**CHAPTER ONE**

**1.1.0 INTRODUCTION**

The students Industrial work experience scheme(SIWES), is a skills training programme designed to expose and prepare students of universities, polytechnics/colleges of technology/colleges of Agriculture and colleges of Education for the industrial work situation that they are likely to meet after graduation.

The scheme also affords the students the opportunity of familiarizing and exposing themselves to the needed experience in handling equipment and machinery that are usually not available in their institutions.

Before the scheme was established, there was a growing concern among industrialists that graduates of our institutions of higher lacked adequate practical background studies preparatory for employment in industries and other organizations. Thus, the employers of labour were of the opinion that the theoretical education going on in higher institution was not responsive to their needs.

Since its inception in 1973, SIWES has evolved continuously to cope with changes in the economy, increase in the number of participating higher institutions of learning, increase in the number of students enrolled in the scheme as well as innovations in technology. At present there are indications that thee entire administration of SIWES will be online in the nearest future.

**1.1.1 OBJECTIVES AND SCOPE OF SIWES**

The main objectives of SIWES are :

1. Provide an avenue for students in institutions of higher learning to acquire industrial skills and experience in their course of study.
2. Prepare students for the industrial work situation they are to meet after graduation.
3. Expose students to work and techniques in handling equipments and machinery that may not be available in their institutions
4. Make transition from school to the world of work easier and enhance students contacts for later job placement
5. Provide students with an opportunity to apply their knowledge in real work situations, thereby bridging the gap between theory and practise.
6. Enlist and strengthen employers involvement in the entire educational process and prepare students for employment in industry and commerce.

**CHAPTER TWO**

2.1.0 **Company’s profile**

Eelspace technologies is a tech company located at no. 33 Ikpa road, Uyo, Akwa Ibom state. As stated in the name, the company is based on technologies mainly on ICT and other computer related technologies. This is why she has departments like Artificial Intelligence (A.I), Internet of Things(IOT), web development, just to mention few. The company was birthed by Mr. David Orok with the help of his co-founders. The company operates from Monday to Sunday(8a.m to 7p.m from Mondays to Saturdays and 11a.m to 6p.m on Sundays).

2.1.1 **Vision**

We are tech community in Africa, rich in intelligence and innovation consistently using technology to make the world a better place.

2.1.2 **Mission**

Create a workspace everywhere in the world where people work to make life not just a living.

2.1.3 **Core Values**

**Inspired:** We do what we love and are connected to something greater than ourselves.

**Innovative:** We are committed to innovating and creating disruptive solutions to challenges and problems.

**Consistent:** We are tirelessly consistent and dedicated to our mission. We are not known to ever give up.

**Educated:** We learn, evolve and indulge in new understanding. We provide information needed for the improvement of work of life.

**Entrepreneurial:** We are creators, leaders and self starters. We try new things, we challenge convention and we are not afraid of failing, that’s why we take flying leaps into the unknown.

**Tenacious:** We never settle, we never quit. We get shit done and we get it done well. Be persistent and knock down walls. Literally if you have to, you have our permission.

**Together:** We are in this together. This is a team effort. We always look out for one another. We have empathy, we know we’re all human and know we can’t do any of these alone.

2.1.4 **Departments in EELSPACE Technologies**

There are seven departments at EELSPACE technologies to include:

1. Artificial Intelligence
2. Digital Marketing
3. Internet of Things
4. User Interface/ User Experience design
5. Web development
6. 3D animation
7. Computer maintenance and repairs.

**CHAPTER 3**

**COMPUTER MAINTENANCE AND REPAIRS**

**3.1.0 INTRODUCTION**

**Computer maintenance** is the practice of keeping computers in a good state of repair. A **computer** containing accumulated dust and debris may not run properly. Dust and debris will accumulate as a result of air cooling. Any filters used to mitigate this need regular service and changes.

Every computer eventually needs a tune-up and in this case learning how to complete that tune-up using basic computer hardware theory and operating system and application program skills. Additionally, acquiring technical hands-on experience in installation, maintenance and application of troubleshooting techniques is the best approach for all computer engineers in this ICT world.

With more and more microcomputer-based systems entering the marketplace, there's a need for professionals who can link their computer hardware expertise to the general needs of business. To ensure your success in the field, you'll also gain business experience by examining approaches for maintaining strong customer relations and providing effective technical support.

This concise applied science program was meant to prepare me to step into an important role by combining a broad range of computer-related courses with strong interpersonal skills training.

## 3.1.1 COMPONENTS COMPUTER SYSTEM :

We have three components of a computer, which are :

**3.1.2 SOFTWARE:** System software is a type of computer [program](https://searchsoftwarequality.techtarget.com/definition/program) that is designed to run a computer’s hardware and [application programs](https://searchsoftwarequality.techtarget.com/definition/application). If we think of the computer system as a layered model, the system [software](https://searchmicroservices.techtarget.com/definition/software) is the interface between the hardware and user applications. The operating system ([OS](https://whatis.techtarget.com/definition/operating-system-OS)) is the best-known example of system software. The OS manages all the other programs in a computer.

Other examples of system software include:

* The [BIOS](https://whatis.techtarget.com/definition/BIOS-basic-input-output-system) (basic input/output system) gets the computer system started after you turn it on and manages the data flow between the operating system and attached devices such as the [hard disk](https://searchstorage.techtarget.com/definition/hard-disk), [video adapter](https://whatis.techtarget.com/definition/video-adapter), [keyboard](https://whatis.techtarget.com/definition/keyboard), [mouse](https://whatis.techtarget.com/definition/mouse) and [printer](https://whatis.techtarget.com/definition/printer).
* The [boot](https://searchwindowsserver.techtarget.com/definition/boot) program loads the operating system into the computer's main memory or random access memory ([RAM](https://searchstorage.techtarget.com/definition/RAM-random-access-memory)).
* An [assembler](https://searchdatacenter.techtarget.com/definition/assembler) takes basic computer [instructions](https://whatis.techtarget.com/definition/instruction) and converts them into a pattern of [bits](https://whatis.techtarget.com/definition/bit-binary-digit) that the computer's [processor](https://whatis.techtarget.com/definition/processor) can use to perform its basic operations.
* A [device driver](https://searchenterprisedesktop.techtarget.com/definition/device-driver) controls a particular type of [device](https://whatis.techtarget.com/definition/device) that is attached to your computer, such as a keyboard or a mouse. The driver program converts the more general input/output instructions of the operating system to messages that the device type can understand.

Additionally, system software can also include system [utilities](https://whatis.techtarget.com/definition/utility), such as the disk [defragmenter](https://searchwindowsserver.techtarget.com/definition/defragmentation) and [System Restore](https://searchwindowsserver.techtarget.com/definition/System-Restore), and development tools, such as [compilers](https://whatis.techtarget.com/definition/compiler) and [debuggers](https://searchsoftwarequality.techtarget.com/definition/debugging).

System software and application programs are the two main types of computer software. Unlike system software, an application program (often just called an application or [app](https://searchmobilecomputing.techtarget.com/definition/app)) performs a particular function for the user. Examples include [browsers](https://searchwindevelopment.techtarget.com/definition/browser), email clients, [word processors](https://searchwindowsserver.techtarget.com/definition/word-processor) and [spreadsheets](https://whatis.techtarget.com/definition/spreadsheet).

**3.1.3 FIRMWARE:** In [computing](https://en.wikipedia.org/wiki/Computing" \o "Computing), firmware is a specific class of computer [software](https://en.wikipedia.org/wiki/Computer_software" \o "Computer software) that provides the low-level control for the device's specific [hardware](https://en.wikipedia.org/wiki/Computer_hardware" \o "Computer hardware). Firmware can either provide a standardized operating environment for the device's more complex software (allowing more [hardware-independence](https://en.wikipedia.org/wiki/Porting" \o "Porting)) or for less complex devices, act as the device's complete [operating system](https://en.wikipedia.org/wiki/Operating_system" \o "Operating system), performing all control, monitoring and data manipulation functions. Typical examples of devices containing firmware are [embedded systems](https://en.wikipedia.org/wiki/Embedded_systems" \o "Embedded systems), consumer appliances, computers, computer peripherals, and others. Almost all electronic devices beyond the simplest contain some firmware.

Firmware is held in [non-volatile memory](https://en.wikipedia.org/wiki/Non-volatile_memory" \o "Non-volatile memory) devices such as [ROM](https://en.wikipedia.org/wiki/Read-only_memory" \o "Read-only memory), [EPROM](https://en.wikipedia.org/wiki/EPROM" \o "EPROM), or [flash memory](https://en.wikipedia.org/wiki/Flash_memory" \o "Flash memory). Changing the firmware of a device was rarely or never done during its lifetime in the past but is nowadays a common procedure; some firmware memory devices are permanently installed and cannot be changed after manufacture. Common reasons for updating firmware include fixing bugs or adding features to the device. This may require ROM [integrated circuits](https://en.wikipedia.org/wiki/Integrated_circuit" \o "Integrated circuit) to be physically replaced or flash memory to be reprogrammed through a special procedure. Firmware such as the [ROM BIOS](https://en.wikipedia.org/wiki/ROM_BIOS" \o "ROM BIOS) of a personal computer may contain only elementary basic functions of a device and may only provide services to higher-level software. Firmware such as the program of an embedded system may be the only program that will run on the system and provide all of its functions.

**3.1.4 HARDWARE**: Hardware represents the physical and tangible components of a computer i.e. the components that can be seen and touched.

A modern PC is both simple and complicated. It is simple in the sense that over the years, many of the components used to construct a system have become integrated with other components into fewer and fewer actual parts. It is complicated in the sense that each part in a modern system performs many more functions than did the same types of parts in older systems.

This section briefly examines all the components and peripherals in a modern PC system. Each item is discussed further in later chapters.

Here are the components and peripherals necessary to assemble a basic modern PC system:

* Motherboard
* Processor
* Memory (RAM)
* Case/chassis
* Power supply
* Floppy drive
* Hard disk
* CD-ROM, CD-RW, or DVD-ROM drive
* Keyboard
* Mouse
* Video card
* Monitor (display)
* Sound card
* Speakers
* Modem

A breakdown of these items is shown in Table 3.1.

|  |  |
| --- | --- |
| **Component** | **Description** |
| Motherboard | The motherboard is the core of the system. It really is the PC; everything else is connected to it, and it controls everything in the system. |
| Processor | The processor is often thought of as the "engine" of the computer. It's also called the CPU (central processing unit). |
| Memory (RAM) | The system memory is often called RAM (for random access memory). This is the primary memory, which holds all the programs and data the processor is using at a given time. |
| Case/chassis | The case is the frame or chassis that houses the motherboard, power supply, disk drives, adapter cards, and any other physical components in the system. |
| Power supply | The power supply is what feeds electrical power to every single part in the PC. |
| Floppy drive | The floppy drive is a simple, inexpensive, low-capacity, removable-media, magnetic storage device. |
| Hard drive | The hard disk is the primary archival storage memory for the system. |
| CD-ROM/DVD-ROM | CD-ROM (compact disc read-only) and DVD-ROM (digital versatile disc read-only) drives are relatively high-capacity, removable media, optical drives. |
| Video card | The video card controls the information you see on the monitor. |
| Monitor |  |
| Sound card | It enables the PC to generate complex sounds. Sound cards and speakers are covered in detail in Chapter 16, "Audio Hardware." |
| Modem | Most prebuilt PCs ship with a modem (generally an internal modem) used to enable internet connections . |

#### **Table 3.1 Basic PC Components**

**3.2.0 DEFINITION OF TERMS :**

**Application & App:**  
An application (often called “app” for short) is a program with a Graphic User Interface (GUI).

**Boot:**  
Boot refers to starting an Operating System (OS) up. Rebooting is the term used if the computer is already running.

**Browser:**  
A browser is the computer program used to view content and search the web.

**Bug:**  
A bug is the term used to designate a mistake in the design of software. Some severe “bugs” can cause a computer to crash.

**Directory:**  
A directory is a collection of files created to organize information and is also commonly called a “folder”. A directory is also itself a file, and so can contain other directories.

**Disk:**  
A disk is the spherical physical object used for storing data and does not lose data even if it loses power. It is always with a disk drive.

**Drive:**  
A drive is the device that stores and/or retrieves data. Some drives are capable of having new data written to them.

**Internet:**  
The Internet refers to the world-wide web (www) or network of computers. Sometimes referred to as the ‘net’, there is only one Internet, and it is typically capitalized.

**Malware:**  
Malware stands for “malicious software,” and refers to software programs that are designed to harm or do other unwanted actions on a computer system. Malware examples include spyware, viruses, spyware and Trojan horses.

**Megahertz (MHz):**  
One megahertz is equivalent to 1000 kilohertz, or 1,000,000 hertz. Older Personal Computers typically measure the clock speed of the main processor in MHz.

**Memory:**  
Computer memory refers devices that can store data temporarily or permanently on a computer. of data on a computer.

**Network:**  
A network is a group of computers that work together. It can also refer to the physical wire etc. connecting the computers.

**Peripheral:**  
A computer peripheral refers to any external device that can provide both input and output. Input peripherals include the mouse and keyboard. Examples of output peripherals include the monitor and printer.

**Printer:**  
A printer is hardware that prints out computer information onto paper.

**Processor:**  
The processor is also called a central processing unit (CPU) and is also referred to as the microprocessor. The processor runs all computations and is the part of the computer that runs the programs and works with the data. Some computers use more than one processor and are called “multiprocessors”.

**Program:**  
A program refers to the series of instructions for a computer. Two other terms, “application” and “app”, have a similar meaning, although they generally have Graphic User Interfaces (GUI).

**Spyware:**  
Spyware is software that literally “spies” on your computer to capture information including usernames, passwords, email content and browsing habits. Similar to viruses, spyware can be installed when an email attachment containing the malicious software is opened or if another program is installed that contains a spyware installer.

**Virus:**  
A computer virus is a malicious program or script that can move, create or erase files, consume your computer’s memory, and cause your computer to function incorrectly. Some viruses can travel across networks, attach to programs and even duplicate themselves. A common way to get infected by a computer virus is by opening an infected email attachment.

**BIOS (basic input/output system):** is the program a personal computer's [microprocessor](https://whatis.techtarget.com/definition/microprocessor-logic-chip) uses to get the computer system started after you turn it on. It also manages data flow between the computer's [operating system](https://whatis.techtarget.com/definition/operating-system-OS) and attached devices such as the [hard disk](https://searchstorage.techtarget.com/definition/hard-disk), [video adapter](https://whatis.techtarget.com/definition/video-adapter), [keyboard](https://whatis.techtarget.com/definition/keyboard), [mouse](https://whatis.techtarget.com/definition/mouse) and [printer](https://whatis.techtarget.com/definition/printer).

BIOS is an integral part of your computer and comes with it when you bring it home. (In contrast, the operating system can either be pre-installed by the manufacturer or vendor or installed by the user.)

# **Device Drivers:**

# In [computing](https://en.wikipedia.org/wiki/Computing" \o "Computing), a device driver is a [computer program](https://en.wikipedia.org/wiki/Computer_program" \o "Computer program) that operates or controls a particular type of device that is attached to a computer.[[1]](https://en.wikipedia.org/wiki/Device_driver" \l "cite_note-dev1-1) A driver provides a [software interface](https://en.wikipedia.org/wiki/Software_interface" \o "Software interface) to hardware devices, enabling operating systems and other computer programs to access hardware functions without needing to know precise details about the hardware being used.

# A driver communicates with the [device](https://en.wikipedia.org/wiki/Peripheral" \o "Peripheral) through the [computer bus](https://en.wikipedia.org/wiki/Computer_bus" \o "Computer bus) or communications subsystem to which the hardware connects. When a calling program invokes a [routine](https://en.wikipedia.org/wiki/Subroutine" \o "Subroutine) in the driver, the driver issues commands to the device. Once the device sends data back to the driver, the driver may invoke routines in the original calling program. Drivers are hardware dependent and [operating-system](https://en.wikipedia.org/wiki/Operating_system" \o "Operating system)-specific. They usually provide the [interrupt](https://en.wikipedia.org/wiki/Interrupt" \o "Interrupt) handling required for any necessary asynchronous time-dependent hardware interface.

# **CENTRAL PROCESSING UNIT**

**central processing unit** (**CPU**), also called a **central processor** or **main processor**, is the [electronic circuitry](https://en.wikipedia.org/wiki/Electronic_circuit" \o "Electronic circuit) within a [computer](https://en.wikipedia.org/wiki/Computer" \o "Computer) that executes [instructions](https://en.wikipedia.org/wiki/Instruction_(computing)" \o "Instruction (computing)) that make up a [computer program](https://en.wikipedia.org/wiki/Computer_program" \o "Computer program). The CPU performs basic [arithmetic](https://en.wikipedia.org/wiki/Arithmetic" \o "Arithmetic), logic, controlling, and [input/output](https://en.wikipedia.org/wiki/Input/output" \o "Input/output) (I/O) operations specified by the instructions. The computer industry has used the term "central processing unit" at least since the early 1960s. Traditionally, the term "CPU" refers to a [processor](https://en.wikipedia.org/wiki/Processor_(computing)" \o "Processor (computing)), more specifically to its processing unit and [control unit](https://en.wikipedia.org/wiki/Control_unit" \o "Control unit) (CU), distinguishing these core elements of a computer from external components such as [main memory](https://en.wikipedia.org/wiki/Main_memory" \o "Main memory) and [I/O](https://en.wikipedia.org/wiki/I/O" \o "I/O) circuitry.

The form, [design](https://en.wikipedia.org/wiki/CPU_design" \o "CPU design), and implementation of CPUs have changed over the course of their history, but their fundamental operation remains almost unchanged. Principal components of a CPU include the [arithmetic logic unit](https://en.wikipedia.org/wiki/Arithmetic_logic_unit" \o "Arithmetic logic unit) (ALU) that performs arithmetic and [logic operations](https://en.wikipedia.org/wiki/Logic_operation" \o "Logic operation), [processor registers](https://en.wikipedia.org/wiki/Processor_register" \o "Processor register) that supply [operands](https://en.wikipedia.org/wiki/Operand" \o "Operand) to the ALU and store the results of ALU operations, and a control unit that orchestrates the fetching (from memory) and execution of instructions by directing the coordinated operations of the ALU, registers and other components.

**RANDOM-ACCESS MEMORY** (**RAM**): Is a form of [computer memory](https://en.wikipedia.org/wiki/Computer_memory" \o "Computer memory) that can be read and changed in any order, typically used to store working [data](https://en.wikipedia.org/wiki/Data_(computing)" \o "Data (computing)) and [machine code](https://en.wikipedia.org/wiki/Machine_code" \o "Machine code). A [random-access](https://en.wikipedia.org/wiki/Random_access" \o "Random access) memory device allows [data](https://en.wikipedia.org/wiki/Data" \o "Data) items to be [read](https://en.wikipedia.org/wiki/Read_(computer)" \o "Read (computer)) or written in almost the same amount of time irrespective of the physical location of data inside the memory. In contrast, with other direct-access data storage media such as [hard disks](https://en.wikipedia.org/wiki/Hard_disk" \o "Hard disk), [CD-RWs](https://en.wikipedia.org/wiki/CD-RW" \o "CD-RW), [DVD-RWs](https://en.wikipedia.org/wiki/DVD-RW" \o "DVD-RW) and the older [magnetic tapes](https://en.wikipedia.org/wiki/Magnetic_tape_data_storage" \o "Magnetic tape data storage) and [drum memory](https://en.wikipedia.org/wiki/Drum_memory" \o "Drum memory), the time required to read and write data items varies significantly depending on their physical locations on the recording medium, due to mechanical limitations such as media rotation speeds and arm movement.

RAM contains [multiplexing](https://en.wikipedia.org/wiki/Multiplexer" \o "Multiplexer) and [demultiplexing](https://en.wikipedia.org/wiki/Demultiplexing" \o "Demultiplexing) circuitry, to connect the data lines to the addressed storage for reading or writing the entry. Usually more than one bit of storage is accessed by the same address, and RAM devices often have multiple data lines and are said to be "8-bit" or "16-bit", etc. devices.

The two main types of volatile random-access [semiconductor memory](https://en.wikipedia.org/wiki/Semiconductor_memory" \o "Semiconductor memory) are [static random-access memory](https://en.wikipedia.org/wiki/Static_random-access_memory" \o "Static random-access memory) (SRAM) and [dynamic random-access memory](https://en.wikipedia.org/wiki/Dynamic_random-access_memory" \o "Dynamic random-access memory) (DRAM).

# OPERATING SYSTEMS

# When a brand new computer comes off the factory assembly line, it can do nothing. The hardware needs software to make it work. Are we talking about applications software such as word processing or spreadsheet software Partly. But an applications software package does not communicate directly with the hardware. But between the applications software and the hardware is a software interface - an *operating system*. An operating system is a set of programs that lies between applications software and the computer hardware. Conceptually the operating system software is an intermediary between the hardware and the applications software. Incidentally, the term system software is sometimes used interchangeably with operating system, but system software means all programs related to coordinating computer operations. System software does include the operating system, but it also includes the BIOS software, drivers, and service programs. Note that we said that an operating system is a set of programs. The most important program in the operating system, the program that manages the operating system, is the supervisor program, most of which remains in memory and is thus referred to as resident. The supervisor controls the entire operating system and loads into memory other operating system programs (called nonresident) from disk storage only as needed.

# An operating system has three main functions:

# Manage the computer's resources, such as the central processing unit, memory, disk drives, and printers.

1. Establish a user interface, and
2. Execute and provide services for applications software. Keep in mind, however, that much of the work of an operating system is hidden from the user; many necessary tasks are performed behind the scenes. In particular, the first listed function, managing the computer's resources, is taken care of without the user being aware of the details. Furthermore, all input and output operations, although invoked by an applications program, are actually carried out by the operating system. Although much of the operating system functions are hidden from view, you will know when you are using an applications software package, and this requires that you invoke-call into action-the operating system. Thus you both establish a user interface and execute software.

# **CHAPTER 4**

# **4.1.0 TROUBLESHOOTING THEORY**

# **4.1.1 EXPLAINING TROUBLESHOOTING THEORY**

Possibly the most important but hard-to-learn ability any technical individual might have is the gift to troubleshoot. For persons who are new with the expression, troubleshooting is the act of investigating and rectifying problems in any type of system. For a businessman, this might mean recognizing the source(s) of ineffectiveness in a business and suggesting a remedial course. For a doctor, this would mean accurately identifying a patient's trouble and recommending a treatment.

A system if creating a problem, it is needed to be solved immediately. But before solving the problem, the very problem is needed to be identified. Once the problem is identified, then that is to be sorted out, and ultimately that is to be fixed. But before the problem is fixed, the system should be brought to action.

# **4.2.0 HOW TO CONFIGURE AND APPLY BIOS SETTINGS:**

# BIOS stand for Basic Input/output System which is the first software that is loaded by the PC and prepares the PC for loading the Operating System. It finds all the hardware components of the PC and it becomes possible for the PC to load the OS. Updating BIOS is a critical work, since it requires lots of careful implementation of steps. Before installing the upgrades for BIOS, one must first understand that when BIOS is being updates, the computer has to keep running. If due to any technical reason like voltage variation, load management or the low battery, the computer shuts down while the BIOS is being updated, the computer will shut down immediately and it won't be able to boot again. So while the update is being installed, one must check that laptop is not being run only at the battery, but it's connected at the main power as well. So if the light blacks out, the battery power can back up the machine.

Bios settings can be considered using the following ways:

1. Boot Sequence
2. Enabling and disabling devices
3. Date/time
4. Clock speeds: For over clocking, one can use BIOS settings. But before that, one should have some gadgets. Firs one is an unlocked processor, Intel's K series processors are specially designed for this.
5. Virtualization support: To enable the virtualization, one can proceed to BIOS. Locate for the Advanced Tab and under CPU configuration, look for Virtualization technology. This option is usually disabled by default and one can enable it from there.
6. BIOS security (passwords, drive encryption)

## **4.3.0 HOW TO USE IN BUILT DIAGNOSTICS:**

There are many built- in diagnostics in the computer to help determine the problems. The first built in diagnose system is, the trouble shooting system. For example, whenever a device is connected to the computer and the computer is unable to detect, it shows message to trouble shoot the problem. The user can simply click it, they computer runs the command and then the possible ways to get rid of this are presented by computer. User can chose any of them to get their device detected. Also, some computer manufacturers also offer a diagnose test. Like Dell has. If someone owns a dell system, they can simply go to manufacturer's website and can run for the test, this way they can understand what's wrong with their computer and can make some corrections for that. The most easiest and recommended way is, use the windows built in system to detect the errors.

**4.3.0 COMMON COMPUTER SYSTEM PROBLEMS AND HOW TO FIX THEM**

## **Slow system Performance:**

You may start to notice slower performance in applications you use every day. That’s likely a problem stemming from your operating system. Typically, this is a result of fragmentation on your C drive (C:). It’s not a big problem **–** easily resolved by doing some basic software cleanup. Run a quick system check from your Task Manager to see which applications are taking up the most CPU and RAM resources. Remove any unnecessary programs or processes running in the background that you don’t use. In the unlikely event that there are more complicated hardware issues to contend with, operating systems now come pre-programmed with [a suite of free diagnostic and troubleshooting tests](https://www.makeuseof.com/tag/how-to-test-your-pc-for-failing-hardware/" \t "https://www.rednightconsulting.com/6-common-computer-issues-fix/_blank) you can run to narrow down the problems.

## **Loud Noises From Computer:**

You may begin to hear loud clicking or grinding noises from your computer. If so, it’s almost certain that you are dealing with some type of hardware failure. There is a range of possible issues when you hear loud noises, but it will likely stem from the rotary functions of your cooling fans or hard drive(s).

If you open the computer case and notice that the cooling fans are the culprits for the noise, [it’s probably time to change them out](https://www.pcmech.com/article/how-to-tell-if-your-pc-fans-need-replacing/" \t "https://www.rednightconsulting.com/6-common-computer-issues-fix/_blank). Cooling fans themselves are relatively inexpensive and easy to change with a screwdriver. CPU fans, power supplies, and graphics cards are other possible areas you should inspect. Keep in mind that these replacements can be a bit more expensive.

## **Computer Constantly Freezes:**

Computers are complex machines that manage multiple processes without you even seeing them. This complexity can sometimes [cause your computer to freeze](https://www.computerhope.com/issues/ch000690.htm" \t "https://www.rednightconsulting.com/6-common-computer-issues-fix/_blank) or not respond to your actions. Nine out of 10 times you can remedy this simply by rebooting your system. In the event that you are experiencing constant freezes, it could be a sign of insufficient system memory, registry errors, corrupted files, or even spyware. You should check each of these potential issues one by one until the problem is rectified. Running system checks in the background will tell you if you don’t have sufficient memory in your system for the applications you use. Antivirus and malware programs can run a more thorough check. They can see if your system’s resources are being impacted by viral infections and registry errors. They’ll help you correct them, too.

## **Internet Browsing Is Slow or Unresponsive:**

If your internet is slow or unresponsive, it could be a combination of software and hardware issues. But if you’ve already checked that your WiFi or LAN network connection is active and strong, the lag could result from conflicts in the IP address registration. That can be fixed by rebooting your modem or router. If it still doesn’t fix the issue, the problem could be the browser you are using. Over time, browser performance can bog down from a large browsing history and cache. There may also be failing browser extensions that [slow down performance](https://www.popsci.com/speed-up-your-web-browser" \t "https://www.rednightconsulting.com/6-common-computer-issues-fix/_blank). Make a practice of clearing your internet search history and cache regularly to keep your browser running efficiently. If all else fails, you can try reinstalling your browser or using a different one altogether to see if you experience the same issues.

## **You’re Seeing a BSOD (Blue Screen of Death):**

There is nothing scarier than working on an important document only to be greeted by the BSOD (Blue Screen of Death). This STOP error is almost certainly hardware-related and unfortunately, could signal significant system failures. However, it’s not necessarily hopeless. In fact, a simple reboot could be all you need to fix the issue.

In most cases, however, further diagnostics are necessary to find the cause of the issue. If the blue screen appears, you’ll see a line of white text that identifies the problem your computer is having. You can easily [look these codes up online](https://www.lifewire.com/blue-screen-error-codes-4065576" \t "https://www.rednightconsulting.com/6-common-computer-issues-fix/_blank) to narrow down the issue and work toward a solution or seek assistance.

## **Screen Display Is Truncated or Has Low Resolution:**

If you restart your computer and see that the resolution has changed or desktop icons and texts are truncated, it’s usually related to your graphics card. Many times, you simply need to update your graphics drivers. If you know the [brand or model of your card](http://nvidia.custhelp.com/app/answers/detail/a_id/2040/~/identifying-the-graphics-card-model-and-device-id-in-a-pc" \t "https://www.rednightconsulting.com/6-common-computer-issues-fix/_blank), you can go to the manufacturer’s website and download the latest software for the device.

If taking this step still doesn’t fix the issue, there could be larger issues with your hardware. In rare cases, you may need to replace the graphics card altogether to solve the issue. However, in most cases, the issue is software-related.

## Missing DLL Files:

Another standard system issue — again, with Windows-based operating systems — is a DLL error. This means a DLL file is either missing or corrupt. Files ending with “.DLL” are dynamic link library files.

They hold many codes, procedures, and instructions for programs. They exist to tell the OS how to deal with certain apps. Several programs can also open them at once, improving memory conversion.

These are necessary system files, and when they’re missing or corrupt, bad things happen. This is unfortunate, and common because there are so many of them.

## Applications Running Slowly:

When applications slow down or hang, it could be due to any number of causes. But the most common relates to processing power and memory.

Computer memory — [or random access memory](http://www.pcmag.com/encyclopedia/term/50159/ram) — is used to store data temporarily while programs are running. The recommended amount for Windows users is 2GB or more, but a higher number is ideal. In fact, the more memory you have, the more programs you can run concurrently.

RAM doesn’t necessarily speed up a computer, but it can make applications and programs run better. So, yes, it’s commonly associated with performance and speed.

## Malware:

Malware is a type of software that can damage or disable computers and related systems. It has to be installed on a computer before it can cause problems. However, this can happen much more quickly than you think.

For example, just downloading a file from a website could result in malware on your computer. Once opened, it can damage files, and it can even slow down your computer by using up valuable resources.

## Internet or Network Connectivity Issues:

Internet or network connectivity issues can stem from many problems. First, there could be something wrong with your ISP, or internet service provider. Then, [there are DNS servers](http://www.networksolutions.com/support/what-is-a-domain-name-server-dns-and-how-does-it-work/) you must connect to, which can also encounter issues. Finally, there’s your local hardware, which includes your router, computer and network software.

Luckily, Windows has a troubleshooting tool that can help identify network connection issues.

## Hard Drive Failure:

A hard drive failure can lead to serious problems. The good news is that hard drives are easily replaceable. The bad news is that the data stored on said hard drive can become corrupt or lost forever.

This isn’t a big deal if you’re talking about program files that can be easily recovered. But when it comes to personal documents, photos, and important data it’s a huge problem. This is all data you can’t easily duplicate.

It’s recommended that you keep backups of your most important files. A hard drive can fail at any time, and it can happen with both old and new drives. Worse yet, [failure rates differ](http://www.pcworld.com/article/3071180/storage/who-makes-the-most-reliable-hard-drive-latest-backblaze-survey-claims-to-know.html) depending on the type, capacity, and brand of a drive.

Translation: You never know when a hard drive failure will happen, so preparation is essential.

## Frozen Screen:

During a severe failure — usually related to hardware — a computer can freeze or lock up. But this can also happen due to software problems, too, so never rule it out.

Most of the time, you can remedy this by opening the Windows task manager and force-closing the problematic application. Other times, the computer will lock up completely, and the only way to fix it is to reboot the machine.

## Strange Noises:

Computers are never silent. At any given time, multiple functions take place that can cause noise. Mechanical hard drives and optical disk drives, for instance, make a distinct noise when powering up and when they’re in use. Cooling fans can also make noise as they spin. Graphics cards or GPUS also have a fan that turns as they heat up.

Many of these components can make strange noises as they fail or begin to age.

## Overheating:

As power flows through the parts inside a computer are used, they heat up. It’s natural. This includes the CPU, hard drives, graphics cards, the power supply, external and internal drives and even the motherboard.

Some of the components can operate fine under a little warmth. When the heat inside a computer grows too high, it can cause serious failures, and it can even damage components. That’s exactly why a processor has its own cooling fan. The same applies to a graphics card or power supply. These components need to stay within a reasonable temperature range.

You never want components to overheat.

## Applications Won’t Install:

There are many reasons why an application might not install on your computer. The most likely of which is that your computer and its software are not compatible with said application.

There are minimum system requirements to run everything from a simple program to a hardware-intensive game. If your computer does not meet these needs, you can experience a slowdown, and sometimes the app won’t even run.

Other issues that can prevent installation are hardware failures, storage space, and missing files. Missing files can also be system files like .DLLs [and .NET framework content](http://www.howtogeek.com/253588/what-is-the-microsoft-net-framework-and-why-is-it-installed-on-my-pc/).

## Computer Suddenly Shuts Off or Restarts:

There’s nothing worse than your computer restarting in the middle of a video game or your work. In addition to having to wait for the computer to boot back up, you might lose any progress you’ve made in the meantime. Sudden reboots or shutdowns can have a number of different hardware or software causes. If you’re running a Windows operating system, an automatic Windows Update could be the culprit. These updates are supposed to warn you before they reboot but if you don’t see the notification, they could catch you unaware.

If you’re playing a new video game and the computer shuts off, it could be a problem with your power supply — specifically, it might not have enough power to keep the computer running under that load.

## Peripherals Stop Working:

It’s hard to use your computer if your peripherals suddenly stop working or aren’t functioning correctly. Even if you know some of the keyboard shortcuts, most modern computers aren’t designed to be used without a mouse. This, again, could be hardware or software problems. The peripherals themselves could fail, preventing them from communicating with the computer. The USB ports can also fail, which interrupts the communication between the keyboard and mouse, and the computer.

On the software side, if the drivers fail the hardware might be working fine but the computer has no idea what to do with that information.

## Not Using All It’s RAM:

You can have 16 gigabytes of RAM on your computer, but if the computer isn’t set up correctly it might only be utilizing a fraction of that processing power. If you’re only using part of your computer’s RAM, your games and programs will run slower — or not at all.

RAM issues can have a lot of causes. If one or more of the RAM sticks isn’t seated correctly, it won’t function. If the computer is programmed to only use a fraction of the available of the ram, regardless of how many sticks you install.

## Crashes Before Loading Operating System:

If your computer starts to boot up before giving you an “Error Loading Operating System” message or just looping back through the restart process, you might start freaking out. Don’t panic. This computer problem can happen because of fresh operating system installation, or a problem caused by power failures, system crashes, or incorrect restarts. You’ll see this error because when your computer boots up, it starts the motherboard up first, then checks the hard drives, and if there isn’t an issue with those, it will boot up the computer. If there are any issues, you’ll get the error message, and have some troubleshooting to do.

## Monitor Not Showing Images:

The computer is on — at least, according to the lights on the case — but you’re not seeing any images on the monitor. This is another issue that could have a lot of different causes. The first thing you should check is your video cables that run between the monitor and the computer. If something has come loose, that would prevent your screens from working. Other issues might include graphics card failure, driver issues, or problems with the graphics ports on the computer.

**CHAPTER 5**

**CONCUSION**

Since when I started my studies in the university, have not been opportune to really see, know or fix physical system problems, even when my personal system crashes or develop faults I will have to take it to a computer technician who is well equipped in knowledge to fix them. But because of this training have been able to dissemble and assemble a computer system , and also learn some techniques used to fix system problems as well as having vast knowledge on components of a computer system and configuration.

**RECOMENDATION**

Computer maintenance and repairs is a skill every computer engineering students should have, cause they would be using computer systems for their work in school or at work , and computer systems are bound to develop faults while using them, due to virus or crash. Then at this point the skill of maintenance and repair comes to play . so it a very important course for computer engineering students. And it should be part of the courses offered in school.