Tutorial 1 – Introduction to Linux
Disclaimer: Subject to updates as corrections are found
Version 0.10
Scoring: 20 pts maximum

The purpose of this tutorial is to introduce the Linux operating system and BASH scripting environment. Open source distributions of the Linux operating system such as Ubuntu and CentOS are broadly used in cloud computing as the guest operating system on virtual machines (VMs) and as the host operating system for cloud services. The use of Linux provides cost savings as there are generally no licensing costs involved with launching VM instances in the cloud. This enables tremendous savings when the number of VM instances must be scaled up for application hosting (e.g. 100 VMs). Linux has even become quite popular on the Microsoft Azure cloud.

Recent article describing Microsoft adoption of Linux on the Azure cloud:
https://www.zdnet.com/article/linux-now-dominates-azure/

Linux is the preferred environment to work with Cloud provider APIs (from AWS, Azure, Google, etc.)

To complete this tutorial, first establish access to a Ubuntu Linux environment by installing a local Ubuntu Virtual Machine.

The recommended approach is to install Oracle VirtualBox (free), and then download Ubuntu 20.04 LTS (iso file) to create a Ubuntu Virtual Machine.

Oracle VirtualBox can be downloaded here:
https://www.virtualbox.org/

The Ubuntu 20.04 LTS ISO file can be downloaded here:
https://releases.ubuntu.com/20.04/ubuntu-20.04.1-desktop-amd64.iso (2.6 GB)

The LIVE installation media is smaller. This ISO file is "bootable" so the system will start up using this image. You can then install Ubuntu over the internet using this ISO file where only the necessary components you select will be downloaded:
https://releases.ubuntu.com/20.04/ubuntu-20.04.1-live-server-amd64.iso (914 MB)

Another approach is to obtain Ubuntu using a bit torrent stream by downloading:
https://releases.ubuntu.com/20.04/ubuntu-20.04.1-desktop-amd64.iso.torrent (208K)

If unfamiliar with BitTorrent, a popular mechansim for downloading and sharing of large files read the wikipedia page here:
https://en.wikipedia.org/wiki/BitTorrent

If wanting additional help on how to install Oracle Virtual Box, try searching the internet for installation instructions using search engines such as bing or google, or try finding a video at video.google.com.

Here are two helpful **videos**:

Introduction to Oracle VirtualBox for creating Virtual Machines:
https://www.youtube.com/watch?v=sB_5fqiysi4

Installing Ubuntu 20.04 on Windows 10 Oracle VirtualBox
https://youtu.be/x3Zpe1rIPFE

And here are instructions for installing Ubuntu 20.04 on Oracle VirtualBox:

Generic instructions for a Windows/Mac/Linux Host:
https://fossbytes.com/how-to-install-ubuntu-20-04-lts-virtualbox-windows-mac-linux/

Linux-specific instructions for a Linux Host:
https://linuxconfig.org/how-to-install-ubuntu-20-04-on-virtualbox

Instructions including how to install Guest Additions:
https://linuxhint.com/install_ubuntu_virtualbox_2004/

When working with Virtual Machines, the base operating system (e.g. Windows 10) on your laptop that hosts the virtual machine is called the **host operating system.** The operating system used by the VM is called the **guest operating system.**

Many people will use the following configuration:
Guest operating system (VM) = Ubuntu 20.04 LTS
Host operating system = Windows 10 or Mac OSX

Once your VM is installed, it is highly recommended to install the Ubuntu 20.04 VirtualBox "Guest Additions". These guest additions provide important features such as sharing clipboards between the host and the guest, as well as file system sharing, and mouse pointer integration. For instructions on installing the guest additions here is an article:

https://linuxconfig.org/virtualbox-install-guest-additions-on-ubuntu-20-04-lts-focal-fossa

Please do yourself a favor, and do not go the entire quarter without installing the guest additions.

Leveraging your newly created Linux VM, please review sections 1 – 12 of the online Linux tutorial:
<div align="center">

Linux Tutorial – Learn the BASH command line:
https://ryanstutorials.net/linuxtutorial/
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While reviewing the tutorial, try practicing some of the commands described.

After reviewing the tutorial, complete an online quiz on Canvas that is based on the online tutorial. Those already familiar with Linux may be able to skip the tutorial or review just some portions to complete the online quiz.

Tutorial Sections include:

1. The Command Line
2. Basic Navigation
3. More About Files
4. Manual Pages
5. File Manipulation
6. VI – Text Editor
7. Wildcards
8. Permissions
9. Filters
10. Grep and regular expressions
11. Piping and Redirection
12. Process Management

At the conclusion of the online Linux tutorial, please complete the tutorial 1 quiz on Canvas for TCSS 562.