IT-Essentials I & II

CONCEPT: CERTIFICATION		
CRITICAL CONTENT	**ESSENTIAL UNDERSTANDINGS**	**PROCESS SKILLS**

CURRENT CERTIFICATION CRITERIA:
IT ESSENTIALS I
for CompTIA A+ (I) &
 	
IT ESSENTIALS II
for CompTIA's three job-environment certification exams. (II)
 	
Also, first three modules of the EUCIP IT Administrator certification:
Module 1 PC Hardware,
Module 2 Operating Systems,
Module 3 Local Area Networks and Network Services
	IT ESSENTIALS I
	Define information technology (IT) and describe the components of a personal computer
	
	Protect herself or himself against accidents and injury, protect equipment from damage, and protect data from loss
	
	Perform a step by step assembly of a desktop computer
		IT ESSENTIALS I
		1.1 Explain IT industry certification
		    1.1.1 Identify education and certifications 1.1.2 Describe the A+
		        certification
		    1.1.3 Describe the EUCIP certification
		1.2 Describe a computer system
		1.3 Identify the names, purposes, and characteristics of cases and power supplies.
		    1.3.1 Describe cases
		    1.3.2 Describe power supplies
		1.4 Identify the names, purposes, and characteristics of internal components
		    1.4.1 Identify the names, purposes, and characteristics of motherboards
		    1.4.2 Identify the names, purposes, and characteristics of processor/CPUs
		    1.4.3 Identify the names, purposes, and characteristics of cooling systems
		    1.4.4 Identify the names, purposes, and characteristics of ROM and RAM
		    1.4.5 Identify the names, purposes, and characteristics of adapter cards
		    1.4.6 Identify the names, purposes, and characteristics of storage drives
		    1.4.7 Identify the names, purposes, and characteristics of internal cables
		1.5 Identify the names, purposes, and characteristics of ports and cables
		1.6 Identify the names, purposes, and characteristics of input devices
		1.7 Identify the names, purposes, and characteristics of output devices
		1.8 Explain system resources and their purpose, IRQ, I/O Address, and DMA
		2.1 Explain the purpose of safe working conditions and procedures
		    2.1.1 Identify safety procedures and potential hazards for users and technicians
		    2.1.2 Identify safety procedures to protect equipment form damage and data from loss
		    2.1.3 Identify safety procedures to protect the environment for contamination
		2.2 Identify tools and software used with personal computer components and their purposes
		    2.2.1 Identify hardware tools and their purpose
		    2.2.2 Identify software tools and their purpose
		    2.2.3 Identify organizational tools and their purpose
		2.3 Implement proper tool use
		    2.3.1 Demonstrate proper use of an antistatic wrist strap
		    2.3.2 Demonstrate proper use of antistatic mat
		    2.3.3 Demonstrate proper use of various hand tools
		    2.3.4 Demonstrate proper use of cleaning material

	tower	3.1 Open the case
		3.2 Install the power supply
		3.3 Attach the components to the motherboard and install the mother board
		3.3.1 Install a CPU and a heat sink/fan assembly
		3.3.2 Install the RAM
		3.3.3 Install the mother board
		3.4 Install internal drives
		3.5 Install drives in external bays
		3.5.1 Install the optical drive
		3.5.2 Install the floppy drive
		3.6 Install adapter cards
		3.6.1 Install the NIC
		3.6.2 Install the wireless NIC
		3.6.3 Install the video adapter card
		3.7 Connect all internal cables
		3.7.1 Connect the power cables
		3.7.2 Connect the data cables
		3.8 Re-attach the side panels and connect external cables to the computer
		3.8.1 Re-attach the side panels to the case
	Explain the purpose of preventive maintenance and identify the elements of the troubleshooting process	3.8.2 Connect external cables to the computer
		3.9 Boot computer for the first time
		3.9.1 Identify beep codes
		3.9.2 Describe BIOS setup
		4.1 Explain the purpose of preventive maintenance
		4.2 Identify the steps of the troubleshooting process
		4.2.1 Explain the purpose of data protection
		4.2.2 Gather data from the customer
		4.2.3 Verify the obvious issues
	Explain, install, and navigate an operating system; and perform preventive maintenance and troubleshooting	4.2.4 Try quick solutions first
		4.2.5 Gather data from the computer
		4.2.6 Evaluate the problem and implement the solution
		4.2.7 Close with the customer
		5.1 Explain the purpose of an operating system
		5.1.1 Describe the characteristics of modern operating systems
		5.1.2 Explain operating system concepts
		5.2 Describe and compare operating systems to include purpose, limitations, and compatibilities
		5.2.1 Describe desktop operating systems
		5.2.2 Describe network operating systems
		5.3 Determine operating system based on customer needs
		5.3.1 Identify applications and environments that are compatible with an operating system
		5.3.2 Determine minimum hardware requirements and compatibility with the OS platform
		5.4 Install an operating system (B.BS.13
		5.4.1 Identify hard drive setup procedures
		5.4.2 Prepare hard drive
		5.4.3 Install the operating system using default settings
		5.4.4 Create accounts
		5.4.5 Complete the installation
		5.4.6 Describe custom installation option

		5.4.7 Identify the boot sequence files and Registry files
		5.4.8 Describe how to manipulate operating system files
		5.4.9 Describe directory structures
		5.5 Navigate a GUI (Windows)
		5.5.1 Manipulate items on the desktop
		5.5.2 Explore control panel applets
		5.5.3 Explore administrative tools
		5.5.4 Install, navigate, and uninstall an application
		5.5.5 Describe upgrading an operating system
	Describe components of a laptop; perform preventive maintenance and troubleshooting	5.6 Identify and apply common preventive maintenance techniques for operating systems
		5.6.1 Create a preventive maintenance plan
		5.6.2 Schedule a task
		5.6.3 Back up the hard drive
		5.7 Troubleshoot operating systems (B.BS.1
		5.7.1 Review the troubleshooting process
		5.7.2 Identify common problems and solutions
		6.1 Describe laptops and other portable devices
		6.1.1 Identify some common uses of laptops
		6.1.2 Identify some common uses of PDAs and Smartphones
		6.2 Identify and describe the components of a laptop
		6.2.1 Describe the components found on the outside of the laptop
		6.2.2 Describe the components found on the inside of the laptop
		6.2.3 Describe the components found on the laptop docking station
		6.2 Compare and contrast desktop and laptop components
		6.3.1 Compare and contrast desktop and laptop motherboards
		6.3.2 Compare and contrast desktop and laptop processors
		6.3.2 Compare and contrast desktop and laptop power management
		6.3.4 Compare and contrast desktop and laptop expansion capabilities
		6.4 Explain how to configure laptops
		6.4.1 Describe how to configure power settings
		6.4.2 Describe the safe installation and removal of laptop components
	Describe components of printer/scanner; perform preventive maintenance and troubleshooting	6.5 Define the different mobile phone standards
		6.6 Identify common preventive maintenance techniques for laptops and portable devices
		6.6.1 Identify appropriate cleaning procedures
		6.6.2 Identify optimal operating environments
		6.7 Describe how to troubleshoot laptops and portable devices
		6.7.1 Review the troubleshooting process
		6.7.2 Identify common problems and solutions
		7.1 Describe the types of printers currently available
		7.1.1 Describe the characteristics and capabilities of printers
		7.1.2 Explain printer-to-computer interfaces
		7.1.3 Describe laser printers
		7.1.4 Describe impact printers
		7.1.5 Describe inkjet printers
		7.1.6 Describe solid ink printers
		7.1.7 Describe other printer types
		7.2 Describe the installation and configuration process for printers
		7.2.1 Describe how to set up a printer
		7.2.2 Explain how to power and connect a device using local or network

| | Describe a network; perform preventive maintenance and troubleshooting | port
7.2.3 Describe how to install and update a device driver, firmware, and RAM
7.2.4 Identify configuration options and default settings
7.2.5 Explain how to optimize printer performance
7.2.6 Describe how to print a test page
7.2.7 Describe how to share a printer
7.3 Describe the types of scanners currently available
    7.3.1 Describe scanner types, resolution, and interfaces
    7.3.2 Describe all-in-one devices
    7.3.3 Describe flatbed scanners
    7.3.4 Describe handheld scanners
    7.3.5 Describe drum scanners
7.4 Describe the installation and configuration process for scanners
    7.4.1 Explain how to power and connect a scanner
    7.4.2 Describe how to install and update the device driver
    7.4.3 Identify configuration options and default settings
7.5 Identify and apply common preventive maintenance techniques for printers and scanners
    7.5.1 Describe printer maintenance
    7.5.2 Describe scanner maintenance
7.6 Troubleshoot printers and scanners
    7.6.1 Review the troubleshooting process
    7.6.2 Identify common problems and solutions
8.1 Explain the principles of networking
    8.1.1 Define computer networks
    8.1.2 Explain the benefits of networks
8.2 Describe types of networks
    8.2.1 Describe a LAN
    8.2.2 Describe a WAN
    8.2.3 Describe a WLAN
    8.2.4 Explain peer-to-peer networks
    8.2.5 Explain client/server networks
8.3 Describe basic networking concepts and technologies
    8.3.1 Explain bandwidth and data transmission
    8.3.2 Describe IP addressing
    8.3.3 Define DHCP
    8.3.4 Define ICMP
8.4 Describe the physical components of a network
    8.4.1 Identify names, purposes, and characteristics of network devices
    8.4.2 Identify names, purposes, and characteristics of common network cables
8.5 Describe LAN topologies and architectures
    8.5.1 Describe topologies
    8.5.2 Describe LAN architectures
8.6 Identify standards organizations
8.7 Identify Ethernet standards
    8.7.1 Explain cabled Ethernet standards
    8.7.2 Explain wireless Ethernet standards
8.8 Explain OSI and TCP/IP Data Models
    8.8.1 Define the DCP/IP model |

		8.8.2 Define the OSI model
		8.8.3 Compare the OSI and TCP/IP
		8.9 Describe how to configure a NIC and a modem
		8.9.1 Install or update a NIC drive
		8.9.2 Attach a computer to an existing network
		8.9.3 Describe the installation of a modem
		8.10 Identify names, purposes, and characteristics of other technologies used to establish connectivity
		8.10.1 Describe telephone technologies
		8.10.2 Define power line communication
		8.10.3 Define Broadband
		8.10.4 Define VolP
		8.11 Identify and apply common preventive maintenance techniques for networks
		8.12 Troubleshoot a network
		8.12.1 Review the troubleshooting process
		8.12.2 Identify common network problems and solutions
		9.1 Explain why security is important
		9.2 Describe security threats
		9.2.1 Define viruses, worms, and Trojans
		9.2.2 Explain web security
		9.2.3 Define adware, spyware, and grayware
		9.2.4 Explain Denial of Service
		9.2.5 Describe spam and popup windows
		9.2.6 Explain social engineering
		9.2.7 Explain TCP/IP attacks
		9.2.8 Explain hardware deconstruction and recycling
	Apply good communication skills and professional behavior while working with customers.	9.3 Identify security procedures
		9.3.1 Explain what is required in a basic local security policy
		9.3.2 Explain the tasks required to protect physical equipment
		9.3.3 Describe ways to protect data
		9.3.4 Describe wireless security techniques
		9.4 Identify common preventive maintenance techniques for security
		9.4.1 Explain how to update signature files for anti-virus and anti-spyware software
		9.4.2 Explain how to install operating systems service packs and security patches
		9.5 Troubleshoot security
		9.5.1 Review the troubleshooting process
		9.5.2 Identify common problems and solutions
		10.1 Explain the relationship between communication and troubleshooting
	IT ESSENTIALS II *Define information technology (IT)*	10.2 Describe good communication skills and professional behavior
		10.2.1 Determine the computer problem of the customer
		10.2.2 Display professional behavior with the customer
		10.2.3 Focus the customer on the problem during the call
	Protect herself or himself against accidents and injury, protect equipment from damage, protect data from loss, and	10.2.4 Use proper netiquette
		10.2.5 Implement time and stress management techniques
		10.2.6 Observe Service Level Agreements (SLAs)
		10.2.7 Follow business policies
		10.3 Explain ethics and legal aspects of working with computer technology
		10.4 Describe call center environment and technician responsibilities
		10.4.1 Describe the call center environment

protect the environment from contamination
 	
Perform advanced installation of a desktop computer tower; select components based on customer needs and perform preventive maintenance and troubleshooting. *Explain the purpose of preventive maintenance and identify the elements of the troubleshooting process*
 	
Explain, install; upgrade components based on customer needs *and perform preventive maintenance and troubleshooting*
 	
Describe wireless communication for laptops and portable devices, remove, and replace select components of a laptop; upgrade components based on customer needs and *perform preventive*
	10.4.2 Describe level-one technician responsibilities
	10.4.3 Describe level-two technician responsibilities
	
	IT ESSENTIALS II
	11.1 Give an overview of field, remote, and bench technician jobs
	11.2 Explain safe lab procedure and tool use
	   11.2.1 Review safe working environment and procedures
	   11.2.2 Review names, purposes, characteristics, and safe and appropriate use of tools
	   11.2.3 Identify potential safety hazards and implement proper safety procedures for computer components
	   11.2.4 Describe environmental issues
	11.3 Describe situations requiring replacement of computer components
	   11.3.1 Select a case and power supply
	   11.3.2 Select a motherboard
	   11.3.3 Select the CPU and heat sink/fan assembly
	   11.3.4 Select RAM
	   11.3.5 Select adapter cards
	   11.3.6 Select storage devices and hard drives
	   11.3.7 Select input and output devices
	11.4 Upgrade and configure personal computer components and peripherals
	   11.4.1 Upgrade and configure motherboard
	   11.4.2 Upgrade and configure CPU and a heat sink/fan assembly
	   11.4.3 Upgrade and configure RAM
	   11.4.4 Upgrade and configure BIOS
	   11.4.5 Upgrade and configure storage devices and hard drives
	   11.4.6 Upgrade and configure input and output devices
	11.5 Identify and apply common preventive maintenance techniques for personal computer components
	   11.5.1 Clean internal components
	   11.5.2 Clean the case
	   11.5.3 Inspect computer components
	11.6 Troubleshoot computer components and peripherals
	   11.6.1 Review the troubleshooting process
	   11.6.2 Identify common problems and solutions
	   11.6.3 Apply troubleshooting skills
	12.1 Select the appropriate operating system based on customer needs
	   12.1.1 Describe operating systems
	   12.1.2 Describe network operating systems
	12.2 Install, configure, and optimize an operating system
	   12.2.1 Compare and contrast a default installation and a custom installation
	   12.2.2 Install Windows XP Professional using a custom installation
	   12.2.3 Create, view, and mange disks, directories, and files
	   12.2.4 Identify procedures and utilities used to optimize the performance of operating systems
	   12.2.5 Identify procedures and utilities used to optimize the performance of browsers
	   12.2.6 Describe installation, use, and configuration of e-mail software
	   12.2.7 Set screen resolution and update video drive

	maintenance and troubleshooting	12.2.8 Describe installation of a second operating system
		12.3 Describe how to upgrade operating systems
		12.4 Describe preventive maintenance procedures for operating systems
		12.4.1 Schedule automatic tasks and updates
		12.4.2 Set restore points
		12.5 Troubleshoot operating systems
		12.5.1 Review the troubleshooting process
		12.5.2 Identify common problems and solutions
		12.5.3 Apply troubleshooting skills
	Describe, remove and replace select components of printer/scanner; *perform preventive maintenance and troubleshooting*	13.1 Describe wireless communication methods for laptops and portable devices
		13.1.1 Describe Bluetooth Technology
		13.1.2 Describe Infrared Technology
		13.1.3 Describe Cellular WAN Technology
		13.1.4 Describe Wi-Fi Technology
		13.1.5 Describe Satellite Technology
		13.2 Describe repairs for laptops and portable devices
		13.3 Select laptop components
		13.3.1 Select batteries
		13.3.2 Select a docking station or port replicator
		13.3.3 Select storage devices
		13.3.4 Select additional RAM
		13.4 Describe preventive maintenance procedures for laptops
		13.4.1 Describe how to schedule and perform maintenance for laptops
		13.4.2 Explain how to manage data version control between laptops and desktops
	*Apply good communication skills and professional behavior while working with customers.	13.5 Describe how to troubleshoot a laptop
		13.5.1 Review the troubleshooting process
		13.5.2 Identify common problems and solutions
		13.5.3 Apply troubleshooting skills
		14.1 Describe potential safety hazards and safety procedures associated with printers and scanners
		14.2 Install and configure a local printer and scanner
		14.2.1 Connect the device to a local port
		14.2.2 Install and configure the driver and software
		14.2.3 Configure options and default settings
	Describe and install a network; upgrade components based on customer needs and *perform preventive maintenance and troubleshooting*	14.2.4 Verify functionality
		14.3 Describe how to share a printer an a scanner on a network
		14.3.1 Describe types of printer servers
		14.3.2 Describe how to install network printer software and drivers on a computer
		14.4 Upgrade and configure printers and scanners
		14.4.1 Describe printer upgrades
		14.4.2 Describe scanner optimization
	*Apply good communication skills and professional behavior while working with customers.	14.5 Describe printer and scanner preventive maintenance techniques
		14.5.1 Determine scheduled maintenance according to vendor guidelines
		14.5.2 Describe a suitable environment for printers and scanners
		14.5.3 Describe cleaning methods
		14.5.4 Describe checking capacity of ink cartridges and toners
		14.6 Troubleshoot printers and scanners
		14.6.1 Review the troubleshooting process
		14.6.2 Identify common problems and solutions

| | Upgrade security components based on customer needs and perform preventive maintenance and troubleshooting | 14.6.3 Apply troubleshooting skills
15.1 Identify potential safety hazards and implement proper safety procedures related to networks
    15.1.1 Explain fiber-optic safety
    15.1.2 Explain cable, cable cutters, and cable cutting safety hazards
15.2 Design a network based on the customer's needs
    15.2.1 Determine a topology
    15.2.2 Determine protocols and network applications
15.3 Determine the components for your customer's network
    15.3.1 Select cable types
    15.3.2 Select ISP connection type
    15.3.3 Select network cards
    15.3.4 Select the network device
15.4 Implement the customer's network
    15.4.1 Install and test the customer's network
    15.4.2 Configure the customer's Internet and network resources
15.5 Upgrade the customer's network
    15.5.1 Install and configure wireless NIC
    15.5.2 Install and configure wireless routers
    15.4.3 Test connection
15.6 Describe installation, configuration, and management of a simple mail server
15.7 Describe preventive maintenance procedures for networks
15.8 Troubleshoot the network
    15.8.1 Review the troubleshooting process
    15.8.2 Identify common problems and solutions
    15.8.3 Apply troubleshooting skills
16.1 Outline security requirements based on customer needs
    16.1.1 Outline a local security policy
    16.1.2 Explain when and how to use security hardware
    16.1.3 Explain when and how to use security application software
16.2 Select security components based on customer needs
    16.2.1 Describe and compare security techniques
    16.2.2 Describe and compare access control devices
    16.2.3 Describe and compare firewall types
16.3 Implement customer's security policy
    16.3.1 Configure security settings
    16.3.2 Describe configuring firewall types
    16.3.3 Describe protection against malicious software
16.4 Perform preventive maintenance on security
    16.4.1 Describe the configuration of operating system updates
    16.4.2 Maintain accounts
    16.4.3 Explain data backup procedures, access to backups, and secure physical backup material
16.5 Troubleshoot security
    16.5.1 Review the troubleshooting process
    16.5.2 Identify common problems and solutions
    16.5.3 Apply troubleshooting skills |
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