

Project 0—Open Source OS and Visualization Appliances
(Due date: Thursday, 9/17/2009)

Your name:	Date:
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Practice with Open Source Operating Systems (Ubuntu) and Virtualization Appliances (VMware Player):

1. (Before you start, check your computer system configuration. You need at least 6 GB on your hard drive to install the application packages on your computer with at least 512 MB or 1 GB memory).
2. Download the VMware Player at <http://www.vmware.com/download/player/> . (Using the latest version VMware Player 2.5.2. Before going to download, you need to fill out a General Info form which will take about 1~2 minutes).
3. Download a virtual machine containing Ubuntu 8.0.4.1. You can find hundreds or thousands of virtualization appliances at <http://www.vmware.com/appliances/> .
 - a. **Ubuntu 8.0.4.1 Desktop** is at
 - i. <http://chrysaor.info/?page=ubuntu> (linked to here from VMware site).
 - b. Read the webpage (or print that page) description about this appliance:
 - i. The most important: write down **Username and Password** (which are *user* ; if you download different package, it may have different ones).
 - ii. You need them after you have installed and booted Ubuntu on your computer!
 - c. You may need to fill in another registration form.
 - d. You will have to use **Bittorent** to download it.
 - e. Ubuntu 8.0.4.1 Desktop is a **7-zip file of nearly 1 GB**.
 - f. (save this file on a drive that has at least 6GB free space and don't move it to another place; otherwise, when you boot this Ubuntu/VMware appliance, you will be asked to answer some questions.)
 - g. (Extract the zipped file).
4. Install the VMware Player.
5. **Boot the virtual machine (Ubuntu) within VMware Player.**
 - a. After you have installed VMware Player and extracted Ubuntu appliance, you can start up Ubuntu by clicking on Ubuntu Appliance icon.
 - b. Now you have Ubuntu OS running on your PC as a **virtual machine!**
 - c. **All the operations related with this project should be done within the Ubuntu OS instead of the host OS** (i.e., Windows), unless you take some screenshots and work on your project write-up. (Of course, you can use your host OS for your assistance.)
 - d. Learn how to use software packages on Ubuntu platform, such as:
 - i. The internet browser, Firefox,
 - ii. OpenOffice Write (Word), Presentation...
 - iii. Graphics tools, i.e., Gimp,
 - iv. Games,
 - v. And particularly, the **Command Line Interface (CLI)**—Terminal:
 1. Click on the **Applications** (UpperLeft corner);
 2. Select **Accessories**;
 3. Select **Terminal**.

6. Open a CLI/Terminal and obtain the Ubuntu Linux **Kernel version number** by
 - a. Using command “uname -a”
 - b. (I got the following from my machine with “**uname -a**”: “Linux ubuntu8041 2.6.24-19-generic #1 SMP Fri Jul 11 23:41:49 UTC 2008 i686 GNU/Linux”).
7. Get the source code of the kernel release of the your Ubuntu version (or the closest version to your Linux kernel; you may have different one than mine.) from the Linux Kernel webpage (<http://www.kernel.org/pub/linux/kernel/>):
 - a. You can use Firefox (inside the Ubuntu) or use wget command to download the source code file.
 - i. A good idea: use Firefox to find its path and then try to use wget.
 - ii. If using Firefox, the downloaded file will be on the Desktop (you can access this directory from your User-root place); if using wget, the downloaded file should be in the place where you issued the command wget.
 - b. Practice according to the following steps:
 - i. Create a “temp” dir by using “mkdir temp”
 - ii. And then enter that dir by using “cd temp”
 - iii. Then I typed command “**wget**
http://www.kernel.org/pub/linux/kernel/v2.6/linux-2.6.24.7.tar.bz2”
To download that kernel (compressed in bz2) file.
 - iv. To decompress/extract this file, use the following commands:
 1. “bunzip2 linux-2.6-24.7.tar.bz2” to get a tar file
 2. “tar xf linux-2.6.24.7.tar” to extract
8. Explore the source code of the Ubuntu kernel you just extracted:
 - a. I entered into kernel dir with “cd linux-2.6.24.7/kernel/”
 - b. And then I display the file “configs.c” by typing “less configs.c”
 - c.

Project Submissions—*Only one* electronic file in PDF or Word format is required to be sent by email to the instructor and it should contain the following items (The email subject should be like “CSC280 Project#0” and the file name should be like “project0_YourLastName”):

1. A cover page with course title/number, your name, project title, project completed date, and anything that you think is funny/amusing (optional)...
2. Open a CLI terminal and make it long enough (do NOT have to be very wide) such that the results of the following commands can be shown within the CLI. Type the following commands and then take screenshot of this CLI with all the results inside.
 - “date”
 - “cd”
 - “pwd”
 - “ls”
 - “mkdir csc280”
 - “cd csc280”
 - “ls”
 - “ls .. -l > listParentFiles.txt”
 - “ls -la”
 - “more listParentFiles.txt”
 - “rm listParentFiles.txt”
 - “ls”
 - “cd ..”
 - “date”
 - **(If one screenshot is too small for the results to be read clearly, you need to take 2 screenshots)**
3. A screenshot showing that you are using OpenOffice Word.
4. A screenshot of any game(s) you are playing with the Ubuntu.
5. A screenshot showing you are using Gimp.
6. A C++ programming running result:
 - a. Open a CLI/Terminal, and go to “csc280” directory.
 - b. Create a hello.cpp file with the following contents (you may use “**gedit**” command):


```
// This program justs displays a string and exits
#include <iostream>

int main()
{
    std::cout << "Hello World!";
    std::cout << std::endl;

    return 0;
}
```
 - c. Type “date”
 - d. Type “g++ hello.cpp” and then “./a.out” to display the result.
 - e. Type “ls -l”
 - f. Type “date”
 - g. **Take a screenshot** of this CLI/Terminal that shows the above *c, d, e, f* steps.
7. For **bonus**:
 - a. Using “**vi**” to create/edit the “hello.cpp”
 - b. Write a C/C++ program (at least 80 lines of code excluding comments and blank lines). Compile, execute it and record the results. Submit the code with a write-up to describe your code.