System Troubleshooting

Short Introduction of Unit

System troubleshooting is a vital skill for keeping computers, machines, and other equipment running smoothly. When things go wrong, troubleshooting helps identify the problem and find a quick solution, preventing issues like downtime, reduced productivity and potential damage.

Q.1 Discuss the importance of troubleshooting in maintaining the smooth operation of systems, especially computing systems.

Ans. Importance of Troubleshooting in Computing Systems:

Troubleshooting is very important in computing systems because it helps keep our computer software, and networks running smoothly. When something goes wrong with computer system, it can disrupt our work, cause data loss, or even lead to security issues.

1. Enhancing Performance

Sometimes, computer systems do not perform as efficiently as they should. Troubleshooting can identify the reasons for slow performance, such as insufficient memory, software conflicts, or hardware malfunctions. By resolving these issues, you can improve the overall performance of the system.

2. Extending Equipment Life

Regular troubleshooting and maintenance can help extend the life of computer equipment. By identifying and fixing small issues before they become big problems, you can prevent unnecessary wear and tear on the systems.

3. Saving Costs

Real-World impact: Effective troubleshooting in businesses helps prevent costly downtime and maintains productivity, showing how important these skills are in the real world. Effective troubleshooting can save money by reducing the need for expensive repairs or replacements. By identifying and resolving issues early, you can avoid costly downtime and prolong the life of yours.

Example: If a printer is not working properly, troubleshooting might reveal a simple paper jam that can be fixed easily, rather than needing to replace the entire printer.

4. Enhancing User Experience

When computer systems work well, users have a better experience. They can completer their tasks efficiently without encountering frustrating issues. Troubleshooting help insure that systems are reliable and user-friendly.

Q.2 Explain the systematic process of troubleshooting. Describe each step in details.

Ans. Troubleshooting is essential for maintaining the smooth operation of systems, whether they are computers, machines, or other types of equipment. When something goes wrong, troubleshooting helps identify the problem and find a solution quickly. For example, if your computer suddenly stops working, knowing how to troubleshoot can help you get it running again without needing to call for expensive professional help.

Systematic Process of Troubleshooting

The troubleshooting process involves several steps that help you systematically identify and fix problems. These steps ensure that you don't overlook any potential issues and that you solve the problem efficiently.

Q.3 Describe basic software-related troubleshooting strategies including handling application freezing and unresponsive peripherals. 09504003

Ans. Understanding basic troubleshooting strategies for software and hardware issues can help keep your computing systems running smoothly. By identifying common problems and knowing simple solution, you can resolve issues quickly and efficiently, ensuring minimal disruption to you work or activities.

Basic Software-Related issues

Issue: Application Freezing: An application freezing means that a program stops responding and you cannot use it. This is a common problem and can usually be fixed with a few simple steps:

Solution: Try pressing Ctrl + Alt + Delete to open the Task Manager. Find the unresponsive application, select it, and click "End Task". This will force the application to close. If the problem persists, consider reinstalling the application or checking for updates.

Issue: Unresponsive Peripherals: Peripherals are external devices like keyboards, mouse, and printers. Sometimes, these devices can stop responding due to software issues.

Solution: First, check the connections to make sure they are secure. If the device is still unresponsive, try unplugging it and then plugging it back in. Updating the drivers for the device can also help.

Restarting and Shutting Down

Issue: Importance of Restarting a Computer: Restarting a computer can fix many software issues. It clears the memory, stops background processes, and gives the system a fresh start.

Issue: Using the Power Button Effectively: The power button can be used to shut down or restart a computer when it is not responding to normal commands.

Solution: Press and hold the power button for a few seconds to force the computer to shut down. This should only be used as a last resort because it can cause data loss if programs are not properly closed.

Q.4 Explain how to recognize hardware failures, particularly focusing on RAM and hard drive issues. 09504004

Ans. Recognizing hardware Failures

Recognizing hardware failures is necessary for maintaining a computer system's functionality. Here are some common symptoms and diagnostic techniques of RAM or Hard Drive Failures.

Issue: RAM Failures: Common signs of RAM issues include frequent system crashes, Blue Screens of Death (BSOD) and poor performance. The computer may also fail to boot or restart randomly.

Solution: RAM Diagnostic tools: Use built-in tools like Window Memory Diagnostic or third-party application like MemTest86 to check for RAM issues.

Issue: Hard Drive Failures: Symptoms of hard drive failures include strange noises (like-clicking), slow performance, frequent crashes and corrupted files. The computer may also fail or boot or display error messages about the disk.

Solution: Hard Drive Diagnostic tools: Use tools like SMART (self-Monitoring, Analysis, and Reporting Technology) status checks, or software like Crystal Disk Info, to monitor hard drive health.

Component Replacements and Upgrades: Upgrading or replacing hardware components can significantly improve your computer's performance and extend its lifespan.

Upgrading RAM: To upgrade RAM, first determine the type and maximum capacity your motherboard supports. Purchase compatible RAM sticks, power of your computer, open the case, and insert the new RAM into the empty slots.

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Example: If your computer slow while multitasking (running multiple applications at a time), adding more RAM Can help improve its performance.

Replacing a Hard Drive: To replace a hard drive, back up your data, purchase a compatible drive (that can work in your computer), power off your computer, open the case, disconnect the old drive, and connect the new one. After installing the new drive, you will need to reinstall the operating system and restore your data from the backup.

Example: If your hard drive is failing, replacing it with a new one can prevent data loss a restore your computer's functionality.

Q.5   Elaborate on the importance of maintaining software and addressing security threats.

09504005

Ans. Understanding and applying regular maintenance and security measure are essential for the proper and continued performance of a system. Using the following security, maintenance and troubleshooting techniques, you can effectively maintain and enhance the performance and security of your computing systems.

Maintaining Software: Keeping software up to date and resolving a conflict is essential for security and performance.

Installing Updates and Software Patches: Regularly installing updates and patches ensures that your software is protected against vulnerabilities and performs optimally.

Example: Updating your operating system and applications can protect your computer from security threats and fix bugs that cause crashes.

Resolving Software Conflicts: Identify and uninstall conflicting software, reinstall or update the affected applications, and check for compatibility issues.

Example: If two applications are causing system instability, removing one or updating both to the latest versions can resolve the conflict.

Q.6   Describe the different data backup methods, including using external storage devices and cloud solutions.

09504006

Ans. Data Backup Methods

Backing up data is essential to prevent data loss in case of hardware failure or other issues. Here are some common methods:

Using External Storage Devices: Use external hard drives or USB flash drives to back up important files. This provides a physical copy of your data that you can easily access and store safely.

Example: Copying your important documents and photos to an external hard drive ensures that you have a backup in case your computer's hard drive fails.

Utilizing Cloud Solutions: Use cloud storage services like Google Drive, Dropbox, or OneDrive to back up your data online. This allows you to access your files from anywhere with an internet connection.

Example: Saving your school projects to Google Drive means you can access them from any computer, even if your personal device is unavailable or damaged.

Q.7   Discuss the Importance of Effective & Collaboration Communication in Troubleshooting.

09504007

Ans. Clearly explain the issue and your troubleshooting steps when assisting others. Listen to their descriptions and ask questions to gather more information.

Example

When helping a friend with a software problem ask them to describe the error message and the actions they took before the issue occurred.

Collaborating with Peers and Staff to Solve Problems: Work together with classmates, teachers, or IT staff to troubleshoot issues. Sharing knowledge and experiences can lead to faster and more effective solutions.

Example: Collaborating with a peer who has more experience with a particular software can help you both learn new troubleshooting techniques.

Transferring Troubleshooting Skills to Assist Others: Share your troubleshooting experiences and solutions with others. Create guides or tutorials to help you peers understand how to fix common issues.

Example: After resolving a tricky software installation problem, you could write a step-by-step guide and share it with your classmates, making it easier for them to handler similar issues in the future.

Q.8 Using a case study where a printer is not printing, explain how you would identify the problem and establish a theory of probable cause. 09504008

Ans. When a printer fails to print, the first step is to gather information to determine the cause of the problem. This includes looking for error warnings, recent updates, the printer model, and the connection type (USB, network, or wireless). The problem is confirmed by printing a test sheet and noting any indicators of malfunction, such as error lights, paper jams, or peculiar noises.

Once the problem is identified, a theory of probable cause is established. Possible causes include connection issues (loose cables or network disconnections), power issues (printer turned off or unplugged), hardware malfunctions (paper jams, empty cartridges, or damaged printheads), software/driver issues (outdated or missing drivers), and configuration errors (offline mode or a stuck print queue). Each cause is tested, beginning with the simplest, until the root cause is discovered.

Q.9 Discuss the importance of documenting findings, actions, and outcomes during the troubleshooting process. 09504009

Ans. The final step is to document everything you did during the troubleshooting process, this includes what you did to fix it, and the outcome. This documentation is important for efficiently in the future. For example, you would write down that the laptop wouldn't turn on due to a dead battery, that you replaced the battery, and that the laptop is now working properly. It also avoids excessive duplication of processes when numerous persons are involved in troubleshooting. Recording outcomes is also crucial because it confirms whether the problem was successfully resolved or requires additional examination. This material can be used as a reference for future troubleshooting, allowing technicians to avoid past mistakes. In addition, detailed documentation is useful for training and can be used to update troubleshooting manuals or knowledge base articles. To summarize, effective documentation speeds up the troubleshooting process, saves downtime, and increases overall efficiency and consistency.

Q.10 Describe common methods for identifying and removing malware infections and applying operating system updates for security. 09504010

Ans. Addressing Security threats:

Updating your computer from security threats are important for maintaining data integrity and privacy.

Identifying and Removing Malware Infections: Use antivirus software to scan for and remove malware. Regularly update the antivirus definitions and perform full system scans.

Example: Regularly updating your operating system can prevent hackers from exploiting security flaws to gain access to your system.

Creating and Managing Strong Passwords: Use a combination of upper (A-Z) and lower-case (a-z) letters, numbers (0-9), and special characters (_, $, %, &, *, @, etc.) to create strong passwords. Change passwords regularly and use a password manager to keep track of them.

Button for a few seconds to force the computer to shut down. This should only be used as a last resort because it can cause data loss if programs are not properly closed.

Example: Creating a strong password for your online accounts can protect you from unauthorized access and identity theft.

Q.11 Analyze the various ways troubleshooting is vital in computing systems, particularly in preventing downtime, ensuring data integrity, and improving security. Provide specific examples and scenario to support your analysis.

09504011

Ans.

1. Preventing Downtime

Downtime occurs when a computer system is not operational. This can be very costly, especially in businesses that rely on their systems to operate efficiently. When a system is down, employees may not be able to work, leading to lost resolve the system problems in very short time which facilitate to reduce the possibilities of system downtime.

2. Ensuring Data Integrity

Data integrity means ensuring that data is accurate and reliable. Problems like software bugs or hardware failure can corrupt data, leading to incorrect information being stored or processed. Troubleshooting helps identify the source of data corruption and prevent it from happening again, ensuring that data remains accurate and reliable.

3. Improving Security

Computer systems are often targets for cyber-attacks. Troubleshooting can help identify vulnerabilities and security breaches, allowing for quick action to protect the system. This is important for maintaining the confidentiality, integrity, and availability of data.

4. Scenario Example:

Consider a financial institution's online banking system that encounters an unexpected outage, prohibiting consumers from accessing their funds. Initial troubleshooting reveals that the server is overloaded due to significant traffic during a peak transaction period. To avoid downtime, the IT staff uses load balancing to divide traffic among many servers. While debugging, they uncover a disk nearing capacity, which may jeopardize data integrity. They plan a disk cleanup and enlargement to ensure smooth operation. During the assessment, security logs show many failed login attempts, prompting the team to enable MFA to protect customer accounts from possible intrusions. This situation demonstrates how successful troubleshooting combines downtime, data integrity, and security.

Topic Wise Short Questions (Additional)

System Troubleshooting

Q.1 What is System Troubleshooting?

09504012

Ans. System Troubleshooting is a vital skill for keeping computers, machines, and other equipment running smoothly.

Q.2 Why System Troubleshooting is Essential?

09504013

Ans. Troubleshooting is essential for maintaining the smooth operation of systems, whether they are computers, machines, or other types of equipment.

Q.3 Which are the steps that helps you systematically identify and fix problems?

09504014

Ans. A systematic approach to troubleshooting involves the following steps:

- Identify Problem
- Establish a Theory of Probable Cause
- Test the Theory to Determine the Cause
- Establish a Plan of Action to Resolve the Problem
- Implement the Solution
- Verify Full System Functionality
- Document findings, Actions, and Outcomes

Q.4 Why System Troubleshooting is Important? 09504015

Ans. Troubleshooting is very important in computing systems because it helps keep our computer, software, and networks running smoothly.

Q.5 Using a case study where a printer is not printing, explain how you would identify the problem and establish a theory of probable cause. 09504016

Ans. If a printer is not working properly, troubleshooting might reveal a simple paper jam that can be fixed easily, rather than needing to replace the entire printer.

Q.6 What are the basic hardware related issues? 09504017

Ans. Following are the basic hardware related issues:

- **Cable Disconnection**
- **Overheating**
- **Peripheral Devices**

Storage Devices Failure & Solutions

Q.7 Describe some basic symptoms and diagnostic techniques of RAM failures? 09504018

Ans. Issue: RAM Failures

Common sign of RAM issues includes frequent system crashes, **Blue Screens of Death (BSOD)** and poor performance. The computer may also fail to boot or restart randomly.

Solution: RAM Diagnostic tools

Use built-in tools like Window Memory Diagnostic or third-party application like MemTest86 to check for RAM issues.

Q.8 Describe some basic symptoms and diagnostic techniques of Hard Drive failures? 09504019

Ans. Issue: Hard Drive Failures:

Symptoms of hard drive failures include strange noises (like-clicking), slow performance, frequent crashes and corrupted files. The computer may also fail or boot or display error messages about the disk.

Solution: Hard Drive Diagnostic tools:

Use tools like **SMART (self-Monitoring, Analysis, and Reporting Technology)** status checks, or software like Crystal Disk Info, to monitor hard drive health.

Q.9 How RAM can be upgraded? Give Example. 09504020

Ans. To upgrade RAM, first determine the type and maximum capacity your motherboard supports. Purchase compatible RAM sticks, power of your computer, open the case, and insert the new RAM into the empty slots.

Example: If your computer slow while multitasking (running multiple applications at a time), adding more RAM can help improve its performance.

Q.10 How to replace a Hard Drive? Give Example. 09504021

Ans. To replace a hard drive, back up your data, purchase a compatible drive (that can work in your computer), power off your computer, open the case, disconnect the old drive, and connect the new one. After installing the new drive, you will need to reinstall the operating system and restore your data from the backup.

Example: If your hard drive is failing, replacing it with a new one can prevent data loss a restore your computer's functionality.

Q.11 What do you know about space saver? 09504022

Ans. Keeping your computer's storage clean by deleting unnecessary files is like making space in your room. The more organized your files are, the faster your computer will

run just like a tidy boy room is easier to navigate.

Q.12 How would you maintain a software? 09504023

Ans. Software maintenance is an important procedure for ensuring a system's long-term performance, security, and usability after it is released. It includes four types of maintenance: corrective, adaptive, perfective, and preventative. Keeping software up to date and resolving a conflict is essential for security and performance.

Q.13 How to create and manage a strong password? 09504024

Ans. Use a combination of upper (A-Z) and lower-case (a-z) letters, numbers (0-9), and special characters (_, $, %, &, *, @, etc.) to create strong passwords. Change passwords regularly and use a password manager to keep track of them.

Q.14 How important is managing the storage space? 09504025

Ans. Management of storage space is one of the key requirements for data management. It is important to keep your computer running smoothly and efficiently.

Q.15 Describe the impact of cooling and overheating on CPU? 09504026

Ans. Computers can overheat if their cooling systems fail. High temperatures can reduce a CPU's lifespan by up to 50%. Proper cooling and regular cleaning can significantly extend a computer's life.

Topic Wise Multiple-Choice Questions (Additional)

Choose the correction option.

System Troubleshooting

1. **Which of the following is the first step in troubleshooting a system issue?** 09504027
   - (a) Replace hardware components
   - (b) Identify the problem
   - (c) Reinstall the operating system
   - (d) Run a system update

2. **What tool is commonly used to check system log files for errors?** 09504028
   - (a) Task Manager
   - (b) Event Viewer
   - (c) Control Panel
   - (d) File Explorer

3. **Which command is used to check network connectivity between two systems?** 09504029
   - (a) ipconfig
   - (b) netstat
   - (c) ping
   - (d) tracert

4. **Which type of error occurs when a program tries to access an area of memory it is not allowed to?** 09504030
   - (a) I/O Error
   - (b) Segmentation Fault
   - (c) Stack Overflow
   - (d) Runtime Error

5. **What is the most likely cause of a "blue screen of death" (BSOD) on Windows?** 09504031
   - (a) Insufficient disk space
   - (b) Critical system error or hardware failure
   - (c) Outdated software
   - (d) Incorrect user login

6. **Which of the following is an example of preventive maintenance for a computer system?** 09504032
   - (a) Replacing a faulty hard drive
   - (b) Applying software updates regularly
   - (c) Restarting the system when it freezes
   - (d) Removing malware after infection

7. **If an application is unresponsive, which key combination is used to force-close it on Windows?** 09504033
   - (a) Ctrl + Alt + Tab
   - (b) Shift + Esc
   - (c) Ctrl + Shift + Del
   - (d) Alt + F4

8. Which of the following is NOT a common troubleshooting tool? 09504034
   (a) Disk Cleanup
   (b) System Restore
   (c) Debugger
   (d) Word Processor

9. Which diagnostic command displays the IP address, subnet mask, and default gateway of a system? 09504035
   (a) ipconfig   (b) nslookup
   (c) tracert   (d) netstat

10. Which approach is best when troubleshooting an unknown issue on a system? 09504036
    (a) Guess the problem and take action
    (b) Change multiple system settings at once
    (c) Apply a systematic, step-by-step approach
    (d) Format the system immediately

Data Backups

11. Which of the following is the primary purpose of data backup? 09504037
    (a) To archive old files
    (b) To recover data in case of loss or corruption
    (c) To increase system performance
    (d) To free up disk space

12. Which backup type only saves files that have changed since the last backup? 09504038
    (a) Full Backup
    (b) Differential Backup
    (c) Incremental Backup
    (d) Cloud Backup

13. Which of the following is the best practice for data backup frequency? 09504039
    (a) Once a year
    (b) Only after a system crash
    (c) Regular and scheduled backups
    (d) After every system update

14. What is the "3-2-1 backup rule"? 09504040
    (a) 3 backups, 2 devices, 1 recovery option

    (b) 3 copies of data, 2 different storage types, 1 offsite copy
    (c) 3 types of backup, 2 administrators, 1 cloud service
    (d) 3 files, 2 backups, 1 test restore

15. Which of the following is NOT a backup storage option? 09504045
    (a) External hard drive
    (b) Cloud storage
    (c) Local disk
    (d) Word processor

16. Which term refers to the process of restoring data from a backup? 09504046
    (a) Data Retrieval
    (b) Data Restoration
    (c) Data Synchronization
    (d) Data Validation

17. Which type of backup creates a complete copy of all data, regardless of previous backups? 09504047
    (a) Differential Backup
    (b) Full Backup
    (c) Incremental Backup
    (d) Snapshot Backup

18. Which of the following is a potential risk of not backing up data? 09504048
    (a) Increased system performance
    (b) Data loss due to hardware failure or malware attack
    (c) Faster system boot times
    (d) Improved file accessibility

19. Which method of backup allows you to restore the system to a specific point in time? 09504049
    (a) System Restore Point
    (b) Incremental Backup
    (c) Full Backup
    (d) Cloud Sync

20. What is the main advantage of cloud-based backups over local backups? 09504050
    (a) They are free of cost
    (b) They provide offsite data storage and disaster recovery
    (c) They increase disk space on local drives
    (d) They require no internet connection

Answer Key

1	b	2	b	3	c	4	b	5	b	6	b	7	d	8	d	9	a	10	c
11	b	12	c	13	c	14	b	15	d	16	b	17	b	18	b	19	a	20	b

Solved Exercise

Choose the correction option.

1. **What is the first step in the systematic process of troubleshooting?** 09504051
   (a) Establish a Theory of Probable Cause
   (b) Implement the Solution
   (c) Identify Problem
   (d) Document Finding, Actin, and Outcomes

2. **Why is effective troubleshooting important for maintaining systems?** 09504052
   (a) It helps save money on repairs
   (b) It prevents the need for professional help
   (c) It ensures systems operate smoothly and efficiently
   (d) It allows for more freque3nt system updates

3. **Which step involves coming up with a theory about what might be causing a problem?** 09504053
   (a) Test the Theory to Determine the Cause
   (b) Establish a Theory of Probable Cause
   (c) Implement the Solution
   (d) Verify Full System Functionality

4. **After implementing a solution, what is the next step in the troubleshooting process?** 09504054
   (a) Document Findings, Actions, and Outcomes
   (b) Test the Theory to Determine the Cause
   (c) Verify Full system Functionality
   (d) Establish a Plan of Action to Resolve the problem

5. **Which of the following is an example of identifying a problem in troubleshooting?** 09504055
   (a) Testing a laptop battery by plugging in the power cord
   (b) Coming up with a plan to replace a laptop battery
   (c) Noticing that a laptop does not turn on when the power button is pressed
   (d) Witting down that a laptop battery was replaced

6. **Why is documenting findings, actions, and outcomes important in troubleshooting?** 09504056
   (a) It helps solve problems faster
   (b) It provides a record for future reference
   (c) It allows for more efficient testing
   (d) It ensures the solution is implemented correctly

7. **What is the purpose of establishing a plan of action in troubleshooting?** 09504057
   (a) To identify the problem
   (b) To verify full system functionality
   (c) To determine the cause of the problem
   (d) To decide on the steps needed to resolve the issue

8. **Why is troubleshooting important in computing systems?** 09504058
   (a) It ensures hardware components are always up to date
   (b) it prevents the need for data backups
   (c) It helps keep systems running smoothly and securely
   (d) It eliminates the need for software updates

9. What does troubleshooting help prevent by quickly identifying and resolving issues? 09504059
   (a) The need for professional help
   (b) The need for software updates
   (c) Downtime and lost productivity
   (d) The need for regular maintenance

10. Which of the following is an example of ensuring data integrity through troubleshooting? 09504060
    (a) Identifying a software bug that causes incorrect database results
    (b) Replacing a faulty printer
    (c) Using a cooling pad to prevent laptop overheating
    (d) Updating the operating system regularly

Answer Key

1	c	2	c	3	b	4	c	5	c	6	b	7	d	8	c	9	c	10	a

Short Questions

Q.1 What is the first step in the systematic process of troubleshooting, and why is it important? 09504061

Ans: The first step in troubleshooting is to identify the problem. This means recognizing that something is not working as it should. For example, if you press power button and your laptop does not turn on, the problem is clear that it won't start.

Q.2 After identifying problem, what is the next step in troubleshooting, and how does it help in resolving the issue? 09504062

Ans: Once you have identified the problem, the next step is to come up with a theory about what might be causing it. This involves thinking about what could have gone wrong. For example, if your laptop does not turn on, possible causes might be a dead battery, a faulty power cord, or an internal hardware issue.

Q.3 Describe the importance of testing a theory during the troubleshooting process. Provide an example. 09504063

Ans: After establishing a theory, you need to test it to see if it is correct. This involves checking if the suspected cause is actually the reason for the problem. For example, if you think the laptop's battery is dead you can test this theory by plugging in the power cord and seeing if the computer turns on.

Q.4 Explain what the "Implement the Solution" step entails in a troubleshooting. 09504064

Ans: Once you have a plan, you need to put it into action. This means doing whatever is necessary to fix the problem. For example, if your plan is to replace the battery, you would buy a new battery and install it in your laptop.

Q.5 Why is it necessary to verify full system functionality after implementing a solution? 09504065

Ans: After implementing the solution, you need to check to make sure that the problem is fully resolved and the system is working properly again. For example, once you replace the battery, you should check to see if the laptop turns on and operates as expected without plugging in the power cord.

Long Questions

Q.1 Discuss the importance of troubleshooting in maintaining the smooth operation of systems, especially computing systems. 09504066

Ans. See Long Question No.1

Q.2 Explain the systematic process of troubleshooting. Describe each step in detail. 09504067

Ans. See Long Question No.2

Q.3 Using a case study where a printer is not printing, explain how you would identify the problem and establish a theory of probable cause. 09504068

Ans. See Long Question No.8

Q.4 Discuss the importance of documenting findings, actions, and outcomes during the troubleshooting process. 09504069

Ans. See Long Question No.9

Q.5 Analyze the various ways troubleshooting is vital in computing systems, particularly in preventing downtime, ensuring data integrity, and improving security. Provide specific examples and scenario to support your analysis. 09504070

Ans. See Long Question No.11

Q.6 Describe basic software-related troubleshooting strategies including handling application freezing and unresponsive peripherals. 09504071

Ans. See Long Question No.3

Q.7 Explain how to recognize hardware failures, particularly focusing on RAM and hard drive issues. 09504072

Ans. See Long Question No.4

Q.8 Elaborate on the importance of maintaining software and addressing security threats. 09504073

Ans. See Long Question No.5

Q.9 Describe common methods for identifying and removing malware infections and applying operating system updates for security. 09504074

Ans. See Long Question No.10

Q.10 Describe the different data backup methods, including using external storage devices and cloud solutions. 09504075

Ans. See Long Question No.6

Activities

09504076

Activity 1:

1. **Introduction:** Briefly explain the importance of troubleshooting in computer systems.
2. **Discussions:** Divide students into small groups and provide each group with a printed troubleshooting flowchart.
3. **Task:** Have each group discuss a scenario where a computer is not turning on. Using the flowchart, they should identify potential problems and suggest solutions. For example, checking if the power cable is plugged in and if the power button is functioning.
4. **Presentation:** Each group presents their findings and solutions to the class.

Ans. Class work/ Lab Work/ Practical Work

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Activity 2:

Workspace Management

Objective: Learn how to maintain a safe and organized computer workspace.

Required Material: Computers, cable ties, labels, ventilated computer stands.

Activity Type: Individual

Activity Task Details:

1. **Introduction:** Discuss the importance of a well-organized workspace for preventing hardware issues.

2. **Task:** Each student will organize their workspace by managing cables with ties and labels and ensuring their computer is properly ventilated using stands. For example, tying together cables to prevent them from tangling and ensuring the computer is not placed in a confined space to prevent overheating.

Activity 3:

Activity: Common computer Issues

Objective: Recognize and resolve common computer issues.

Required Task Details:

1. **Introduction:** Briefly explain common computer issues like application freezing and unresponsive peripherals.

2. **Task:** Provide students with a list of common issues and troubleshooting guides.

Hands-on Practice: Each student will troubleshoot the issues on their computer and document the steps they took to resolve them. For example, if the mouse is unresponsive, check the USB connection or replace the batteries.

Ans. Class work/ Lab Work/ Practical Work

Activity 4:

Activity: Security Practices

Objective: Learn and apply basic security practices.

Required Material: Computers, internet access, security software (e.g., antivirus).

Activity Type: Individual

Activity Task Details:

1. **Introduction:** Discuss common security threats and the importance of strong passwords and software updates.

2. **Task:** Each student will create a strong password for their computer, run a security scan using antivirus software, and update their operating system. For Example, creating a password with mix of letters, numbers, and symbols, and using antivirus software to scan for malware.

Documentation: Students will document the steps they took and the outcomes.

Ans. Class work/ Lab Work/ Practical Work

Activity 5:

Collaborative Troubleshooting:

Activity Task Details:

1. **Introduction:** Explain the value of using online resources and collaboration in troubleshooting.

2. **Task:** Provide groups with a list of complex computer issues.

3. **Research and Solution:** Each group will research solution using built-in help and internet resources, then apply the solutions to resolve the issues. For example, if a computer is running slow, research potential cause and solutions such as checking for malware or clearing temporary files.

Presentation: Groups will present their solutions and the resources they used to the class.

Ans. Class work/ Lab Work/ Practical Work