Computer Maintenance I
Module 8 Lab

Assemble an ATX Form Factor PC

Objectives:
- Assemble a generic PC
- Verify the correct BIOS settings
- Inventory components

Resources:
- PC Tool Kit
- Anti-Static Wrist Strap
- Personal computer components

Step 1 – Inventory the computer components
a. Complete the "Computer Component Inventory" worksheet.
b. Are all the components accounted for and correct?

Step 2 – Prepare the computer case
a. Remove the computer sides and place under your workstation table.
b. Install the power supply and set to the proper input voltage.
c. Install the back plate.
d. Install the standoffs.

Step 3 – Install the drives
a. Install the CD/DVD drives. Check that the jumpers are set correctly (If applicable).
b. Install the hard drives. Check that the jumpers are set correctly (If applicable).
c. Install any other drive.

Step 4 – Prepare and install the motherboard and its components
a. Motherboard jumper settings are correct (If applicable).
b. CPU, thermal compound, and cooling fan installed.
c. All memory chips are installed.
d. Motherboard secured in case.

Step 5 – Install power connectors and cables
a. Connect the main and auxiliary power cables.
b. Connect power to all drives.
c. Connect front panel cables.

Step 6 – Install expansion cards
a. The expansion boards are fully inserted in appropriate slots.
b. Power connected (if applicable)

Step 7– Close the computer case
a. Close up the computer case.
b. Attach the keyboard, monitor, and mouse.
c. Connect the power cable and turn on the power switch.
d. Start the PC.
e. Check for POST errors or beep codes.

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Step 8 – Set the BIOS/CMOS

    a. Locate the Clear CMOS jumper. Document its location.
    b. Move the jumper to the clear position.
    c. After POST, move the jumper back to its original position.
    d. Restart the machine.
    e. Reboot to the CMOS (Delete key or appropriate sequence for your computer).
    f. Change the settings as applicable (boot order, voltages, etc.).
    g. Write down in detail the settings on every screen.
    h. Secure document in a safe place.

BIOS Settings

Type and version of BIOS installed: _____

Computer Component Inventory

Computer Identification

Name: _____   Number: _____

Case

Manufacturer: _____

Form Factor _____

Desktop _____   Mini-Tower _____   Mid-Tower _____   Full-Tower _____

Number of 3.5" bays _____   5.25" bays _____   Other _____

Power Supply

Manufacturer: _____   Model: _____

Power Supply Wattage _____

Form Factor: AT _____   ATX _____   Other _____

Number of: Molex _____ Berg _____   SATA _____   Main _____ Aux _____

Motherboard

Manufacturer: _____   Model: _____

Form Factor: _____

Bus Speed: _____

Chipset Manufacturer: _____   Model: _____

BIOS Manufacturer: _____   Version: _____

Does the CPU use a socket or a slot? _____   How many CPU socket/slots are there? _____

How many PCIe slots are there? _____   How many PCI slots are there? _____

How many IDE connectors are there? _____   How many floppy connectors are there? _____

How many serial ports are there? _____   How many parallel ports are there? _____

Is there an AGP slot? _____   How many USB ports are there? _____

How many other ports or slots are there? _____   What kind(s) are they? _____

CPU

Manufacturer: _____   Model: _____

Speed _____   Slot/Socket Type: _____

Computer Component Inventory

Memory

Manufacturer: _____ Model: _____

Type _____ How many memory slots are there? _____

What is the fastest type of memory supported? _____ What is the maximum memory supported? _____

Hard Drive

Manufacturer: _____ Model: _____

Interface Type: IDE _____ SCSI _____ SATA _____

Size _____ Cylinders _____ Heads _____ SPT _____

CD-ROM

Manufacturer: _____ Model: _____

Speed: _____ Interface Type: IDE_____ SCSI _____ SATA _____

Video Card

Manufacturer: _____ Model: _____

Memory _____

Type: PCIe _____ PCI _____ AGP _____ On Board_____

Sound Card

Manufacturer: _____ Model: _____

Type: PCIe _____ PCI _____ On Board _____

Network Interface Card (NIC)

Manufacturer: _____ Model: _____

Type of connection: RJ-45 _____ BNC _____ Fiber _____ Wireless _____

Speed: 10BaseT _____ 100BaseT _____ 1000BaseT _____

Monitor

Manufacturer: _____ Model Number: _____

Type: _____

Mouse

Manufacturer: _____ Model: _____

Type: _____ PS/2 _____ Serial _____ USB _____

Computer Component Inventory

Keyboard

Manufacturer: _____   Model: _____

Connector: 6-pin Mini-DIN _____   USB _____

Front Panel Connections

Cable	Color/Orientation
Power Switch:	
Speaker:	
Power LED:	
HDD LED:	
Reset:	

I/O Port Connections

Cable	Color/Orientation
COM 1:	
COM 2:	
Parallel:	

Computer Setup Checklist

A. _____ Inventory Sheet completed and all parts accounted for.

B. _____ Case prepared and power supply installed.

C. _____ The power supply is set to the proper input voltage of your country or region, for example 110/115/120v AC (North America) or 220/240/250v AC (Europe and other regions of the world.

D. _____ Back plate and standouts installed.

E. _____ All drivers are properly installed and jumpers set correctly to Master/Slave settings.

F. _____ Motherboard jumper settings are correct, if changed from the original settings.

G. _____ CPU, thermal compound, and cooling fan installed. Fan connected to power.

H. _____ All memory chips are installed.

I. _____ Motherboard secured.

J. _____ All power cables connected.

K. _____ All cables and ribbons are correctly connected and secured.

L. _____ All front panel cables connected.

M. _____ The expansion boards are fully inserted in appropriate slots.

                ____ Video Card   ____ Sound Card   ____ NIC Card   ____ Other

N. _____ A keyboard, monitor and mouse are properly attached.

O. _____ CMOS setup correctly.   Boot order set to: CD/DVD, HDD

P. _____ There are no device conflicts (for example, two expansion boards sharing the same IRQ).

Q. _____ POST error codes are OK.

R. _____ Operating system ready to load.

Purchasing a Computer

You have been contracted to build the "Ultimate Gaming Computer." You are to pick all needed components to build the best system you can while staying under budget. You have **$1200** to purchase this entire system.

Ultimate Gaming Computer Specifications

- A metal case with front USB, eSATA, and audio ports

- Ventilation to create positive pressure air flow

- A motherboard capable of supporting all the front panel connections and the required processor, ram, and peripherals

- Connector for an external hard drive enclosure with a transfer rate of 3Gb/s

- A minimum of a Quad core 3 GHz processor that must sustain a temperature of less than 120ºF while running at 70% capacity

- At last 4GB of Ram running at least 1600 MHz

- At least 1 optical drives capable of playing to latest video/movie technology

- At least 700 GB of hard drive space with a transfer rate of 6 Gb/s

- Dual 1 Gbps internet connections

- At least 5.1 surround sound capable sound card

- A video card with at least 2560 x 1600 resolution @ 40 fps and HDMI ready

- A power supply that will run this system at maximum sustained output for a period of 6 hours

- Protect the computer against power surges and brownouts

- Basic keyboard and mouse

- 22" Cinema Display with a DVI interface

- Stereo Speakers

Answer

Item	Quantity	Selection	Amperage	Cost
Case				
Motherboard				
Processor				
Memory				
Optical Drives				
Hard Drive				
Video Card				
Power Supply				
Mouse				
Keyboard				
Monitor				
Speakers				
Misc.				
Total				