CompTIA Tech+ (Exam FC0-U71), Skill Labs

Course Specifications

Course Number: ACI76-003SL_rev1.0
Lab Length: Approximately 16 hours

Managing Units of Measure—Disks, Network Throughput, and Processor (FC0-U71)

Introduction
Objective

Tech+ Domains

1.0 IT Concepts and Terminology

Tech+ Objectives

1.3 Compare and contrast common units of measure.

Overview

Welcome to the Managing Units of Measure—Disks, Network Throughput, and Processor practice lab. In this lab, you will receive the instructions and devices needed to develop your hands-on skills.

Outcomes:

In this lab, you will learn to:

- Shrink a disk volume.
- Create and format partitions.
- Create virtual hard disks with Disk Management.
- Download and install Wireshark.
- Collect information on network throughput.
- Download and install CPU-Z.
- Access system information.
- Verify system information.

	Key Term	Description
1	Disk Volume	A storage area on a hard drive that has been formatted with a file system and assigned a drive letter. It can be resized, formatted, or divided into partitions.
2	Partition	A section of a physical hard drive that acts as a separate storage unit. Partitions can be primary, extended, or logical, and must be formatted before use.
3	Format Disk	The process of preparing a storage device for use by setting up a file system (e.g., NTFS, FAT32). Formatting erases all existing data on the drive.
4	Virtual Disk (VHD)	A file that emulates a physical hard drive, used primarily in virtual environments or for backup and testing purposes. VHDs can be created and mounted using Disk Management.

	Key Term	Description
5	Disk Management	A built-in Windows utility that allows users to manage hard disk drives and the partitions associated with them, including creating, formatting, and resizing volumes
6	Network Throughput	The actual rate at which data is successfully transferred over a network. It's measured in bits per second (bps) and reflects network performance.
7	Wireshark	A free and open-source network protocol analyzer used to capture and inspect data packets on a network in real time. It helps diagnose network issues and analyze traffic.
8	CPU-Z	A free tool that provides detailed information about the processor (CPU), motherboard, memory, and other system components
9	System Information	A collection of data about a computer's hardware, software, and system configuration. It can be accessed using built-in utilities or third-party tools.
10	Shrink Volume	A disk management operation that reduces the size of an existing partition, freeing up space to create a new partition or for other uses

Installation of Peripheral Devices (FC0-U71)

Introduction
Objective

Tech+ Domains

2.0 Infrastructure

Tech+ Objectives

2.4 Given a scenario, install and configure common peripheral devices.

Overview

Welcome to the Installing of Peripheral Devices Practice Lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will learn to:

- Add a device.
- View device properties.
- Install a local printer.
- Install a network printer.
- Connect to a network printer.
- View Internet printers on IIS.

	Key Term	Description
1	Plug and Play (PnP)	A feature that allows the operating system to automatically detect and install hardware devices
2	Device Manager	A Windows tool used to view and manage hardware devices
3	Driver	Software that allows the operating system to communicate with hardware devices

	Key Term	Description
4	Device Status	Shows whether the device is working properly or has issues
5	Local Printer	A printer connected to a computer wired or wirelessly using a USB or parallel port
6	Port	The connection interface used by the printer, such as USB or LPT
7	Network Printer	A printer connected to a network, accessible by multiple devices
8	IP Address	A unique number identifying the printer on the network
9	TCP/IP Port	A virtual connection used to send data to the printer over the network
10	Host name	The network name assigned to a printer or device

Introduction to Virtualization and Cloud Technologies (FC0-U71)

Introduction
Objective

Tech+ Domains

2.0 Infrastructure

Tech+ Objectives

2.6 Compare and contrast virtualization and cloud technologies

Overview

Welcome to the Introduction to Virtualization and Cloud Technologies lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will learn to:

- Create a virtual machine using AWS Management Console.
- AWS virtual networking components
- Explore the Azure Portal.
- Create a virtual machine using the Azure Portal.

	Key Term	Description
1	Virtualization	The process of creating a virtual version of computing resources such as servers, storage devices, networks, or operating systems
2	Hypervisor	Software that allows multiple virtual machines (VMs) to run on a single physical machine; can be Type 1 (bare metal) or Type 2 (hosted)
3	Virtual Machine (VM)	A software-based emulation of a physical computer, running its own operating system and applications
4	Guest OS	The operating system installed on a virtual machine. It runs independently within the VM.
5	Host Machine	The physical computer that runs the hypervisor and supports virtual machines

	Key Term	Description
6	Snapshot	A saved state of a VM at a specific point in time that can be restored if needed
7	Cloud Computing	The delivery of computing services—servers, storage, databases, networking, software—over the Internet (“the cloud”)
8	Public Cloud	Cloud services provided over the internet and shared among multiple users or organizations (e.g., AWS, Azure, Google Cloud)
9	Private Cloud	Cloud infrastructure operated solely for a single organization, either on premises or hosted
10	Hybrid Cloud	A computing environment that combines public and private clouds, allowing data and applications to be shared between them
11	IaaS (Infrastructure as a Service)	Cloud service that offers virtualized computing resources over the Internet (e.g., virtual servers, storage)
12	PaaS (Platform as a Service)	Cloud service that provides a platform for developing, running, and managing applications without dealing with the underlying infrastructure
13	SaaS (Software as a Service)	Cloud service where users access application software over the Internet (e.g., Google Workspace, Microsoft 365)

Basic Networking Concepts (FC0-U71)

Introduction
Objective

Tech+ Domains

2.0 Infrastructure

Tech+ Objectives

2.8 Identify Basic Networking Concepts

Overview

Welcome to the Basic Networking Concepts Lab. In this lab, you will receive the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will learn to:

- Use network utilities and protocols from the TCP/IP suite.
- Use ping and arp to verify network layer connectivity.
- Using basic network services with browsers, email, and FTP.

	Key Term	Description
1	Network Communication	The exchange of data between computers or devices using wired or wireless connections
2	IP Address	A unique numerical identifier assigned to each device on a network (e.g., 192.168.1.1)

	Key Term	Description
3	MAC Address	A hardware-based identifier (Media Access Control) embedded in network interface cards, used to uniquely identify a device on a local network
4	Port	A logical channel identified by a number used to differentiate multiple services or applications running on a single device
5	Secure Web Browsing	The use of encrypted protocols (such as HTTPS) to protect data exchanged between a web browser and a web server
6	File Transfer	The process of sending or receiving files between devices on a network using protocols like FTP, SFTP, or SMB
7	Email	A digital message system that uses standard protocols (SMTP, IMAP, POP3) to send and receive electronic messages across networks
8	Modem	A device that converts digital signals to analog for transmission over telephone lines and vice versa
9	Router	A device that connects multiple networks and directs data packets between them, typically between a local network and the Internet
10	Switch	A network device that connects devices within a LAN and uses MAC addresses to forward data to the correct destination
11	Access Point	A device that provides wireless access to a wired network, enabling Wi-Fi connectivity for wireless devices
12	Firewall	A security system (hardware or software) that monitors and controls incoming and outgoing network traffic based on predetermined security rules
13	Client/Server Model	A network architecture where a central server provides resources or services, and clients request access to them
14	Peer-to-Peer Model	A decentralized network model in which devices (peers) share resources directly without needing a central server
15	Local Area Network (LAN)	A network covering a small area like a home, school, or office building
16	Wide Area Network (WAN)	A network that spans a large geographic area, such as the internet, and connects multiple LANs

Filesystem Management and Operating System Utilities (FC0-U71)

Introduction
Objective

Tech+ Domains

3.1 Identify components of an OS

Tech+ Objectives

3.1 Identify components of an OS

Overview

Welcome to the Filesystem Management and Operating System Utilities lab. In this lab, you will receive the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will learn to:

- Manage share and NTFS permissions.
- Working with Windows administrative tools.
- Implementing system configuration settings.

	Key Term	Description
1	Filesystem	A method and data structure used by an operating system to control how data is stored and retrieved on a disk
2	File	A collection of data or information that has a name and is stored in a filesystem
3	Directory	A special type of file that contains references to other files or directories, organizing them into a hierarchy
4	Metadata	Data that describes and gives information about other data, such as file size, creation date, and permissions
5	Mounting	The process of making a filesystem accessible at a certain point in the directory tree
6	Journaling	A filesystem feature that logs changes before they are actually made, helping to prevent corruption during crashes or power failures
7	Partition	A section of a physical storage device that is treated as a separate logical disk by the operating system
8	Path	The location of a file or directory in the filesystem, expressed as a string of directory names (e.g., /home/user/file.txt)
9	File Management	The organization, storage, retrieval, naming, sharing, and protection of files on a storage device
10	System Applications	Software included with the operating system that provides essential functions like file browsing, task management, and system monitoring
11	System Utilities	Tools provided by the OS to perform maintenance tasks such as disk cleanup, defragmentation, and backup
12	Services	Background processes managed by the OS that perform system-level functions such as print spooling, networking, and system logging
13	Processes	Instances of running programs that are managed by the OS in terms of CPU usage, memory allocation, and scheduling
14	Drivers	Software modules that enable the operating system to communicate with hardware devices like printers, disks, and network cards
15	Interfaces	The means through which users interact with the operating system, such as command-line interfaces (CLI) or graphical user interfaces (GUI)

Compare Different Operating Systems and Functionalities (FC0-U71)

Introduction
Objective

Tech+ Domain

3.0 Applications and Software

Tech+ Objectives

3.2 Explain the purpose of operating systems

Overview

Welcome to the Compare Different Operating Systems and Functionalities Lab. In this lab, you will receive the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will learn to:

- Use Disk Management.
- Use task and process management.
- Use Device Manager.
- Use access control.

	Key Term	Description
1	Operating System (OS)	A system software that manages computer hardware and software resources and provides common services for computer programs.
2	Interface	A shared boundary across which two or more separate components of a computer system exchange information, such as between applications and hardware.
3	Windows API	A set of application programming interfaces available in Windows OSs that allow programs to interact with hardware and OS services.
4	Disk Management	The process and tools used by the OS to manage disk drives and partitions, including formatting, resizing, and assigning drive letters.
5	Device Driver	A specialized software component that allows the OS to communicate with hardware peripherals like printers, keyboards, and video cards.
6	Task management	The OS function responsible for managing the execution of multiple processes or threads by allocating CPU time and managing process states.
7	Process	A running instance of a program that is being executed by the computer, managed by the OS with its own memory and resources.
8	Application management	The capability of the OS to install, update, and manage software applications, including their interaction with system resources.
9	Device Manager	A Windows tool that allows users to view and control the hardware attached to the computer, including updating drivers and troubleshooting issues.
10	Access control	A security feature that limits access to system resources and data to authorized users, based on permissions and authentication.
11	Mobile operating systems	An OS designed for smartphones and tablets that emphasizes touchscreen input, battery management, and app ecosystems (e.g., Android, iOS).
12	Server operating systems	A full-featured OS intended for personal or business use on laptops and desktops (e.g., Windows 11, macOS).
13	Embedded operating systems	A compact OS designed to operate within embedded systems such as ATMs, kiosks, and smart appliances (e.g., Windows IoT Core).
14	File system	The structure and method used by the OS to store, retrieve, and organize data on storage devices (e.g., New Technology File System [NTFS] in Windows).

Management of Business and Productivity Software (FC0-U71)

Introduction
Objective

Tech+ Domain

3.0 Applications and Software

Tech+ Objectives

3.3 Explain the purpose and proper use of software

Overview

Welcome to the Management of Business and Productivity Software lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 - Installing Productivity Software
- Exercise 2 - Installing and Configuring an Email Client
- Exercise 3 - Creating a Database with OpenOffice Base

	Key Term	Description
1	Productivity Software	A category of applications used to produce documents, presentations, spreadsheets, and other content to improve work efficiency
2	Word processing	Software used to create, edit, and format text-based documents (e.g., Microsoft Word, OpenOffice Writer)
3	Spreadsheet	Software used for organizing, analyzing, and storing data in tabular form (e.g., Excel, Calc)
4	Presentation software	Software used to create visual slide shows for educational or business purposes (e.g., PowerPoint, Impress)
5	Visual diagramming	Tools used to create flowcharts, network diagrams, and organizational charts (e.g., Microsoft Visio, OpenOffice Draw)
6	Collaboration software	Applications that enable multiple users to work together in real time or asynchronously
7	Email client	A program used to send, receive, and manage email communications (e.g., Microsoft Outlook, Thunderbird)
8	Conferencing	Software that supports virtual meetings via audio, video, and screen sharing (e.g., Zoom, Microsoft Teams)
9	Online workspace	Cloud-based platforms where users collaborate and manage shared documents and tasks (e.g., OneDrive, Google Drive)
10	Document sharing	The process of giving access to files and folders for viewing, editing, or downloading
11	Instant messaging	Real-time text communication software used in workplaces (e.g., Slack, Microsoft Teams chat)
12	Web-browsing software	Programs used to access and navigate websites and online tools (e.g., Microsoft Edge, Firefox)
13	Remote support software	Applications that allow remote control of another computer for support or troubleshooting (e.g., TeamViewer, Remote Desktop)
14	Apache OpenOffice	A free, open-source productivity suite offering tools for word processing, spreadsheets, presentations, and more
15	Microsoft Office	A widely used commercial productivity suite including Word, Excel, PowerPoint, Outlook, and others

Web Browser Configuration and Settings Part 1 (FCO-U71)

Introduction
Objective

Tech+ Domain

3.0 Applications and Software

Tech+ Objectives

3.4 Given a scenario, configure and use web browser features.

Overview

Welcome to the Web Browser Configuration and Settings Part 1 lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 - Managing Web Browser Cache
- Exercise 2 - Managing Client Side Scripting

After completing this lab, you will be able to:

- Modify user account control policy.
- Populate the web browser cache of Chrome and Edge.
- View and delete browser cache data.
- Disable and enable client-side scripting in Google Chrome.
- View popup blocker settings and add popup blocker extension in Chrome.

Note: Our main focus is to cover the practical, hands-on aspects of the exam objectives. We recommend referring to course material or a search engine to research theoretical topics in more detail.

	Key Term	Description
1	Private browsing	A browser mode that prevents history, cookies, and site data from being saved during a session; commonly used for privacy on shared or public devices
2	Browser add-ons/extensions	Small software programs that enhance browser functionality, such as ad blockers or productivity tools
3	Cache	Temporary storage of web page elements like images and scripts to speed up load times
4	Pop-up blockers	Browser tools that prevent unwanted or malicious pop-up windows from appearing
5	Bookmarks	Saved links to web pages for easy access and organization; often categorized in folders
6	Password management	Tools built into browsers that store, autofill, and manage website login credentials
7	Accessibility	Browser features are designed to support users with disabilities, such as screen readers and keyboard navigation
8	Appearance	Customization options for browser themes, fonts, and layouts to improve user experience

Web Browser Configuration and Settings Part 2 (FC0-U71)

Overview

Learning Outcomes:

Tech+ Domain

3.0 Applications and Software

Tech+ Objectives

3.4 Given a scenario, configure and use web browser features

Overview

Welcome to the Web Browser Configuation and Settings Part 2 practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Configure Browser Add-ons, Privacy, and Proxy Settings
- Exercise 2 – Manage Browser Certificates

After completing this lab, you will be able to:

- View and add extensions in Google Chrome and Microsoft Edge.
- Enable private browsing.
- Install a Certification Authority.
- Export the CA certificate.
- Configure web services to use a certificate.
- Configure proxy server settings
- Connect to a website with an untrusted certificate.
- Import the certificate in Trusted Root Certification Authorities store.
- Verify that the Certification Authority is trusted.

Note: Our main focus is to cover the practical, hands-on aspects of the exam objectives. We recommend referring to course material or a search engine to research theoretical topics in more detail.

	Key Term	Description
1	Private browsing	A browser mode that prevents history, cookies, and site data from being saved during a session. It is commonly used for privacy on shared or public devices.
2	Browser add-ons/extensions	Small software programs that enhance browser functionality, such as ad blockers or productivity tools.
3	Cache	Temporary storage of web page elements like images and scripts to speed up load times.
4	Pop-up blockers	Browser tools that prevent unwanted or malicious pop-up windows from appearing.
5	Bookmarks	Saved links to web pages for easy access and organization; often categorized in folders.
6	Password management	Tools built into browsers that store, autofill, and manage website login credentials.
7	Accessibility	Browser features designed to support users with disabilities, such as screen readers and keyboard navigation.

	Key Term	Description
8	Appearance	Customization options for browser themes, fonts, and layouts to improve user experience.

Common Uses of Artificial Intelligence (FC0-U71)

Overview
Learning Outcomes:

Tech+ Domain

3.0 Applications and Software

Tech+ Objectives

3.5 Identify common uses of artificial intelligence (AI).

Overview

Welcome to the Common Uses of Artificial Intelligence. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will learn to:

- Start up ChatGPT.
- Work with ChatGPT chats.
- Use ChatGPT as a cybersecurity tool for users.
- Use ChatGPT as a cybersecurity tool for organizations.

	Key Term	Description
1	ChatGPT	ChatGPT is an advanced language model developed by OpenAI.
2	OpenAI	OpenAI, or Open Artificial Intelligence, is an artificial intelligence research organization and company.
3	GPT	GPT stands for "Generative Pretrained Transformer."
4	Artificial Intelligence (AI)	The simulation of human intelligence processes by machines, especially computer systems.
5	Automation	The use of technology to perform tasks with reduced human intervention.
6	Natural Language Processing (NLP)	A field of AI that enables computers to understand and respond to human language.
7	Computer vision	An AI technology that allows machines to interpret and analyze visual information.
8	Predictive analytics	The use of data, statistical algorithms, and machine learning to identify the likelihood of future outcomes.

Software Programming Fundamentals (FC0-U71)

Overview
Learning Outcomes:

Tech+ Domain

4.0 Software Development Concepts

Tech+ Objectives

4.1 Compare and contrast programming language categories

Overview

Welcome to the Software Programming Fundamentals lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Demonstrating a Compiled Language
- Exercise 2 – Demonstrating an Interpreted Language

After completing this lab, you will be able to:

- Demonstrate compiled language.
- Demonstrate interpreted language.

Note: Our main focus is to cover the practical, hands-on aspects of the exam objectives. We recommend referring to course material or a search engine to research theoretical topics in more detail.

	Key Term	Description
1	Software development	The process of designing, coding, testing, and maintaining applications and systems software.
2	Programming language	A formal language used to write instructions that a computer can execute.
3	Interpreted language	A type of language where code is executed line-by-line by an interpreter at runtime.
4	Scripting language	A lightweight interpreted language used for automating tasks and manipulating software systems.
5	Markup language	A language used to annotate and format text, typically for web and data structure purposes.
6	Compiled language	A language whose code is translated into machine code before execution, often yielding faster performance.
7	Interpreter	A program that reads and executes code line-by-line at runtime.
8	Compiler	A program that translates source code into executable machine code before running the program.
9	Query language	A type of language used to request and manipulate data stored in databases.
10	Structured Query Language (SQL)	The most widely used query language for relational database management and operations.
11	Assembly language	A low-level programming language that is closely related to machine code and provides direct control of hardware.

	Key Term	Description
12	Machine code	The lowest-level representation of a computer program, directly executed by the central processing unit (CPU).

Python Programming Fundamentals (FC0-U71)

Overview
Learning Outcomes:

Tech+ Domain

4.0 Software Development Concepts

Tech+ Objectives

4.2 Identify fundamental data types and their characteristics.
4.3 Explain the purpose and use of programming concepts.
4.4 Identify programming organizational techniques and logic concepts.

Overview

Welcome to the Python Programming Fundamentals lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 - Working with Primitive Data Types in Python
- Exercise 2 - Working with Arrays/Lists in Python
- Exercise 3 - Working with Functions in Python

After completing this lab, you will be able to:

- Work with primitive data types in Python.
- Work with arrays/lists in Python.
- Work with functions in Python.

	Key Term	Description
1	Char	Represents a single character. In Python, this is just a string of length 1 (e.g., 'A')
2	String	A sequence of characters enclosed in quotes ("Hello")
3	Integer	Whole numbers (e.g., 5, -2)
4	Float	Decimal numbers (e.g., 3.14, -0.5)
5	Boolean	Logical values representing truth (True or False)
6	Identifier	The name used to identify variables, functions, classes, etc
7	Variable	A storage location identified by a name (e.g., x = 10)
8	Constant	A variable that should not change. In Python, uppercase names (e.g., PI = 3.14) are used by convention

	Key Term	Description
9	Array	A collection of items. In Python, this is implemented as a list (e.g., colors = ['red', 'blue'])
10	Function	A reusable block of code (e.g., def greet():)
11	Object	An instance of a class containing data and behavior
12	Property	Data associated with an object (e.g., self.name in a class)
13	Attribute	Another term for properties in Python's object model
14	Method	A function that belongs to an object (e.g., my_object.do_something())
15	Pseudocode	Informal description of a program's logic, not written in actual code
16	Object-Oriented Methods	Techniques using objects and classes to structure code
17	Documentation	Comments and written explanations to help understand code
18	Sequence	Code statements executed one after another
19	Branching	Conditional execution using if, elif, else
20	Looping	Repeating code using for or while loops

Introduction to Database Concepts (FC0-U71)

Overview

Learning Outcomes:

Tech+ Domain

5.0 Data and Database Fundamentals

Tech+ Objectives

5.1 Explain the value of data and information.
5.2 Explain database concepts and the purpose of a database.
5.3 Compare and contrast various database structures.

Overview

The Introduction to Database Concepts lab provides you with the instruction and server hardware to develop your hands-on skills in the defined topics. This module includes the following exercises:

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 - Relational Database Concepts
- Exercise 2 - Working with Data Manipulation Statements
- Exercise 3 - Working with Data Definition Language

After completing this lab, you will be able to:

- Create a table and establish table relationships.
- Use data manipulation statements.
- Use data definition language.

	Key Term	Description
1	Data	Raw, unprocessed facts and figures without context (e.g., numbers, dates, strings)
2	Information	Data that has been processed and contextualized to be meaningful and useful
3	Critical data	Information essential for operations or legal compliance, such as financial records or patient health data
4	Non-critical data	Data that enhances user experience but is not vital for operations, such as theme settings or screen preferences
5	Data analytics	The process of analyzing data to extract insights for decision making
6	Big data	Extremely large data sets that require advanced tools and technologies (e.g., Hadoop, Spark) to process and analyze
7	Database	An organized collection of structured information or data, typically stored electronically and managed by a database management system (DBMS)
8	Flat file	A plain text or spreadsheet file where data is stored in a two-dimensional structure without relationships between records
9	Query	A request for data or information from a database using a specific syntax, such as SQL
10	Table	A database structure that organizes data into rows and columns
11	Row (record)	A single entry in a database table that represents one instance of data
12	Column (field)	A specific attribute or category of data within a table
13	Primary key	A column (or combination of columns) that uniquely identifies each record in a table
14	Foreign key	A field in one table that links to the primary key in another table, establishing a relationship between the two
15	Constraint	Rules applied to fields in a database to ensure data integrity (e.g., NOT NULL, UNIQUE)
16	Schema	The structure of a database, including tables, fields, data types, and relationships
17	Structured data	Data that resides in fixed fields within a record or file, often stored in relational databases
18	Semi-structured data	Data that does not follow a strict schema but has some organizational properties (e.g., JSON, XML)
19	Unstructured data	Data with no predefined format, such as videos, images, and audio files
20	Relational database	A type of database that stores data in tables with predefined relationships, using SQL
21	Non-relational database (NoSQL)	A flexible database that stores data in various formats (document, key-value, column) without requiring fixed schemas
22	Key-value store	A flexible database that stores data in various formats (document, key-value, column) without requiring fixed schemas

	Key Term	Description
23	Document store	A NoSQL database that stores data as documents, often in JSON or BSON format (e.g., MongoDB)
24	DDL (Data Definition Language)	SQL commands that define or alter the structure of a database (e.g., CREATE, ALTER, DROP)
25	DML (Data Manipulation Language)	SQL commands used to manipulate data within tables (e.g., INSERT, SELECT, UPDATE, DELETE)

Securing and Administering Databases (FC0-U71)

Overview
Learning Outcomes:

Tech+ Domain

5.0 Data and Database Fundamentals

Tech+ Objectives

5.4 Explain basic data backup concepts.

Overview

The Securing and Administering Databases lab provides you with the instruction and server hardware to develop your hands-on skills in the defined topics.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 - Securing Databases
- Exercise 2 - Backing Up and Restoring a Database

After completing this lab, you will be able to:

- Create logins and users for a database.
- Assign roles to users and granting permissions.
- Perform backup and restore using T-SQL.
- Perform backup and restore using SSMS.

Note: Our main focus is to cover the practical, hands-on aspects of the exam objectives. We recommend referring to course material or a search engine to research theoretical topics in more detail.

	Key Term	Description
1	Data backup	The process of copying and storing data so it can be restored in case of loss or corruption
2	File backup	Backing up individual files or folders
3	System backup	A complete image or snapshot of an entire system, including OS, software, and data
4	Flash drive	A portable storage device used for quick, local data backup

	Key Term	Description
5	Data availability	The degree to which data is accessible and usable when required
6	Cloud storage	A remote data storage solution accessed over the Internet, offering scalability and disaster recovery

Securing Workstations (FC0-U71)

Overview
Learning Outcomes:

Tech+ Domain

6.0 Security

Tech+ Objectives

6.2 Explain methods to secure devices and security best practices

Overview

Welcome to the Securing Workstations lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will complete the following exercises:

- Securing a Windows client workstation.

	Key Term	Description
1	Security awareness	Security awareness refers to the knowledge and understanding of potential threats to safety and security, coupled with the ability to recognize, prevent, and respond to such threats.
2	Securing devices (mobile/workstation)	Securing devices, such as mobile phones and workstations, refers to implementing measures to protect these devices from unauthorized access, data breaches, malware, and other cybersecurity threats.
3	Device use best practices	Device use best practices refer to guidelines and habits that help users optimize the performance, security, and longevity of their devices, whether they're mobile phones, computers, tablets, or other gadgets. These practices ensure efficient and safe usage while minimizing risks like cyber threats, data loss, and hardware damage.
4	Privacy considerations	Privacy considerations refer to the careful evaluation and implementation of measures to protect individuals' personal information and ensure it is collected, stored, and shared responsibly.

Implementing Password Policies (FC0-U71)

Overview
Learning Outcomes:

Tech+ Domain

6.0 Security

Tech+ Objectives

6.3 Explain password best practices

Overview

Welcome to the Implementing Password Policies lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will complete the following exercises:

- Implement a secure password policy
- Implement a password manager

	Key Term	Description
1	Password length	Password length refers to the number of characters in a password. Generally, longer passwords are more secure because they are harder to guess or crack. Most security experts recommend using passwords that are at least 12–16 characters long, combining letters, numbers, and special characters for added complexity.
2	Password complexity	Password complexity refers to the variety and combination of characters used in a password to enhance its security. A complex password typically includes: • Uppercase letters (A–Z) • Lowercase letters (a–z) • Numbers (0–9) • Special characters (e.g., !, @, #, $, %, ^, &, *)
3	Password history	Password history refers to the record of previously used passwords for a specific account or system. Many security policies require users to avoid reusing old passwords to enhance security. This helps prevent unauthorized access by ensuring that even if an old password is compromised, it cannot be used again.
4	Password expiration	Password expiration refers to the policy that requires users to change their passwords after a certain period of time. This is a security measure designed to minimize the risk of compromised passwords being used for extended periods. Common expiration periods range from 30 to 90 days, but this can vary depending on the organization's security requirements.
5	Password reuse across sites	Password reuse across sites refers to the practice of using the same password for multiple accounts or websites. This is generally discouraged because it increases the risk of multiple accounts being compromised if one password is exposed. If a hacker gains access to one account, they can potentially access all other accounts using the same password.
6	Password managers	Password managers are tools designed to help users securely store, manage, and generate passwords for various accounts and websites.
7	Password privacy	Password privacy refers to the practice of keeping your passwords confidential and protected from unauthorized access.
8	Password reset process	The password reset process is a procedure that allows users to regain access to their accounts when they have forgotten their passwords or suspect their accounts have been compromised.

	Key Term	Description
9	Changing default usernames and passwords	Changing default usernames and passwords is a crucial security practice to protect devices and accounts from unauthorized access. Default credentials are often easy to guess and widely known, making them vulnerable to attacks.
10	Enabling passwords	Enabling passwords refers to the process of setting up password protection for accounts, devices, or applications to ensure security.

Introduction to Encryption (FCO-U71)

Overview

Learning Outcomes:

Tech+ Domain

6.0 Security

Tech+ Objectives

6.4 Identify common use cases for encryption.

Overview

Welcome to the Introduction to Encryption lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Learning Outcomes:

In this lab, you will complete the following exercises:

- Implement an Encryption Solution

	Key Term	Description
1	Plain text vs. cipher text	Plain text refers to data that is in its original, readable form. It is not encrypted or encoded, making it easily understandable by humans and machines. For example, a simple email message or a text file. Cipher text, on the other hand, is data that has been encrypted. It is transformed from plain text using an encryption algorithm and a key, making it unreadable to anyone who does not have the key to decrypt it. This ensures the confidentiality and security of the information.
2	Data at rest	Data at rest refers to data that is stored on physical media, such as hard drives, solid-state drives, or cloud storage, and is not actively being transferred or processed. This includes files, databases, and backups that are saved and not currently in transit.
3	Data in transit	Data in transit refers to data that is actively moving from one location to another, such as across the Internet or through a private network. This includes data being transferred between devices, applications, or servers.