**Solutions for Chapter 2: All About Motherboards**

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1. Lab 2.1 Use the HWiNFO Hardware Information Utility
2. Review Questions
3. List three reasons you might use HWiNFO when troubleshooting or upgrading a computer:

Answer: Answers will vary; here are some possibilities:

* You might use HWiNFO when you need to update video drivers and need to identify the video card in use.
* When you are having a problem with an onboard device and need to update BIOS/UEFI, you might turn to HWiNFO for information about the current version of the firmware.
* You might use HWiNFO when you need to download drivers for a laptop and need the model and serial numbers of the laptop.

1. You are considering upgrading memory on a laptop. What are three attributes of currently installed memory that HWiNFO can give to help you with this decision?

Answer: Amount, speed, and type of RAM installed

1. You suspect a hard drive in a system might be failing. What type of data about the hard drive can HWiNFO give you to help you diagnose the problem? Which button on the main menu do you select to get this data?

Answer: HWiNFO can report S.M.A.R.T. data about the drive, including the temperature of the drive, drive failures, and drive warnings. Click the Sensors button to see this data.

1. List two precautions you should take when using free utility software available on the web.

Answers may vary; here are some possibilities:

* Be careful not to download adware or bloatware along with the utility.
* Make sure you download only from reliable websites you trust.

1. Lab 2.2 Identify Motherboard Components
2. Review Questions
3. What are the two main differences between an ATX and microATX board?

Answer: The microATX is smaller and has fewer expansion slots. The microATX has a maximum size of 9.6" × 9.6" with a maximum of four expansion slots, but usually three or fewer.

1. How can you determine the chipset if it’s not written on the board?

Answer: Consult the documentation for your motherboard or research your motherboard’s make and model number on the Internet.

1. Of the motherboards you examined, which do you think is the oldest? Why?

Answer: Answers will vary.

1. Which motherboard best supports old and new technology? Why?

Answer: The answer depends on available samples.

1. Which motherboard seems to provide the best possibility for expansion? Why?

Answer: The answer depends on available samples.

1. Which motherboard is most likely the easiest to configure? Why?

Answer: The answer depends on available samples.

1. Which motherboard do you think is the most expensive? Why?

Answer: The answer depends on available samples.

1. What are some considerations a motherboard manufacturer has to contend with when designing a motherboard? (For example, consider room for large CPUs and cooling fans, where the power supply is located in relationship to the power connector, new technologies, and so forth.)

Answer: Answers will vary depending on student experience and research, but might include the following:

* Locations of ports and connections off the back or front of a tower or desktop case
* Holes in the board that align with holes in different types of computer cases
* The need to accommodate different memory module technologies and amounts of RAM
* The need to accommodate more than one type of CPU and CPU manufacturer
* Room for additional components, such as modem riser cards
* Stenciled or printed information on the board to identify the manufacturer, model, components, and connections on the board

1. Lab 2.3 Identify a Motherboard and Find Documentation and Drivers on the Web
2. Review Questions
3. How is the label usually applied to or written on a motherboard? How is it most often applied to other components?

Answer: It is stenciled or printed directly on the board. Other components might use a paper sticker or have no label at all.

1. What type of link on a manufacturer’s website usually leads you to manuals and other documentation?

Answer: Service or Support

1. What other downloads about your motherboard might you want to find on the manufacturer’s website?

Answer: Driver updates and BIOS/UEFI updates

1. In what format is documentation most often available for download?

Answer: PDF (.pdf)

1. When supporting motherboards, what helpful information besides downloads can be found on the manufacturer’s website?

Answer: The answer depends on the website. Examples include troubleshooting videos, guidelines, and forums.

1. Lab 2.4 Remove and Replace a Motherboard
2. Review Questions
3. How many screws usually attach the motherboard to the computer case?

Answer: It depends on the motherboard, but usually six to nine.

1. What is the purpose of spacers?

Answer: The purpose of spacers is to prevent the board from shorting out on the case and to provide space for air circulation.

1. When replacing a motherboard, why would you want the replacement board to use the same processor that the older board used?

Answer: To avoid having to also replace the processor

1. List three tools or methods you can use to identify a motherboard so that you can find its documentation on the web.

Answers may vary; possibilities include running CPU-Z, running System Information (msinfo32.exe) in Windows, and opening the case to look for the model and brand etched on the board.

1. A motherboard has an onboard DVI port that is currently used for a single monitor. Sometimes the video does not come on after a Windows restart. To solve the problem, which of the following should you try first?
   1. Flash BIOS/UEFI.
   2. Update the motherboard drivers.
   3. Reinstall Windows.
   4. Replace the motherboard.

Answer: b. Update the motherboard drivers. Try the least invasive and easiest task first.

1. Lab 2.5 Examine BIOS/UEFI Settings and Research BIOS/UEFI Updates
2. Review Questions
3. Why does a computer need BIOS/UEFI?

Answers may vary. One possible answer is that the computer needs BIOS/UEFI to start, to manage onboard components, and to launch an operating system.

1. When troubleshooting a computer, why might you have to enter BIOS/UEFI setup? List at least three reasons:

Answer: Answers may vary and might include:

* To enable/disable components, such as a USB, FireWire, or network port
* To verify that the system recognizes a new hard drive correctly
* To change the boot sequence, such as when Windows is corrupted beyond repair and you want to boot the system to a network server that holds a fresh deployment of Windows

1. What happens automatically after you exit BIOS/UEFI setup?

Answer: The system reboots.

1. You plan to use Microsoft Hyper-V Manager to install a virtual machine on your laptop. Which settings should you verify or change in BIOS/UEFI before you launch Hyper-V Manager?

Answer: Turn on support for virtualization.

1. Bluetooth on a laptop computer refuses to work. Which should you do first, update the Bluetooth drivers or update BIOS/UEFI? Why?

Answer: Try updating the Bluetooth drivers first. If that doesn’t work, update BIOS/UEFI. When troubleshooting, always apply the least invasive solution first.

1. Where should you go online to get BIOS/UEFI update files?

Answer: The manufacturer’s website

1. List at least two precautions you should take before or during the update process to help reduce the chance of problems occurring during the update.

Answer: Answers will vary and might include:

* Make sure the computer stays plugged in.
* Have a printed copy of update instructions on hand.
* Close all open programs and disable anti-malware software.
* Create a backup of the old BIOS/UEFI version.

1. Older motherboards used many jumpers to configure the board, but today’s motherboards are likely to have only a single jumper group. What is the purpose of this group of jumpers?

Answer: The jumpers are used to clear BIOS/UEFI settings and can be useful to recover from a forgotten power-on password.

1. Lab 2.6 Flash BIOS/UEFI
2. Review Questions
3. At what point in the boot process is BIOS/UEFI information displayed?

Answer: During POST (power-on self test)

1. Why is it so important to record BIOS/UEFI and motherboard information correctly?

Answer: It is important so you get the correct version. If the wrong version is used to flash BIOS/UEFI, permanent damage can occur.

1. What file might contain last-minute adjustments to the upgrade procedures?

Answer: Readme.txt

1. In what state are BIOS/UEFI settings usually placed after an update?

Answer: The default state

1. Why should you not update BIOS/UEFI unless a computer needs it?

Answer: Because updating BIOS/UEFI can cause problems with the computer

1. When flashing BIOS/UEFI, why is it always important to save the old version of the BIOS/UEFI code?

Answer: Save the BIOS/UEFI so that if you encounter problems with a new version, you can revert to the previous version.