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**DEPARTMENT OF COMPUTER STUDIES ITEC 110 –**

**Systems Administration and Maintenance Final Examination**

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| **Surname: Gicale** | **First Name: John Andre** | **M.I.: C.** | **Date of**  **Examination: Jan 30, 2023** | **Equivalent:** |
|  | **Course/Year/Section: BSIT-4D** | | | **Remarks:** |

================================================================================= **GENERAL INSTRUCTIONS:**

• Use black text only.

• If you have any clarification or question relevant to the items listed in the questionnaire, politely ask it to the proctor/instructor concerned.

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**I. PROBLEM 1 (5 points)**

**Question:** As a system administrator and maintenance, what steps or procedures should you take if one of your employees encounters a blue screen of death?



**Answer:**

* **Consider the employee recent actions on the computer.** Did the employee install a piece of software, plug in a new piece of hardware, download custom drivers, or change the settings? If so, the recent change you made is probably the reason for the Blue Screen of Death, so repairing it will depend on that change.
* **See if the computer is unusually hot.** If the computer has been running on high-performance settings for several hours, especially if the computer doesn't have adequate circulation or if it was live in a particularly warm environment, the Blue Screen of Death can appear. If so, turn off your computer the first chance that you get and leave it off for a few hours.
* **Run the Blue Screen troubleshooter.** If this is the first time you've encountered a Blue Screen of Death on your computer, you can run your PC's Blue Screen troubleshooter to try to diagnose the issue: Open **Start**, Click **Settings,** Click **Update & Security**, Click the **Troubleshoot** tab, Click **Blue Screen,** Click **Run the troubleshooter**. Review the resulting solutions and follow any on-screen instructions.
* **Remove any unnecessary hardware.** Things like USB flash drives, Ethernet or HDMI cables, controllers, printer cables, SD cards, and so on can be removed from your computer without impacting the computer's performance.
* **Wait for the computer to restart.** Once the Blue Screen of Death appears, Windows will diagnose the problem, attempt to fix whatever the issue is, and then restart. If the computer restarts like usual and doesn't run into a Blue Screen error again, make some changes right from your desktop.
* If the BSOD appears again while the computer is attempting to restart, check its error code. If the error code is 0x000000EF, it should immediately [skip ahead to the next part](https://www.wikihow.com/Fix-the-Blue-Screen-of-Death-on-Windows#step_2_1). If not, try [rebooting in Safe Mode](https://www.wikihow.com/Fix-the-Blue-Screen-of-Death-on-Windows#step_3_1).
* Run a virus scan. While rare, sometimes viruses can trick your computer into thinking that it's malfunctioning, which can in turn cause the BSOD crash.
* If the virus scan comes up with any malicious software, remove it immediately.

If the virus scan sends software settings suggestions (e.g., battery life) to the computer during the scan, try implementing them. A flawed setting may cause the Blue Screen of Death to appear.

**II. PROBLEM 2 (5 points)**

**Question:** As a system administrator and maintenance, what steps or procedures would you take to discover and resolve an issue with one of your employees' network connection?

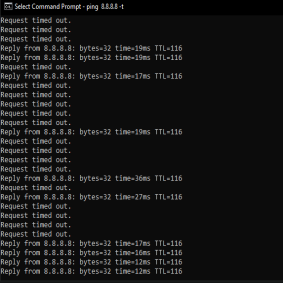


**Answer:**

* **Restart your modem, router, and device**
* Restarting your modem and router should be the first thing you do when encountering an internet signal issue. Don’t skip this step! This is almost always what tech support will ask you to try first, as it often solves the problem.
* To restart your equipment, unplug the power cable for 60 seconds and plug it back in. The equipment will take a few minutes to reboot. It’s also a good idea to restart the device you’re using**.**
* Check the lights on your equipment: nearly all modems and routers have LED status lights. You may also have a combo unit that is an all-in-one modem/router (also called a gateway). Either way, the LED status lights on your equipment are very helpful for quickly diagnosing network problems.
* Check the internet signal light: The light for an internet connection is on your modem and is usually labeled WAN, Internet, or with a globe icon, and you can tell the internet is on if the light (usually white or green) is solid.
* If the light is red or not on at all, you have an internet signal problem as your modem isn’t successfully connecting to the internet. If this is you, skip ahead to our internet signal troubleshooting section.
* Check the Wi-Fi light: The WiFi light(s) will be on your router or somewhere below the internet connection light if you have a modem/router combo unit. Labels for Wi-Fi lights vary but usually will read “2.4G” and “5G,” “WLAN,” or “Wireless.” These lights should be on and are usually blinking. If the Wi-Fi light(s) are off or red, your router isn’t broadcasting a signal. Skip to the Wi-Fi troubleshooting section to begin troubleshooting.
* Check your cables and wires: Wires and cables often become loose or damaged from repeated stress. The cable feeding the internet to your modem is either a coaxial cable (the same used for cable TV), an Ethernet cable, or a phone cable. The best way to troubleshoot cables is to swap them all out, if you have extras, Otherwise, make sure to connect these cables to both the modem and your wall outlet. Ethernet and phone cables should click when they are fully inserted into a socket. Coaxial cables should be screwed on snugly. Also, check for damage. See if the cable looks torn or perhaps chewed by a pet. Ethernet and phone cables are especially prone to damage, as the copper wires inside are very thin.
* Run the internet troubleshooter (for Windows): If you’re on Windows, run the built-in troubleshooter program to see if your computer can fix the issue for you. For Windows 10, click to Start > Settings > Update & Security > Troubleshoot, and then select the troubleshooter for Internet Connections.

**III. PROBLEM 3 (10 points)**

**Question:** As a system administrator and maintenance, you are aware that the company's internet connection is experiencing difficulties every day. The connections are intermittent and unstable, and the company requires an immediate solution; therefore, what steps or procedures will you take to resolve the problem?



**Answer:**

* Step 1: Restart the computer. A quick reboot can often be a life-saver. If you’ve already tried this or restarting the computer didn’t fix anything, proceed to Step 2.
* Step 2: Restart the router or modem. Do Not reset the router or modem or restore its settings back to factory default. Simply turn the router or modem off and back on. If this doesn’t work or only works for a moment, keep going to Step 3.
* Step 3: If you are connected to your network via Ethernet cable, unplug the cable and then reattach it. If needed, replace your network cable with a new or different cable to see if this was the cause of the issue.
* Step 4: If you’re connected via Wi-Fi when you see this error, it’s a possibility that the network adapter is attempting to conserve power. Stop this by finding the Network and Sharing Center in the Control Panel. Right click “Wi-Fi Connection”, select “Properties”, click “Configure” and find the “Power Management” tab. Click and uncheck the option that allows your computer to turn off device to conserve power.
* Step 5: If you’ve tried all of this and there’s still no connection, unplug your router and connect your computer directly to your modem. If this solves the issue, then your router is likely to be malfunctioning. If not, contact the router manufacturer for support.

**IV. PROBLEM 4 (10 points)**

**Question:** As a system administrator and maintenance, what steps or procedures will you take if one of the company's departments experiences serious computer problems?



**Answer:**

**The Computer Won’t Start**

* A computer that suddenly shuts off or has difficulty starting up could have a failing power supply. Check that the computer is plugged into the power point properly and, if that doesn’t work, test the power point with another working device to confirm whether or not there is adequate power.
* **The Screen is Blank**

If the computer is on but the screen is blank, there may be an issue with the connection between the computer and the screen. First, check to see if the monitor is plugged into a power point and that the connection between the monitor and computer hard drive is secure. If the problem is on a laptop, then you may need to get a professional to fix it as some of the internal wires may be worn.

* **Abnormally Functioning Operating System or Software**

If the operating system or other software is either unresponsive or is acting up, then try restarting your computer and run a virus scan. To avoid having this happen, install reliable anti-virus software.

* **Windows Won’t Boot**

If you are having troubles booting Windows, then you may have to reinstall it with the Windows recovery disk.

* **The Screen is Frozen**

When you computer freezes, you may have no other option than to reboot and risk losing any unsaved work. Freezes can be a sign of insufficient ram, registry conflicts, corrupt or missing files, or spyware. Press and hold the power button until the computer turns off, then restart it and get to work cleaning up the system so that it doesn’t freeze again.

* **Computer is Slow**

If yourcomputer is slower than normal, you can often fix the problem simply by cleaning the hard disk of unwanted files. You can also install a firewall, anti-virus and anti-spyware tools, and schedule regular registry scans. External hard drives are great storage solutions for overtaxed CPU’s, and will help your computer run faster.

* **Strange Noises**

A lot of noise coming from your computer is generally a sign of either hardware malfunction or a noisy fan. Hard drives often make noise just before they fail, so you may want to back up information just in case, and fans are very easy to replace.

* **Slow Internet**

To improve your Internet browser performance, you need to clear cookies and Internet temporary files frequently. In the Windows search bar, type ‘%temp%’ and hit enter to open the temporary files folder.

* **Overheating**

If a computer case lacks a sufficient cooling system, then the computer’s components may start to generate excess heat during operation. To avoid your computer burning itself out, turn it off and let it rest if it’s getting hot. Additionally, you can check the fan to make sure it’s working properly.

* **Dropped Internet Connections**

Dropped Internet connections can be very frustrating. Often the problem is simple and may be caused by a bad cable or phone line, which is easy to fix. More serious problems include viruses, a bad network card or modem, or a problem with the driver.

**V. PROBLEM 5 (10 points)**

**Question:** As a system administrator and maintenance, what steps or procedures will you take if one of your employees receives a file from an unknown source? After opening the file, the hacker gains access to the company's account information and server database.



**Answer:**

* Use a firewall.

Firewalls prevent unauthorized access to your business network and alert you to any intrusion attempts.

Make sure the firewall is enabled before you go online. You can also purchase a hardware firewall from companies such as Cisco, Sophos or Fortinet, depending on your broadband router, which also has a built-in firewall that protects your network. If you have a larger business, you can purchase an additional business networking firewall.

* Install antivirus software.

Antivirus programs such as Bitdefender, Panda Free Antivirus, Malwarebytes and Avast protect your computer against unauthorized code or software that may threaten your operating system. Antivirus software plays a major role in protecting your system by detecting real-time threats to ensure your data is safe. Some advanced antivirus programs provide automatic updates, further protecting your machine from the new viruses that emerge every day. After you install an antivirus program, don’t forget to use it. Run or schedule regular virus scans to keep your computer virus-free.

* Install an anti-spyware package.

Anti-spyware packages provide real-time protection by scanning all incoming information and blocking threats.

* Use complex passwords.

Using secure passwords is the most important way to prevent network intrusions. The more secure your passwords are, the harder it is for a hacker to invade your system. More secure often means longer and more complex. Use a password that has at least eight characters and a combination of numbers, uppercase and lowercase letters, and computer symbols. Hackers have an arsenal of tools to break short, easy passwords in minutes.

* Keep your OS, apps and browser up-to-date.

Always install new updates to your operating systems. Most updates include security fixes that prevent hackers from accessing and exploiting your data. The same goes for apps. Today’s web browsers are increasingly sophisticated, especially in privacy and security. Be sure to review your browser security settings in addition to installing all new updates.

* Ignore spam.

Beware of email messages from unknown parties, and never click on links or open attachments that accompany them. Inbox spam filters have gotten pretty good at catching the most conspicuous spam. But more sophisticated phishing emails that mimic your friends, associates and trusted businesses (like your bank) have become common, so keep your eyes open for anything that looks or sounds suspicious.

* Back up your computer.

If your business is not already backing up your hard drive, you should begin doing so immediately. Backing up your information is critical in case hackers do succeed in getting through and trashing your system.

Always be sure you can rebuild as quickly as possible after suffering any data breach or loss. Backup utilities built into macOS (Time Machine) and Windows (File History) are good places to start. An external backup hard drive can also provide enough space for these utilities to operate properly.

* Shut it down.

Always being on makes your computer a more visible and available target for hackers; shutting down breaks the connection a hacker may have established with your network and disrupts any possible mischief.

* Use virtualization.

While the best way to avoid browser-derived intrusions is to steer clear of unsafe sites, virtualization allows you to run your browser in a virtual environment, like Parallels or VMware Fusion, that sidesteps your operating system to keep it safer.

* Secure your network.

Routers don’t usually come with the highest security settings enabled. When setting up your network, log in to the router, and set a password using a secure, encrypted setup. This prevents intruders from infiltrating your network and messing with your settings.

* Use two-factor authentication.

Passwords are the first line of defense against computer hackers, but a second layer boosts protection. Many sites let you enable two-factor authentication, which boosts security because it requires you to type in a numerical code sent to your phone or email address in addition to your password when logging in.

* Use encryption.

You can encrypt your Windows or macOS hard drive with BitLocker (Windows) or FileVault (Mac), encrypt any USB flash drive that contains sensitive information and use a VPN to encrypt web traffic. Only shop at encrypted websites; you can spot them immediately by the “https” in the address bar, accompanied by a closed-padlock icon.

**VI. ESSAY (10 points)**

Can you provide step-by-step instructions on how to create a straight-through and crossover UTP Cable using UTP Cable Simulation?

**Answer:**

The first step is to install UTP Cable Simulation/Simulator on either your desktop or mobile phone. The second step is open the UTP cable simulation and check the cable, the third step is un twist the wire and arrange it according to the straight- through cable color order sequence which is the white/orange – orange – white/green – Blue – White/Blue – Green – White/Brown – Brown, the fourth step is after you arrange the wires make sure it fits the cover of RJ45 well, and the fifth step is Crimp it using the Crimping tool and the Last Step after you crimp the wire with RJ45 is to test it using cable tester, if its wire or cable was functioning well according to Straight Through Type. While in Cross Over repeat the Step 1 till the last step but the Color order sequence must be White/Green – Green – White/Orange – Blue – White/Blue – Orange – White/Brown – Brown.

**Note:** I'll be reviewing your test paper. If I find a duplicate image of your test paper, your grade will be zero.

***“GOD will never let you down because His love is unconditional”***

Prepared by:

**RHOEL JOSEPH R. SARINO**

**Instructor**