# PC Demolition Report

<table>
<thead>
<tr>
<th>PHOTO</th>
<th>DESCRIPTIVE PARAGRAPH</th>
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<tbody>
<tr>
<td><img src="Image" alt="Open Computer Case" /></td>
<td>The case that usually closes and contains the interior parts of the PC is removed as seen in the photo. A PC with a closed computer case prevents the hardware within from incurring damage and keeps all of the important hardware as intact as possible. A computer would have an open computer case when the hardware within needs to be adjusted, replaced, or fixed. However, a recent treatment of PC hardware is the use of an Open Air PC Case. One can then see all of the components connected and present within the computer, easily remove and install components without the hassle of removing the case, benefit from increased cooling performance, and enjoy the aesthetical arrangement of the components, especially if they are sophisticated and decorated with colorful LED strips [1].</td>
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<tr>
<td><img src="Image" alt="Motherboard" /></td>
<td>The motherboard is the main printed circuit board (PCB) that maintains and enables informational transfer and exchange between key electronic components of a microcomputer system via buses. Not only is it the primary hub of communication for a system (and, as such, contains the central processing unit or CPU and memory), but it can also connect to other peripheral components that enhance a computer’s performance and capabilities, such as video cards, sound cards, hard drives, and cards with additional USB slots [2]. Moreover, the motherboard contains BIOS (basic input-output system code) that checks the motherboard’s major components when the computer has been turned on and, together with the CPU, loads the operating system into RAM [3].</td>
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<tr>
<td><img src="Image" alt="Power Supply" /></td>
<td>Located inside the back of the case, the power supply unit, also known as the PSU or the power pack/converter, provides electrical energy to an electrical load. The alternating electrical current (AC) from an outlet is converted to the necessary voltage, current, and frequency as the direct current (DC). This allows the components of the PC receiving the energy to actively interact and exchange bits of information so that the device successfully functions [2]. The power supply also engages in heat regulation by controlling the voltage and, as a result, prevents overheating. Its power capacity is measured by wattage [4].</td>
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A central component of a computer, the **processor** contains logic circuitry that is responsive to elementary instructions that the computer requires to operate. Processors have four tasks: (1) fetch (reads instructions from memory), (2) decode, (3) execute (further acts upon instructions by shifting bits), and (4) writeback (updates information) [5, 6]. A processor has the following components: (1) the arithmetic logic unit (ALU) which executes arithmetical and logical operations on operands provided in instructions, (2) the floating point unit (FPU) which expedites number manipulation, (3) registers which store instructions and data, such as the accumulator and program counter, and (4) L1 and L2 cache memory which expedites data retrieval from memory [6].

**Processor (INTEL, INTEL CORE™2 DUO)**

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**Memory** is a collection of integrated circuits that can store information which is easily and immediately retrievable. Information can be very quickly accessed from the RAM (Random-Access Memory), in particular. **RAM** is a memory that is volatile (which means that the memory loses the stored information within when the hardware has no power). This is why one must always save their work before turning off their device! RAM also stores data used by various elements of the PC, that is, the operating system, software, and hardware. It is different from memory in the hard drive: it is temporary whereas hard drive memory is permanent [7]. Memory cells are typically grouped into words of $2^n$ bits, depending on the length of the word and the data that needs to be stored [2].

**Memory/RAM (Samsung, 2GB of memory)**

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Speaking of the **hard disk/drive**, this component is memory as well. However, while RAM is “primary storage” for immediate access, the hard disk is “secondary storage” for long-term access of data and information [7]. It is an electromechanical device that utilizes magnetic disks that rotate quickly, also called platters, in order to store data [2]. Programs are loaded from the hard disk into RAM, and then the program communicates with the processor in order to operate. Saved material is sent to the hard drive and the information remains in the drive until the user. When accessing the saved material, the material is located, read, and sent back to RAM [8].

**Hard Disk (160 GB Capacity)**
Usually a quartz crystal oscillator, a **crystal** is located on the motherboard, and, often, more than one crystal is present. The crystals control the timing of data stream flow and, as a result, the computer has a timing circuit [9]. Measured in hertz, the crystal’s frequency determines the clock rate of a processor which is the frequency at which a processor runs, or in other words, the processor’s speed [2].

### Crystal (14 MHz)

The optical disc drive (ODD), also called the DVD drive, reads or writes data to or from optical discs such as compact discs, DVDs, and Blu-ray disks which themselves typically contain software or media that can be extracted and imported into the computer. The drive uses laser light or electromagnetic waves around or within the visible light spectrum to perform these reading or writing operations [2]. Located in the front of the computer, the optical disk drive is connected to the motherboard via a cable that can be placed in a port on the back end of the drive as well as on a port found on the motherboard. Some computers (such as the MacBook Air) lack a built-in disk drive so, if they wish, users can purchase external optical drives that can connect to the original computer via USB [4].

### DVD Drive

Connectors in the back of the computer are connected to several input/output devices. Some backside connectors are (1) the SMPS, or Switch Mode Power Supply, which converts the AC current to different DC currents, (2) the SMPS Fan which sends heated air from within the computer to outside the computer, (3) the Power in Socket, which inputs 220V AC to the computer when it is turned on, (4) the PS-2 Port, which connect input hardware such as the keyboard and mouse, (5) the USB port, which is used to connect other external hardware such as printers, (6) the DVI (Digital Video Interface) Port which connects output display devices, (7) the HDMI (High Definition Multimedia Interface) Port which allows for high definition and multi-channel sound, (8) LAN Port, which is used to connect to other computers and devices in a network, (9) Audio Ports for connecting headphones or speakers, and etc. [10].

**Connectors in back of computer, including USB connectors**
Cables connecting the motherboard to various peripherals, such as the hard disk/drive, the optical drive, the cooling system fan, and the power supply, allow the processor to interact with other components of the PC. Examples of such cables are the 4-Pin Main Power Cable, the 6-Pin Aux Power Cable, and the 4-Pin Peripheral Power Cable (Molex). The Molex power cable particularly connects the motherboard to hard drives, optical drives, and system fans. Other cables, namely the Data cables, include the SATA and IDE Ribbon cables, and these connect specifically to the hard drive [11]. If connectors in the back of the computer connect devices outside of the PC to the components within the PC, then the cables connecting the motherboard to various peripherals links the various internal PC components together.

Connected to the motherboard, a video card is a printed circuit board that sends output images to a display device such as a computer monitor and typically performs additional processing, thereby alleviating the central processing unit of this work [2]. The card has its own processing unit and memory, which is very similar to the RAM of a PC. A high-quality video card significantly improves gaming performance as well as movie watching experience since the quality of the graphics increases. Such a card especially helps enhance 3D graphics [12].
References


