1.tar.bz2
4. Move into **linux-2.6.23.1/**
   - Run cd linux-2.6.23.1
5. Copy the .config file
   - Run cp /u/OSLab/original/.config .

Setting up environment for Project 2

3. Extract files locally
   - Run tar xfj linux-2.6.23.1.tar.bz2
4. Move into **linux-2.6.23.1/**
   - Run cd linux-2.6.23.1
5. Copy the .config file
   - Run cp /u/OSLab/original/.config .
6. Build linux source code
   - Run make ARCH=i386 bzImage

Setting up environment for Project 2

- Repeating from step **2** will give you a new environment
  - This will not be necessary unless you really need to

Setting up environment for Project 2

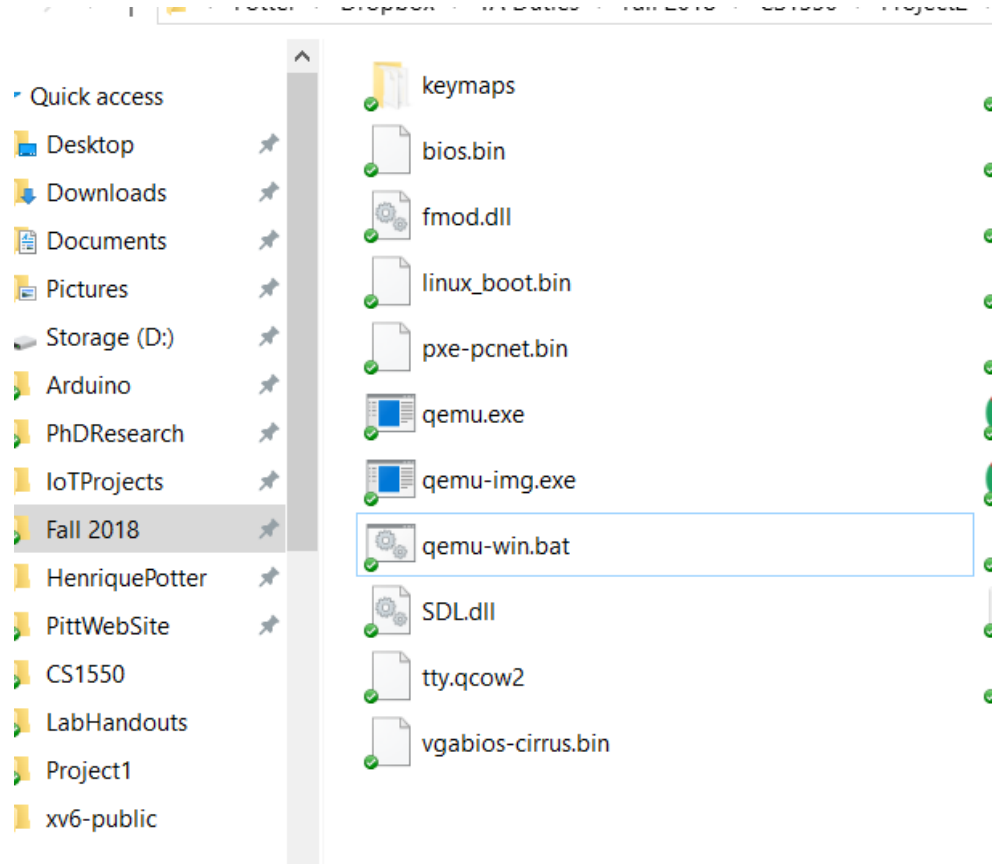
- To add the changes you will need to rebuild the Kernel
  - Run again make ARCH=i386 bzImage

Configuring Qemu

- We need a x86 version of Qemu (username and pass is **root**)
  - Windows Users
    - Download Qemu and a Image
  - Linux/Mac Users
    - Qemu-test

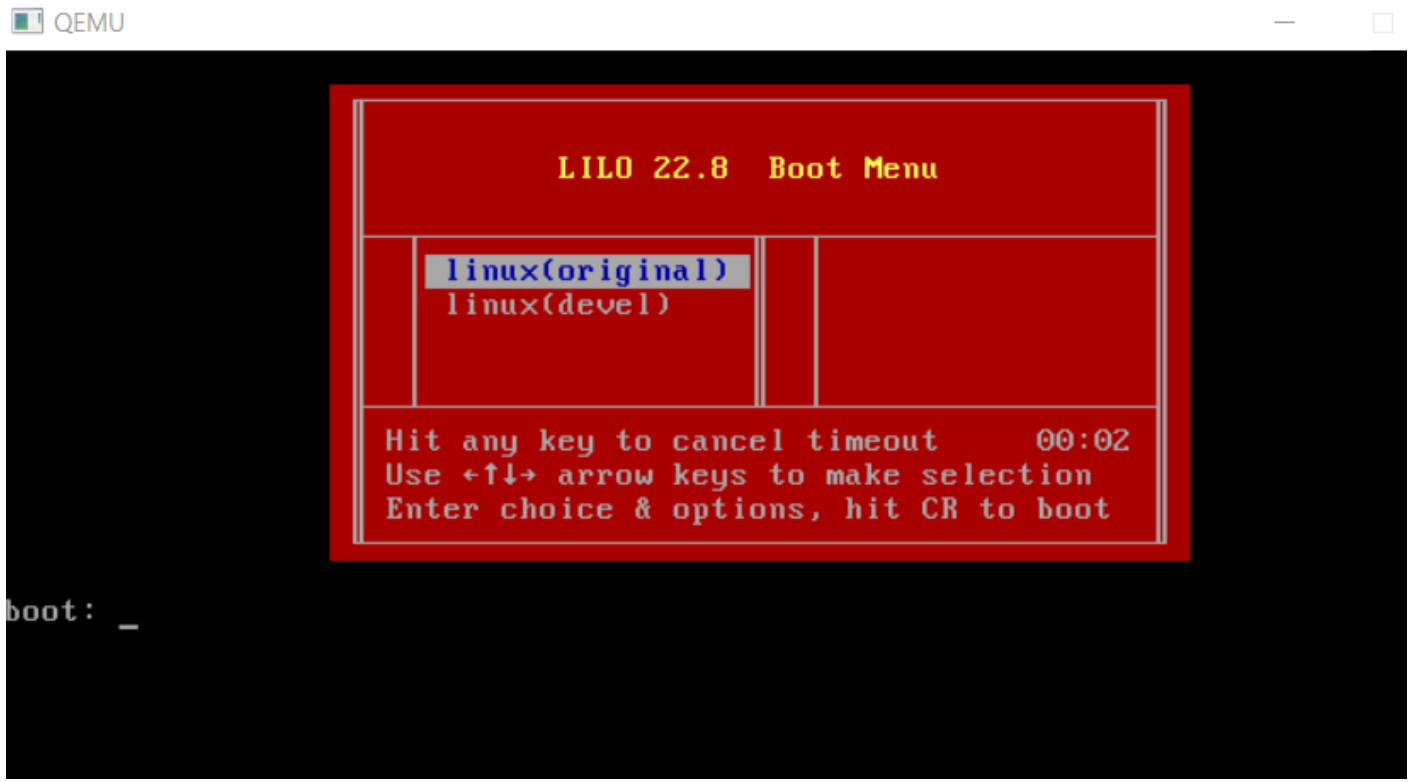
Configuring Qemu

- Unzip Qemu.zip and double-click/execute
  - qemu-win.bat



Configuring Qemu

- Choose Linux(original)



Copying files from Linux to Qemu

- Now we need two files from the Linux we just built
  - Kernel File **bzImage** from:
    - linux- 2.6.23.1/arch/i386/boot/
  - System call map **System.map** from:
    - linux-2.6.23.1/

Copying files from Linux to Qemu

- **FROM WITHIN THE NEW QEMU**

- Download the files from your compiled Linux:
  - scp USERNAME@thoth.cs.pitt.edu:/u/OSLab/USERNAME/linux-2.6.23.1/arch/i386/boot/bzImage .
  - scp USERNAME@thoth.cs.pitt.edu:/u/OSLab/USERNAME/linux-2.6.23.1/System.map .

Copying files from Linux to Qemu

- **FROM WITHIN THE NEW QEMU**

- Copy the files into the right folder
  - cp bzImage /boot/bzImage-devel
  - cp System.map /boot/System.map-devel

Copying files from Linux to Qemu

- After this run **li**nux **lo**ade command:
  - Run **lilo**
- This will relink the new modified kernel you just copied
- Then reboot the system with the command:
  - Run **reboot**

Copying files from Linux to Qemu

- You will change to **linux(devel)** kernel
  - So to see changes always remind to choose it when opening Qemu