OSYS 1000 Final Project

**UNIX**

**In Class Check Due: Wednesday, Apr. 24, 2019 (in class)**

**Write-Up Due: Thursday, Apr. 25, 2019 @ 4:30 p.m. (via Brightspace)**

# Instructions

1. This project involves installing a distribution of Linux not covered in class (i.e. NOT CentOS/Mint) in a VMWare Virtual Machine, configuring it as requested, and installing/activating and configuring some useful services on the installation.
2. The entire project is marked out of 50 points but will be worth 20 points overall.
3. **We will be documenting the installation procedure with key screenshots so be sure to capture these as you go, or perform one installation for testing purposes and go back and repeat it to document it. To keep the file size of the write up down so you can post it to Brightspace, you might want to pass screenshots through image editing software like MS Paint or Photoshop to save screenshot images as JPEGs to save space.**
4. You are probably better off with a major Linux distribution such as ***Ubuntu***, ***Debian***, ***Fedora***, ***OpenSUSE,*** ***Slackware***, ***FreeBSD***, etc. The major distributions will be generally far better supported and documented than smaller distributions. See <http://distrowatch.com> and click on the Major Distributions link for some descriptions of the various distributions. If you don’t have a strong preference or desire to learn another distribution, then ***Fedora*** is a good bet as it is very popular and similar to CentOS.
5. **The virtual machine should have your first name as the hostname.**
6. The virtual machine should have a large enough hard disk set to allow for the following partitioning. Any default partitions particular to the Linux distribution you choose can be left as-is but the following partitions must be set as requested:
   * 1. swap -> 2.5 Gb
     2. /data -> 10 Gb
7. The virtual machine should be set up to boot into a terminal with the GUI only starting when explicitly launched. So, we want a GUI but not one that launches automatically.
8. The virtual machine should have either VMWare Tools or Open VM Tools installed.
9. Have all tasks and configuration options completed so that you can go through the checklist. In particular, make sure to have the **script file** mentioned above steps 3.a – 3.g completed and **ready to execute**.
10. In the services section, the recommended potential additional server services that can be set up are: **SSH**, **VNC**, **Samba**, **NFS**, and **FTP**. You must configure **at least 2 of these services for full marks on the project in addition to the required NGINX**. If you happen to choose a Linux distribution that has one or more of these running by default, then it will be your lucky day. **If there is a service that you would like to try that is not mentioned above, then you must clear it with the instructor first.**
11. The checklist for the installation and services **will be done in class before the deadline**. The write-up can be submitted to **Brightspace** before the deadline.
12. THINGS MAY GO AWRY –FULL BACKUPS OF YOUR VIRTUAL MACHINE DIRECTORY ARE HIGHLY RECOMMENDED AFTER YOU GET THE BASIC INSTALLATION FINISHED AND BEFORE YOU BEGIN SETTING UP THE CONFIGURATION AND ADDITIONAL SERVICES.

**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Student ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Linux Distribution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| Item # | Item Description | Student has completed (Y/N)? |
| Basic Installation and Configuration (15 points total – 1 point each item) | | |
| - | Have a different flavour of Linux installed and configured in a VMWare Virtual Machine as per the instructions above and so that you can go through the steps below. |  |
| 1. | Power on the new VMWare Virtual Machine. It should boot into a terminal as per point 7 in the description on the first page. | sh finalproject.sh  or bash ~~~~ |
| 2. | When presented with a login screen, log in as a **non-root user**. |  |
| - | Have an executable shell script file created to perform the actions below. The script will be called with a switch plus two arguments, which will be the **file** to write all of the output to in steps 3.b – 3.g and the **folder** to archive in step 3.g. The script will be executed from your home directory but must run out of a subfolder included in your PATH. Each task should be separated with “++++++++++++++++++++++++++++++++++++++++++++++++++++++++” lines **in the output file.** | Sep=”++++++” |
| 3.a | The script will have comments at the top with your username and ID. |  |
| 3.b | The script will output full system information including the hostname redirected to the file specified in the **2nd** argument. | ps -ef | grep `whoami` > $1.txt |
| 3.c | The script will output the currently mounted file systems with the output appended to the same file. | Mount >> $1.txt |
| 3.d | The script will output the current run level appended to the same file. | runlevel >> $1.txt |
| 3.e | If the script is run with a “-p” switch, it will output the current PATH variable to the same file. If it is run with a “-s” switch, it will output the current SHELL. For any other switch it will report an “illegal switch”. | If [ “$1” = “-p” ]  Then  Realpath $2  Elif [“$1” = “-s” ]  Then  Echo $0  Else  Echo “illegal switch”  fi |
| 3.f | The script will output a full listing of your home folder to the same file. | Ls -la / ~ >> $2.txt |
| 3.g | The script will archive and compress a folder specified by the instructor as the **3rd** argument of the script to a tar.gz file in verbose mode with output redirected and appended to the same file. \***Use a function for this\*.** | fn()  {  Sudo tar -zcvf $1.tar.gz $2  }  Fn $2 $3 |
| 4. | Become the root user in the terminal. | Su |
| 5. | Become a second non-root user (that you have already created) in the terminal. Sudo useradd osys1001 | Su osys1001 |

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| --- | --- | --- |
| 6. | Verify that the user has a different default group set than your other non-root user with a full listing of their home directory. | Ls -la / ~ |
|  | Switch to a runlevel with the GUI running or launch the GUI in the current one and log in as a non-root user. |  |
| 7. | Launch a Web Browser and hit a site specified by the instructor. **So, you will need to have network connectivity working.** |  |
| 8. | Use either a graphical utility or the command line to show the system has been partitioned as requested in point 5 in the description on the first page. |  |
| 9. | Demonstrate that VMWare Tools is installed. |  |

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| Item # | Item Description | Student has completed for NGINX (Y/N)? | Student has completed for Service 2 (Y/N)? | Student has completed for Service 3 (Y/N)? |
| - | Service Name |  |  |  |
| 1. | Demonstrate that the service is currently running on the system. |  |  |  |
| 2. | Demonstrate that the Service is properly installed, configured, and not blocked by any firewall (Firewall must be running for full points) by **testing it from a client** (i.e. on the Host Windows OS).  (2 points) |  |  |  |
| 3. | Demonstrate that you modified one setting from the default. |  |  |  |
| 4. | Demonstrate the service is set up to run on system startup. |  |  |  |

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| **OSYS1000 - Final Project Rubric**  Write Up | | | | |
|  | **Developing** | **Competent** | **Professional** |  |
| **Write Up - Overall**  Formatting | Developing (0 -1 pts.)  A minority of the following are present in the document:  Cover page  Table of Contents  Appropriate Headers/Subheaders for Each Section  Evidence that Spell Check has been run  Page numbers  Headers & Footers - but not on the cover page  Readable text alignment, font, and paragraph spacing | Competent (2 – 4 pts.)  A majority of the following are present in the document:  Cover page  Table of Contents  Appropriate Headers/Subheaders for Each Section  Evidence that Spell Check has been run  Page numbers  Headers & Footers - but not on the cover page  Readable text alignment, font, and paragraph spacing | Professional (5 pts.)  All of the following are present in the document:  Cover page  Table of Contents  Appropriate Headers/Subheaders for Each Section  Evidence that Spell Check has been run  Page numbers  Headers & Footers - but not on the cover page  Readable text alignment, font, and paragraph spacing |  |
| **Write Up - Content**  Installation Steps | Developing (0 -1 pts.)  Installation/configuration procedure of the Linux Distribution incompletely documented. | Competent (2 – 4 pts.)  Installation/configuration procedure of the Linux Distribution documented so fairly tech-savvy users can follow it. | Professional (5 pts.)  Installation/configuration procedure of the Linux Distribution clearly documented so even relatively non-technical users can follow it. |  |
| **Write Up - Content**  Service Setup Steps | Developing (0 -1 pts.)  Installation/configuration procedures of the three core project services incompletely documented. | Competent (2 – 4 pts.)  Installation/configuration procedures of the three core project services documented so fairly tech-savvy users can follow them. | Professional (5 pts.)  Installation/configuration procedure of the three core project services clearly documented so even relatively non-technical users can follow them. |  |
| **Write-Up - Content**  Screen Shots | Developing (0 -1 pts.)  Screen shots were not used to any effective degree. | Competent (2 – 4 pts.)  Moderately effective and frequent use of screen shots to demonstrate set up steps of both the OS installation and the services. | Professional (5 pts.)  Completely effective and frequent use of screen shots to demonstrate set up steps of both the OS installation and the services.   Screen shots included to show successful use of each of the three core project services from a client. |  |
| **Student ID:** | Student Name: | Write Up Total  ( / 20) | Project Total  ( / 50) |  |
| **Comments:** | | | | |