IT ESSENTIALS V. 4.1

Module 5

Fundamental Operating Systems

5.0 Introduction		
1.	What controls almost all functions on a computer?	The operating system
5.1 Explain the purpose of an operating system		
2.	What are the roles of an operating system?	Control hardware access Manage files and folders Provide user interface Manage applications
5.1.1 Describe the characteristics of modern operating systems		
3.	What is a device driver?	A small program written by the hardware manufacturer and supplied with the hardware component
4.	What is PnP?	Plug and Play
5.	What does PnP do?	Operating system automatically detects the device and installs the driver for that component
6.	What is contained in the registry?	Information about application, users, hardware, network settings, and file types
7.	What is a file?	A block of related data that is given a single name and treated as a single unit
8.	What is the difference between a directory and a subdirectory?	A subdirectory is inside a directory
9.	What are the two types of user interfaces?	CLI – Command Line Interface GUI – Graphical User Interface
10.	What is an application?	Software programs
11.	What is API (Application Programming Interface)?	A set of guidelines used by programmers to ensure that the application they are developing is compatible with an operating system
12.	What are two examples of API's?	Open GL (Open Graphics Library) DirectX
13.	What is meant by multi-user?	Two or more users can work with programs and share peripheral devices at the same time
14.	If the computer is capable of operating multiple applications at the same time it is called?	Multi-tasking
15.	What is multi-processing?	The computer can have two or more CPUs that programs share
16.	What is multi-threading?	Programs can be broken into smaller parts that can be loaded as needed by the operating systems

17.	What is referred to as mode of operation?	The capability o the PCU and the operating environment
18.	What does the mode of operation determine?	How the CPS manages applications and memory
19.	What are the four common modes of operation?	Real mode Protected mode Virtual real mode Compatible mode
20.	What memory type has logical memory allocation of 0 to 640 KB?	Conventional
21.	What is the logical memory allocation of extended memory?	1 MB to the maximum amount of RAM installed
22.	How many programs can a CPU operate in real mode?	One
23.	What is virtual memory?	Hard disk space that is used to emulate RAM
24.	What size operating system is used by protected mode?	32-bit
25.	What happens when a CPU operates in virtual real mode?	A real-mode application runs within a protected-mode operating system
26.	What does compatibility mode do?	Creates the environment of an earlier operating system for applications that are not compatible with the current operating system
27.	What happens if you override the User Account Control?	This allows an application to be run even if the user does not have the required administrative privileges
28.	What DOS command displays the contents of a directory?	Dir
29.	What DOS command copies flies and subdirectories?	Xcopy
30.	What is the command to make a directory?	Md
31.	What does the DOS command CD do?	Changes to a specified directory
32.	What are the three main differences between a 32-bit and 64-bit operating system?	1. 32-bit can address only 4 GB of RAM 64-bit can address more than 128 GB of RAM 2. Memory management is different. 64-bit programs have enhanced performance 3. 64-bit has additional security features
33.	What is Kernel Patch protection?	Third-party drivers cannot modify the kernel
34.	What does mandatory driver signing do?	Unsigned drivers cannot be used
35.	What are the two common architectures used by CPUs to process data?	X86 (32-bit) X64 (64-bit)
36.	What is a register?	Storage areas used by the CPU when performing calculations
5.2 Describe and compare operating systems to include purpose, limitations and compatibilities		

37.	What determines the type of operating system selected?	The customer's requirements for the computer
38.	What are the two types of operating systems?	Desktop; network
5.2.1 Describe desktop operating systems		
39.	What are the characteristics of a desktop operating system?	1. Supports a single user 2. Runs single-user applications 3. Shares files and folders on a small network with limited security
40.	What are the three groups of the most commonly used desktop operating systems?	1. Microsoft Windows 2. Apple Mac OS 3. Unix/Linux
41.	Which operating system is the oldest?	Unix
42.	Who developed Linux?	Linus Torvalds
43.	What is meant by open source?	The source code can be distributed and changed by anyone as a free download or from other developers
5.2.2 Describe network operating systems		
44.	What are the characteristics of a network operating system?	1. Supports multiple users 2. Runs multi-user applications 3. Is robust and redundant 4. Provides increased security
45.	What are the most common network operating systems?	Microsoft Windows Novell Netware Linux/Unix
46.	What is the central database that is used to manage network resources in Windows?	Active Directory
Worksheet: NOS certifications and jobs		
5.3 Determine operating system based on customer needs		
5.3.1 Identify applications and environment that are compatible with an operating system		
47.	What determines which operating systems are compatible?	The network type
48.	What must you do before making an operating system recommendation?	1. Review budget constraints 2. Learn how the computer will be used 3. Determine which types of applications will be installed
5.3.2 Determine minimum hardware requirements and compatibility with the operating system platform		
49.	What are the minimum hardware requirements for Vista ultimate?	1 GHz 32-bit or 64-bit processor 1 GB of system memory 40 GB hard drive with 15 GB of available space
50.	What are the minimum hardware requirements for Windows XP Professional?	233 MHz /300 MHz recommended 64 MB/128 MB recommended 1.5 BG available hard disk space

51.	What is a hardware compatibility list (HCL)?	A detailed inventory of hardware that has been tested and is known to work with the operating system
52.	Where might you find a HCL?	Manufacturer's website
Worksheet: Upgrade Hardware Components		
5.4 Install an operating system		
5.4.1 Identify hard drive setup procedures		
53.	What is the installation and initial booting of the operating system called?	Operating system setup
54.	What is the most common installation method for an operating system?	CDs and DVDs
55.	What happens when you partition a hard drive?	It is logically divided into one or more areas
56.	Where is the primary partition?	The first partition
57.	How many partitions can you have on a hard drive	Up to 4
58.	What is the active partition?	The partition used by the operating system to boot the computer
59.	How many extended partitions can you have on a hard drive?	1
60.	What is a logical drive?	A section of an extended partition that can be used to separate information for administrative purposes
61.	Why do you format a drive?	To prepare a file system in a partition to store filed
62.	What is a sector?	A fixed number of bytes - - usually 512
63.	What is a cluster?	A file allocation unit; the smallest unit of space used for storing data
64.	What is a track?	One complete circle of data on one side of a hard drive platter
65.	What is a cylinder?	A stack of tracks lined up one on top of another to form a cylinder shape
66.	What is drive mapping?	A letter assigned to a physical or logical drive
5.4.2 Prepare Hard Drive		
67.	What is the first phase of the installation process?	Partitioning and formatting the hard drive
68.	What does the file system provide?	The directory structure that organizes the user's operating system, application, configuration, and data files
69.	What are the two file systems used by Windows XP?	FAT – File Allocation Table NTFS – New Technology File System
Lab: Install Windows XP		
5.4.3 Install the operating system using default settings		
70.	What two installation options does the Windows XP install wizard give you?	Typical, custom
71.	What are the three options you get when	Setup XP

	Windows XP installation starts?	Repair XP Quit
72.	What is the Recovery Console?	A troubleshooting tool that can be used to create and format partitions, repair boot sector or Master Boot Record, and perform basic file operations on operating system files and folders
73.	What key do you press to quit setup without installing Windows XP?	F3
74.	What is a clean installation?	There is no existing Windows installation
75.	What does a repair installation do?	Fixes the current installation using the original files from the Windows XP installation disc
76.	What are the three options you get with the Windows Vista installation disk?	Upgrade, Custom, Quit
77.	If no Windows installations are found, which option is disabled?	Upgrade
5.4.4 Create Accounts		
78.	What is the default administrator account named?	Administrator
79.	How does the user account differ from the computer administrator?	User account has fewer permissions
5.4.5 Complete the installation		
80.	Why should you register your copy of Windows XP?	A legal copy enables you to download patches and service packs
81.	How do you access Windows Update in Windows Vista?	Start > All Programs>Windows Update
82.	What can you use to locate problems and to install the correct or updated drivers?	Device manager
83.	What does a yellow exclamation mark represent?	A problem with the device
84.	What does a red X represent?	Device has been disabled
85.	How do you enable a device?	Right click the disabled device and select enable
Lab: Create Accounts and check for updates in Windows XP		
5.4.6 Describe custom installation options		
86.	What tool can be used to install and configure the same operating system on multiple computers?	Microsoft System Preparation (Sysprep)
87.	What is disk cloning?	Creates an image of a hard drive of a computer
88.	What is a master installation?	The operating system, software applications, and configuration settings that will be used by the other computers in the organization
89.	Where are the Windows XP installation files found?	I386 folder on the installation disk
90.	What is the name of the Windows setup	Winnt.exe

	program?	
91.	When would you use a recovery disk?	When there has been a system failure and other recovery options have failed
92.	What does the Automated System Recovery (ASR) wizard do?	Creates a backup of the system state, services, and operating system components; creates a file that contains information about your disks, the backup, and how to restore the backup
93.	What key do you press to restore the ASR?	F2
94.	What is a factory recovery partition?	A partition on the disk that contains an image of the bootable partition that is created when the computer was built.
95.	How do you find out how to access the factory recovery partition and restore the original configuration of the computer?	Contact the manufacturer
5.4.7 Identify the boot sequence file and registry files		
96.	What is the boot sequence for Windows XP?	1. POST 2. Bios locates and reads configuration settings in CMOS 3. NTLDR reads BOOT.INI to now which operating system to load 4. NTDETECT.COM used to detect installed hardware 5. NTLDR loads NTOSKRNL.EXE and HAL.DLL 6. NTLDR reads registry files and loads device drivers 7. NTOSKRNL.EXE starts WINLOGON.EXE
97.	What is a cold boot?	Turing on the computer
98.	What is boot device priority?	The order in which devices are checked to see if an operating system is located there
99.	What is Windows registry?	Files followed by the name of the portion of the operating system under their control
100.	Which registry contains information about all users who have logged onto a system?	HKEY_Users
101.	Which registry contains information relating to all active devices on a system?	HKEY_Current_Config
5.4.8 Describe how to manipulate operating system files		
102.	What boot configuration utility allows you to set the programs that run at startup and to edit configuration files?	Msconfig
103.	How do you edit the registry?	regedit
104.	What utility displays a complete system summary of your computer including hardware components and details and installed software and settings	Msinfo32

105.	What command is used to execute command line programs and utilities?	Cmd
106.	What key do you press during the boot process to open the Windows Advanced Startup Options menu?	F8
107.	What drivers are loaded in safe mode?	Drivers for basic components such as keyboard and display
108.	What is loaded if you boot to last known good configuration?	The configuration settings of Windows that were used the last time that Windows started successfully
LAB: Managing System Files with built-in utilities in Windows XP		
5.4.9 Describe directory structures		
109.	How is the root level of the Windows partition labeled?	C:\
110.	What are the naming conventions for Windows files?	1. Maximum of 255 characters 2. Slash or backslash not allowed 3. Extension of 3 or 4 letters to identify file types 4. Not case sensitive
111.	What file extension indicates a graphics file?	Jpg
112.	What file extension indicates compression format?	zip
113.	What are the most common file attributes?	R, A, S, H
114.	What command will show filenames, extensions, and attributes?	Attrib
115.	How do you display a DOS window?	Start > Run > Type CMD Press Enter
116.	What are the differences between FAT 32 and NTFS?	Security, NTFS supports larger files
117.	How do you convert partitions from FAT 32 to NTFS?	Use convert.exe utility
Worksheet: NTFS and FAT 32 Questions		
5.5 Navigate a GUI		
5.5.1 Manipulate items on the desktop		
118.	What is a desktop?	A graphical representation of a workspace
119.	What allows you to manipulate files?	Icons, toolbars, and menus
120.	What is the default theme for Windows Vista?	Aero
121.	What is the sidebar in Windows Vista?	A graphical pane on the desktop that keeps small programs called gadgets organized
122.	What are gadgets?	Small applications
123.	How do you customize the Windows XP GUI of your desktop?	Right-Click Desktop; select Properties
124.	How do you access the start menu?	Click the start button
125.	What is included in the start menu?	All applications installed in the computer, a

		list of recently opened documents, and a list of other elements.
126.	What are the two styles of start menus?	XP and Classic
127.	How do you access the various drives installed in the computer?	Double-click the My Computer icon
128.	What do you click on to view and configure network connections?	My Network Places > Properties
Lab: Run Commands in Windows XP		
5.5.2 Explore Control Panel applets		
129.	What is the applet that controls the look of Windows?	Appearance and Themes
130.	What applet would you use to find information about your computer or perform maintenance?	Performance and Maintenance
131.	What is the part in order to change your wallpaper?	Start > Control Panel > Display > Settings Tab > Advanced
5.5.3 Explore Administrative Tools		
132.	What are the three main areas of administration addressed by the computer management consoler?	1. System tools 2. Storage 3. Services and applications
133.	What is necessary to access the computer management console?	Administrative privileges
134.	What does the task manager do?	Allows you to view all applications that are currently running and to close any applications that have stopped responding
135.	How do you access task manager?	CTRL – ALT – DEL
136.	What are services?	Executable programs that require little or no user input
137.	What allows you to manage all of the services on your computer and remote computers?	Services console
138.	Can anyone access the services console?	No, you have to have administrative privileges
139.	What does the system monitor display?	Real-time information the processors, disks, memory and network usage for your computer
140.	What logs a history of events regarding applications, security, and the system?	Event Viewer
141.	What allows you to organize management tools, in one location for easy administration?	MMC – Microsoft Management Console
142.	What is another name for management tools?	Snap-ins
143.	What is remote desktop?	Allows one computer to remotely take control of another computer
144.	What is the path to change the virtual memory setting in Windows XP?	Start > Control Panel > System > Advanced > Performance Area > Settings button

Lab: Managing Administrative Settings and Snap-ins in Windows XP		
5.5.4 Install, Navigate and uninstall an application		
145.	Why should you always use the Add or Remove program utility when installing or removing applications?	The utility tracks installation files so that the application can be uninstalled completely
Lab: Install Third Party Software in Windows XP		
5.5.5 Describe upgrading an operating system		
146.	What should you do before upgrading an operating system?	Check minimum requirements Check HCL Back up all data
147.	Can you always upgrade to a newer operating system?	No
148.	What does the Windows User State Migration Tool (USMT) do?	Migrates all of the current user files and settings to the new operating system
5.6. Identify and apply common preventive maintenance techniques for operating systems		
149.	What is included in preventive maintenance for an operating system?	Organizing the system Defragmenting the hard drive Keeping applications current Removing unused applications Checking system for errors
5.6.1 Create a preventive maintenance plan		
150.	What is the goal of an operating preventive maintenance plan?	To avoid problems in the future
151.	What are the benefits of preventive maintenance?	1. Decreased downtime 2. Improved performance 3. Improved reliability 4. Decreased repair costs
152.	What do firmware updates do?	Increase the speed of certain types of hardware Enable new features Increase the stability of a product
153.	What are service packs?	Downloads that contain multiple updates
5.6.2 Schedule a Task		
154.	What utility launches tasks at a specified time using a GUI?	Windows Task Scheduler
155.	How do you access the Windows Task Scheduler?	Start > All Programs > Accessories > System Tools > Scheduled Tasks
156.	Which utility checks the integrity of files and folders and scans the hard disk surface for physical errors?	Chkdsk
157.	What is a restore point?	An image of the computer settings
158.	When should a restore point be created?	1. Before updating or replacing the operating system 2. When an application is installed 3. When a driver is installed
159.	Does a restore point backup application data?	no

160.	What does a recovery disk contain?	The essential files used to repair the system after a serious issue
Lab: Restore Points in Windows XP		
5.6.3 Backup the Hard Drive		
161.	What determines how often the data must be backed up and the type of backup to perform?	The organization's requirements
162.	What is a normal or full backup?	All selected files on the disk are archived to the backup media. Files are marked as being archived by clearing the archive bit
163.	Does a copy backup mark the files as having been archived?	No
164.	What is a differential backup?	Backs up all files and folders that have been created or modified since the last normal backup or the last incremental backup. It does not mark files as being archived
165.	What is the difference between a differential and an incremental backup?	Incremental backup marks the file as having been archived by clearing the archive bit
166.	What is a daily backup?	Backups the files that are modified on the day of the backup
167.	What types of backup media are available for computers?	Tape drives, digital audio tape, digital linear tape, USB flash drive, optical media, external hard drive
Lab: Registry backup and recovery in Windows XP		
5.7 Troubleshoot operating systems		
5.7.1 Review the troubleshooting process		
168.	What is the first step in the troubleshooting process?	Identify the problem
169.	What are the other steps in the troubleshooting process?	Establish a theory of probable cause Determine an exact cause Implement a solution Verify solution and full system functionality Document findings
5.7.2 Identify common problems and solutions		
170.	What is the probable cause if your computers locks and/or displays a blue screen?	Computer is overheating Operating system files may be corrupt Incorrect driver installed Power supply, RAM, hard drive, or motherboard may be defective
Lab: Managing device drivers with device manager		