DIVISION OF GEN. TRIAS CITY
Project ISuLAT – ACTIVITY SHEETS in Technology and Livelihood Education 10 (TLE)
(Intensified Support to Learning Alternatives Through Activity Sheets)

COMPUTER SYSTEM SERVICING G10
QUARTER 1–WEEK 7-8: Power ON self-test and BIOS configuration

Name of Learner: _____ Date: _____

Grade & Section: _____ Teacher: _____

MOST ESSENTIAL LEARNING COMPETENCY (MELC):
Perform BIOS configuration in accordance with hardware requirements
(TLE_IACSS9-12ICCS-Ia-e-28)

Objectives:
1. To recognize the use and performance of POST and BIOS
2. To understand the importance of BIOS configuration
3. To check the POST and BIOS configuration procedures

TEACH ME

Learning Task 1:

Picture it out! Look on the picture carefully and describe the words you can find. (Acronyms may be included.)

Learning Task 2:

Configuration is the way a system is set up, or the assortment of components that make up the system. Configuration can refer to either hardware or software, or both.
  ➢ **The Basic Input Output System, usually known as BIOS, is software stored on a small memory chip on the motherboard. It is a program that uses to get the computer started after it was turned on. It also allows the user to access and set up the computer system at the most basic level.**
    Four Main Functions BIOS:
1. *POST* - **Test the computer hardware and make sure no errors exist before loading the operating system.**
    The principal duties of the main BIOS during POST are as follows:
       a. **verify CPU registers**
       b. **verify the integrity of the BIOS code itself**
       c. **verify some basic components like DMA, timer, interrupt controller**
       d. **find, size, and verify system main memory**
       e. **initialize BIOS**
       f. **pass control to other specialized extension BIOSes (if installed)**
       g. **identify, organize, and select which devices are available for booting**
    When power is turned on, POST (Power-On Self-Test) is the diagnostic testing sequence that a computer's BIOS runs to determine if the computer keyboard, RAM, disk drives, and other hardware are working correctly.

    If the necessary hardware is detected and found to be operating properly, the computer begins to boot. If the hardware is not detected or found not to be operating properly, the BIOS issues an

error message which may be text on the display screen or a series of coded beeps, depending on the nature of the problem. The pattern of beeps may be a variable numbers of short beeps or a mixture of long and short beeps, depending on what type of BIOS is installed.

Original IBM POST beep codes   **POST AMI BIOS beep codes**

Beeps	Meaning	Beeps	Meaning
1 short beep	Normal POST – system is OK	1	Memory refresh timer error
2 short beeps	POST error – error code shown on screen	2	Parity error in base memory (first 64 KiB block)
No beep	Power supply, system board problem, disconnected CPU, or disconnected speaker	3	Base memory read/write test error
Continuous beep	Power supply, system board, RAM or keyboard problem	4	Motherboard timer not operational (check all PSU to MB connectors seated)
Repeating short beeps	Power supply, system board or keyboard problem	5	Processor failure
1 long, 1 short beep	System board problem	6	8042 Gate A20 test error (cannot switch to protected mode)
1 long, 2 short beeps	Display adapter problem (MDA, CGA)	7	General exception error (processor exception interrupt error)
1 long, 3 short beeps	Enhanced Graphics Adapter problem (EGA)	8	Display memory error (system video adapter)
3 long beeps	3270 keyboard card error	9	AMI BIOS ROM checksum fix
		10	CMOS shutdown register read/write fix
		11	Cache memory test failed
		continuous beeping	Motherboard does not detect a RAM module (continuous beeping)

Reference: AMIBIOS8 Check Point and Beep Code List, version 2.0, last updated 10 June 2008

The Role of POST in the Startup Process

A Power On Self Test is the first step of the boot sequence. It doesn't matter if you've just restarted your computer or if you've just powered it on for the first time in days; the POST is going to run, regardless.

POST doesn't rely on any specific operating system. In fact, there doesn't even need to be an OS installed on a hard drive for the POST to run. This is because the test is handled by the system's BIOS, not any installed software.

A Power On Self Test checks that basic system devices are present and working properly, like the keyboard and other peripheral devices, and other hardware elements like the processor, storage devices, and memory.

The computer will continue to boot after the POST but only if it was successful. Problems can certainly appear after the POST, like Windows hanging during startup, but most of the time those can be attributed to an operating system or software problem, not a hardware one.

If the POST finds something wrong during its test, you'll usually get an error of some kind, and hopefully, one clear enough to help jump-start the troubleshooting process.

2. *Bootstrap Loader* - **Locate the operating system. If a capable operating system is located, the BIOS will pass control to it.**
3. *BIOS drivers* - **Low-level drivers that give the computer basic operational control over your computer's hardware.**
   - *Video Card* **is known as a display adapter, graphics card, video adapter, video board, or video controller, a video card is an expansion card that connects to a computer motherboard. It is used to create a picture on a display; without a video card, it would not be able to see page. Video cards are used by gamers in place of integrated graphics due to their extra processing power and video ram.Since POST runs before the**

computer's video card is activated, it may not be possible to progress to the display screen.

> *Sound Card* referred to as an audio output device, sound board, or audio card. It is an expansion card or IC for producing sound on a computer that can be heard through speakers or headphones.

4. *BIOS setup or CMOS setup* - Configuration program that allows you to configure hardware settings including system settings, such as computer passwords, time, and date.

How to enter BIOS and CMOS set-up?

STEP 1: Computers manufactured in the last few years allow you to enter the BIOS setup using one of the five keys shown below during the boot process.

- F1
- F2 *
- F10 **
- Del
- Esc

Setup keys are to be pressed as the computer is booting up. Most users see a message similar to the example below upon startup. Some older computers may also display a flashing block to indicate when to press the F1 or F2 keys.


STEP 2: Use the arrow keys along with the Enter key to select categories and change their values. Some manufacturers may have you press the Page up and Page down keys to change the values.

STEP 3: If any changes are made, you need to save those changes, which is usually done by pressing the F10 key on the keyboard. If F10 doesn't work, look at the bottom or top of the screen for the key that's used to save the settings.

How to reset CMOS?

1. **Enter CMOS setup.**
2. In CMOS setup, look for an option to reset the CMOS values to the default setting or an option to load the fail-safe defaults. With many CMOS setup screens, there will be a function key to do this. For example, the F5, F6, F9, F11, or F12 key, as shown in the picture, may be set up as a shortcut to load the default settings. Other setups may list an option that you can arrow over to using the arrow keys and pressing Enter.
3. When found and selected, you'll likely be asked if you're sure you want to load the defaults. Press **Y** for yes or arrow to the yes option.
4. Once the default values are set, make sure to **Save and Exit**.
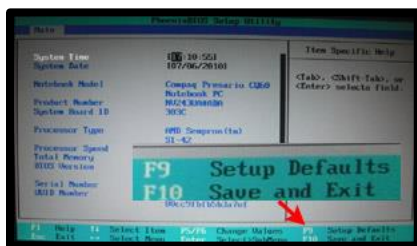
LEARN MORE

Learning Task 3:

Directions: A. IBM POST beep codes and POST AMI BIOS beep codes.
Identify the correct beep codes based on the error of the computer system.

No beep	1 short beep	8 beeps	5 beeps	3 beeps
Continuous beep	2 short beeps	10 beeps	4 beeps	9 beeps

1. AMI BIOS ROM checksum fix _____
2. CMOS shutdown register read/write fix _____
3. Display memory error (system video adapter) _____
4. Power supply, system board problem, disconnected CPU, or disconnected speaker _____
5. Power supply, system board, RAM or keyboard problem _____
6. Normal POST – system is OK _____
7. POST error – error code shown on screen _____
8. Base memory read/write test error _____

9. <u>Motherboard</u> timer not operational (check all PSU to MB connectors seated) _____
10. Processor failure _____

Learning Task 4:
 Directions: TRUE or FALSE: Write T if the sentence is correct and F if it is not.
1. A Power On Self Test it is the first step of the boot sequence. It doesn't matter if you've just restarted your computer or if you've just powered it on for the first time in days; the POST is going to run, regardless.

2. The motherboard will continue to boot after the POST but only if it was successful.

3. CMOS doesn't rely on any specific operating system. In fact, there doesn't even need to be an OS installed on a hard drive for the CMOS to run.

4. CMOS is configuration program that allows you to configure hardware settings including system settings, such as computer passwords, time, and date.

5. BIOS allows the user to access and set up the computer system at the most basic level.

EVALUATE NOW

SUMMATIVE ASSESSMENT:

A. WRITTEN TASK: Read the statement carefully. Choose the letter of the correct answer.
1. It is known as mainboard, system circuit, mobo.
     a. Graphical user interface   c. Sound card
     b. Motherboard   d. Video card
2. The program uses to get the computer started after it was turned on?
     a. BIOS   b. CMOS   c. POST   d. ROM
3. BIOS stand for _____
     a. Basic Input Outgoing System   c. Begin Input Outgoing System
     b.Begin Input Output System   d. Basic Input Output System
4. It is the process to check if the basic system devices are present working properly.
     a.BIOS Configuration   c. Reformat
     b.CMOS battery Reset   d. POST Configuration
5. POST stand for _____
     a.Post-On Set Test   c. Post-On Self-Test
     b.Pre-on Set Test   d. Pre-On Self -Test
6. CMOS stand for _____
     a.Complementary Metal-Oxygen-Semiconductor
     b.Computer Metal-Oxide-Semiconductor
     c.Computer Metal-Oxygen-Semiconductor
     d.Complementary Metal-Oxide-Semiconductor
7. This part gives information on time and date to system hardware of the computer.
     a. BIOS   b. CMOS   c. POST   d. ROM
8. It is used for producing sound on a computer that can be heard through speakers or headphones.
     a. Graphical user interface   c. Sound card
     b. Motherboard   d. Video card
9. It is used by gamers in place of integrated graphics due to their extra processing power and video RAM.
     a. Graphical user interface   c. Sound card
     b. Motherboard   d. Video card
10. It is used for interactive visual components for computer software.
     a. Graphical user interface   c. Sound card
     b. Motherboard   d. Video card
11. It is the way a system is set up, or the assortment of components that make up the system.
     a. Assessment   b. Configuration   c. Install   d. Reformat
12. It is known as a display adapter, graphics card, video adapter, video board, or video controller.
     a. Graphical user interface   c. Sound card
     b. Motherboard   d. Video card
13. The following are the main function of BIOS except:
     a. POST   c. BIOS set-up or CMOS set-up
     b. BIOS Drivers   d. BIOS reformat
14. It is the diagnostic testing sequence that a computer's BIOS runs to determine if the computer keyboard, RAM, disk drives, and other hardware are working correctly.

      a. BIOS   b. CMOS   c. POST   d. ROM

15. It is a configuration program that allows you to configure hardware settings including system settings, such as computer passwords, time, and date.

      a. BIOS   b. CMOS   c. POST   d. ROM

B. PERFORMANCE TASK

Directions: Based on your knowledge of performing BIOS configuration illustrate the output appearance of BIOS set-up. Explain each part of the illustration.

Performance Rubrics			
Criteria	**5 points**	**3 points**	**1 point**
Correctness/ Accuracy	All tasks are done correctly	Almost all tasks are done correctly	Some of the tasks are done correctly
Completeness	Complete information	With 1-2 information missing	With 3-4 information missing
Time Management	Finish the task on the given time	Finish the task after the given time	Unable to finish the given task

Rating Scale: Points Earned	Numerical Rating	Descriptive Rating
16 - 20	91 – 100	Very Good
11 - 15	86 – 90	Good
6 - 10	81 – 85	Fair
1 - 5	75 - 80	Needs Improvement

References:

https://whatis.techtarget.com/definition/POST-Power-On-Self-Test

https://www.computerhope.com/jargon/b/bios.htm

https://www.slideshare.net/ynlcadapan/ict-9-module-3-lesson-25-basic-computer-configuration-setup

https://en.wikipedia.org/wiki/Power-on_self-test#:~:text=A%20power%2Don%20self%2Dtest,electronic

https://www.computerhope.com/jargon/v/video-card.htm

https://www.computerhope.com/jargon/s/souncard.htm

https://www.computerhope.com/issues/ch000976.htm

https://www.lifewire.com/what-is-post-2625953