IT Support

This is a certification for entry-level help desk technicians, end user desktop support technicians, IT students, interns, etc. The exam targets entry-level IT professionals, and secondary and immediate post-secondary students. The successful candidates are qualified entry-level help desk technicians and customer support technicians, students, and interns with at least 150 hours of instruction and hands-on experience.

Prerequisites: Candidates are expected to have reading and writing competencies of at least the 8th grade level. They should also have two-years of experience using a desktop computer, laptop computer, or tablet as an end user. In addition, they should have familiarity using productivity applications, such as Microsoft Office or Google Docs.

Interpersonal skills

Although not specifically tested as discrete objectives, this certification expects candidates to perform their jobs using the following interpersonal best practices:

- Demonstrate professional communication skills when interacting with users.
- Demonstrate active listening.
- Express technical concepts to a non-technical audience.
- Communicate effectively using vocabulary appropriate to the situation.

Some scenarios on the test require understanding these best practices.

Objectives: CCST IT Support

1. IT Support Job Tasks and Responsibilities

1.1   Define key help desk concepts.

- Queue management, time management, ticketing systems, service level agreement (SLA), key performance indicators (KPIs)

1.2   Prepare documentation to summarize a customer interaction.

- Creating a clear, concise, factual, and comprehensive description of the problem, the troubleshooting steps, and the results obtained.
- Documenting in such a way that the documentation is useful for future interactions.

1.3   Describe the problem solving process.

- Define the problem.
- Gather detailed information.
- Identify a probable cause of the failure.
- Devise a plan to resolve the problem.
- Make necessary changes to implement the plan.
- Observe the results of the changes.
- If the problem is not resolved, repeat the process.
- Document the changes made to resolve the problem.

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2. Hardware Issues

2.1 Demonstrate how to follow basic safety procedures.

- Electrical shock, ESD, fire, personal safety

2.2 Assist end users in using tools to locate information about their device.

- **Information:** Host name, Hardware (processor, memory, disk space), operating system version, IPv4 address, IPv6 address, MAC address
- **Windows tools:** Task Manager, System Information, Event Viewer, ipconfig
- **MacOS tools** : Activity Monitor, About This Mac, System Settings, Console, ifconfig

2.3 Assist end users in locating, identifying, and understanding the characteristics of various ports and cables.

- Video ports: HDMI, USB-C, DVI, DisplayPort, VGA
- USB-A, USB-B, USB-C, Micro USB
- Serial ports
- RJ-45, UTP, STP
- Common types of power cables (desktop, laptop, mobile)
- Thunderbolt 3/4 (USB-C)
- Converters

2.4 Identify, install, and upgrade various components in a desktop computer.

- Identifying the processor and motherboard
- Identifying, installing, and upgrading RAM, peripherals (graphics cards, wireless cards, Bluetooth cards), and internal storage devices (SATA, SSD, NVMe, M2)
- Interfaces and expansion card compatibility
- Using Device Manager to manage drivers
- E-waste best practices for disposing of components

2.5 Investigate commonly encountered hardware issues.

- Basic troubleshooting: plug in, connected to power, powered on
- Application compatibility requirements: Processor architecture, RAM requirements, GPU requirements, disk space
- Using Device Manager to identify issues with hardware
- Device status indicators
- Awareness of firmware updates (benefits and dangers)

3. Connectivity and Resource Access Issues

3.1 Assist users with establishing access to network-based resources.

- Basic knowledge of common directory services: Active Directory, Cloud-based access management (Entra ID and AWS IAM)
- Multifactor Authentication (authenticator apps and other methods)
- Mapping a shared drive, including SMB and cloud drive (S3 bucket, OneDrive, GoogleDrive, Dropbox, Box, etc.)

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- Using Gpupdate/adgpupdate to force a group policy update
- Resetting passwords
- Checking membership in security and distribution groups to determine whether there is an issue.
- Verifying permissions

3.2 Troubleshoot commonly encountered connectivity issues with peripherals.

- Printers: Connectivity to printer, assisting a user in using a multifunction device, loading paper, fixing a paper jam, clearing print queue, swapping toner
- Fax
- Headphones
- Microphones
- External drives
- Scanners
- Webcams
- Keyboard, mouse, pointing devices (wired and wireless)
- Tactile/interactive input devices (flat panels)
- Teleconferencing devices (Webex Desk Pro screens)

3.3 Examine basic end-device connectivity to the network.

- LAN (wired) access vs. WLAN
- Purpose of DNS
- Purpose of DHCP (recognizing self-assigned IP addresses (APIPA))
- Purpose of DHCPv6 (recognizing a link-local address instead of a global address)
- IP address ranges (is it in the right subnet, public and private)
- Default gateway
- WLAN SSID
- Using the following commands to verify connectivity
    ◇ Ipconfig/Ifconfig
    ◇ Traceroute/tracert
    ◇ Ping
    ◇ Nslookup
    ◇ Netstat
    ◇ Ping6
    ◇ Traceroute6
    ◇ Iproute2 (ip add, ss)
- Purpose of a firewall and how it might impact connectivity

4. Operating System and Application Issues

4.1 Assist users in resolving Windows operating system issues.

- Display settings, multiple displays, brightness
- BitLocker codes
- Windows and application updates
- Clearing the browser cache

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- Terminating processes with Task Manager
- Assisting the customer in backing up and restoring personal data with cloud-based tools (OneDrive)
- Boot sequence, booting to safe mode
- Power management
- Accessibility features

4.2 Assist users in resolving MacOS operating system issues.

- Display settings, multiple displays, brightness
- Allowing applications the necessary permissions
- Mounting external drives
- Clearing the browser cache
- AirDrop
- Terminating processes with Activity Monitor
- Assisting the customer in backing up and restoring personal data with cloud-based tools (iCloud and Time Machine)
- Power management
- Accessibility features

4.3 Assist users in resolving mobile device issues.

- Restarting the phone, phone not charging, connectivity, email setup, mobile apps, collaboration software, basic understanding of MDM
- Device OS: iOS, Android

4.4 Describe virtualization and cloud terminology.

- Cloud providers (Amazon Web Services (AWS), Microsoft Azure and Google Cloud Platform (GCP)
- Virtual machines and hypervisors
- Recognizing cloud models in order to direct the incident to the right team

4.5 Assist users in resolving common application issues.

- Marketplace or approved application installation
  ◊ Untrusted/unknown sources
- Email, collaboration, productivity applications
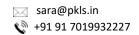
5. Common Threats and Preventions

5.1 Describe security threats to the end user, perform basic investigation, and escalate to the appropriate team.

- **Threats:** Phishing, malware, spam, unauthorized access attempts, spoofing
- Helping the user run a malware scan
- Strong passwords and good password practices

5.2 Recognize how to avoid becoming a victim of social engineering attacks.

- Awareness that a help desk technician is a prime target for social engineering attacks
- Phishing, impersonation, etc.

5.3 Recognize how company policies and confidentiality guidelines protect user data.

- Identifying confidential, propriety, and personally identifiable information (PII) data

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6. Job Tools

6.1 Use remote access software to connect to end-user devices and perform remote support tasks.

- Remote Desktop, Remote Assistance, Cisco WebEx, Remote Management, TeamViewer , Virtual Network Computing (VNC), PC Anywhere

6.2 Use appropriate troubleshooting tools to research an issue and update internal documentation with findings.

- **AI:** Query AI to research an issue, limitations of AI, ethical considerations for AI, privacy and security risks, difference between predictive and generative AI
- Using search engine results
- Technical forums
- Knowledge base articles (industry and internal)

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