Assessment – Operating System Diagnostics

Read the “Tutorial – Operating System Diagnostics.docx” for more information on completing this assessment, including steps to:

* Update Software Packages,
* Perform Disk Maintenance,
* Managing User Accounts and Permissions,
* Installing new software.

***Complete this document and submit as part of your final assessment. Include screenshots of your work as evidence.***

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## Installing Virtual Box (Optional), installing pre-configured VMs.

1. Write down the steps taken to install VirtualBox on a host machine. Take screenshots of the process. NOTE: VirtualBox is installed on AIE computers. Only complete this section if VirtualBox is not installed on your device.
2. Describe the process you performed to install pre-configured Virtual Machines into VirtualBox and starting up the VMs.
3. Take screenshots of the process to install Virtual Box and pre-configured VMs.

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| Already installed on AIE computer. |

## Updating an Operating System

1. Describe the process taken to update the OS on the Virtual Machine.
2. Explain what the “apt list --installed” command does in Linux.
3. Explain what the “apt-get” command does in Linux, and what the “update”, “upgrade” and “dist-upgrade” options are when used with the “apt-get”.
4. Explain what does the “sudo” command does on Unix-based systems (like Linux)?
5. Take screenshots of the process used to update the Linux Mint OS.

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| To update the OS on the Virtual Machine, firstly you open the Terminal from the Menu. Type “apt list –installed” to see which installed packages are out-of-date. Then you can type “man apt-get” to check what commands there are to manage installed and downloaded packages on the Linux system. To complete an update, you will need to type “sudo apt-get update” followed by the admin password. Once the update has finished, type “sudo apt-get dist-upgrade” followed by the admin password to ensure that the installed software packages are all up to date.    The “apt list –installed” command lists all packages that have been installed.  The “apt-get” command is used by Linux to manage installed and downloaded packages on your Linux system. Packages are technically a downloadable chunk of software, like an application.  “update” – used to resynchronise the package index files from their source.  “upgrade” – used to install the newest versions of all packages currently installed.  “dist-upgrade” – performs the function of upgrade and intelligently handles changing dependencies with new versions of packages.  The “sudo” command allows you to run any Linux command with elevated privileges which are required to perform certain administrative tasks. The “sudo” prefix will usually require a password. |

## Installing Software

1. Describe how to *install software* using **at least one (1)** *Administration tool* in Linux Mint.
2. Select a software package (not mentioned in the tutorial) and install it into the VM.
3. Explain your choice of installed software, what it is and why you chose it.
4. Take screenshots of the process used to install new software on Linux Mint.

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| Open the Synaptic Package Manager from the Administration Window, wait for the package manager to update its database, navigate to section you want e.g. Games and Amusement, check the desired game to install e.g. Sudoku, hit apply button, confirmation window appears, check settings and commence the installation by clicking “Apply” again. Once installation is complete, open the Sudoku program from the menu.      I chose to install Sudoku because it is a simple fun game to kill time. |

## Scheduling Backups

1. Describe the process taken to schedule a regular backup on Linux
2. What are the “**crontab”** & “**tar”** commands used for on Unix-based machines?
3. What’s the ***Archive Utility*** used for?
4. Take screenshots of the process used to schedule regular backups on the Linux Mint OS.

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| Open terminal, type “man crontab” to learn more about the crontab utility. Type “crontab -l” to list your current scheduled commands (should be nothing scheduled). Type “crontab -e” to edit new schedule, you will be asked which editor to use -select the default (Nano).    Scroll to the bottom of the file. Add “00 22 \* \* \* tar -zcf ~/Desktop/backup.tgz ~/Home/” to the end of file to schedule a backup of your Home folder each night at 10:00pm. Can change the first two numbers to schedule a different time each day. Press Ctrl-O keys to save file, the press Enter to select the default filename. Press Ctrl-X keys to close the editor. After successfully creating the scheduled backup file, open the resulting .tgz file using the Archive Utility by double-clicking the file.    The “crontab” command is used to schedule commands to be executed periodically. The “tar” command is used to create compressed archives which represent a file or collection of files.  Archive Utility is a tool used for opening/compressing files in a similar way to 7-Zip or WinZip on windows. |

## Maintaining the file system

1. Describe **one (1) tool** used to *analyse the file system* on Linux Mint and how to use it.
2. Explain what the “sudo apt-get clean” and “sudo apt-get autoclean” commands are used for.
3. Take screenshots of the process used to maintain & record diagnostics for the Linux Mint OS.

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| Open Disk Usage Analyser Tool from the Menu. Select the /Home folder to examine its contents. Right-click on the .cache folder and select “Move to rubbish bin” to clear the temporary cache. Next, open up the Terminal, type “sudo apt-get clean” then “sudo apt-get autoclean” commands to clean any unused packages.    The “sudo apt-get clean” command clears out the local repository of retrieved package files.  The “sudo apt-get autoclean” command is the same as the clean command but only removes files that can no longer be downloaded and are virtually useless. |

## Managing the network

1. Describe **two (2) tools** used to *manage the network* on Linux Mint.
2. Explain what the tools are used for and how to use them to manage the system network.
3. Take screenshots of the process used to manage/maintain/secure the network for the Linux Mint OS.

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| Domain Blocker – used to restrict access to certain websites.  Open the “Domain Blocker” tool from the Administration menu. Click the “Add” button to block a new domain. Enter any URL you’d like to test. Test the domain in the “admintest” account by opening a browser in the VM (e.g. Firefox) and navigating to the blocked domain. You should receive an error like the screenshot.    Firewall Tool - is used to block incoming connections at specific network port numbers.  Open the “Firewall tool from the Administration Menu. The firewall tool uses profiles to store settings for different scenarios. Change the Firewall profile from Home to Public. Reject all connections. Your settings should look like the screenshot. Now test the internet connection by browsing to any website in the VM. Use the “Log” and “Report” menus to examine details about the recent connection attempts. |

## Creating User Accounts

1. Describe the process to create/remove new users on Linux Mint.
2. Take screenshots of the process used to create/administer Users on the Linux Mint OS.

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| Open the “Users and Group” tool from the Administration menu. Press the “Add” button, then enter details for your new user. The new account type is set to “standard”, doesn’t allow user to have administrator privileges. Select the new user, click the “No password set” button and change their default password. Logout the system. Login using the new user’s details. While logged in as the test user try using Firefox and browsing to the website that you previously blocked in the admintest account. |

## Explore other Administration Tools

1. Select **one (1) other Administration tool** from the ***Administration menu*** (one we haven’t discussed yet)
2. Describe what the tool is for, and how to use it.
3. Take screenshots of the process.

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| Login Window – This tool is used to adjust the login window preferences  Open “Login Window” tool from the Menu. Pick a theme, change the colour and add a custom message to the login window. Select the “Auto login” option, you can enable auto login or enable a timed login for certain accounts. Select the “options” tab, this gives you access to various options to adjust for user preferences (e.g. 24 hour clock), log debug info and limit/filter session outputs. |