1. SSH (Secure Shell) is a cryptographic network protocol used for secure remote login, command execution and file transfers between computers.

SSH is important for several reasons:

* Security: SSH provides a secure and encrypted communication channel between a client and a server over an untrusted network.is protected from eavesdropping and unauthorized access
* Remote access and administration: SSH enable remote access and administration of servers and systems
* Secure file transfer: SSH includes secure file transfer protocols, such as SXP (Secure XoPy) and SFTP (SSH File Transfer Protocol)
* Tunneling and Port Forwarding: SSH support tunneling and port forwarding, which allow you to securely access services running on remote machines through an encrypted tunnel.
* Key-based authentication: with key-based authentication, you generate a public-private key pair, and the server stores the public key.
* Automation and Scripting: it allows to remotely execute commands or scripts on multiple servers, making it valuable for tasks like deployment, configuration management, and system monitoring.

1. VPN is Virtual Private Network. Is important for several reasons:

* Privacy and Security: VPN encrypt the internet traffic and create a secure tunnel between the device and the VPN server.
* Secure remote access:
* Bypassing Geographical restrictions
* Public wi-fi security: VPN encrypt the internet traffic, even on unsecured public wi-fi network

1. The LAN (local area Network) is the network infrastructure that connects devices within a limited geographical area.
2. Some tools to connect to a remote server are:

* SSH
* PuTTY
* OpenSSH
* Remote Desktop Protocol (RDP) clients (only for Windows based system)
* Virtual Network Computing (VNC) clients

1. To connect to a remote server, i need:

* IP Address or Hostname
* Port Number for certain protocols like ssh, rdp or ftp
* Username
* Password or SSH key
* Protocol

1. The difference between CLI and GUI are:

* CLI (Command Line Interface): Text based interface, commands, Efficiency and Control, Lower resource usage, Scripting and automation
* GUI (Graphical User Interface): Graphical representation, Point and-Click, Eae of use, Visual Feedback, Multitasking and what you see is what you get (WYSIWYG) editing

1. The difference between the client machine and a server are:

* Client machine: user-facing (used by end-users), requesting services, consumes resources
* Server: service provider, centralized control, shared resources

1. The Linux distribution are: Ubuntu, Debian, Fedora, CentOS, Arch Linux, OpenSUSE, Linux Mint, Manjaro, CentOS Stream.
2. The open-source software is the software that the source code is freely available and can be accessed; modified; and distributed by anyone
3. The difference between open source and close source software or OS

* Open source: source code availability, licensing, collaborative development, flexibility and customization, transparency and security
* Closed source (proprietary): source code protection, licensing and usage restrictions, limited customization, security auditing

1. Linux was created by LIINUS TORVALDs with the goal of creating a free and open-source alternative to proprietary operating systems.
2. Linux is open source primarily because of the vision and decision of its creator, to have the collaboration and community of developers worldwide, is transparence and make the source code accessible to everyone
3. Linux is case sensitive because it follows the Unix like operating system conventions.
4. Migration refers to the process of transferring data, applications, systems, or infrastructure from one environment to another.
5. Companies are migrating to the cloud for several reasons:

* Scalability and flexibility: ability to scale resources up or down based on demand, adjust their infrastructure and resources to accommodate fluctuating workloads
* Cost savings: reduce upfront infrastructure costs, such as purchasing and maintaining servers and data center
* Accessibility and remote work:

1. Some cloud providers are: Amazon Web Service (AWS), Microsoft Azure, Google Cloud Platform (GCP) IBM Cloud, Oracle Cloud, Alibaba Cloud.
2. Some convention to name file and directories are:

* Lowercase letters: it is recommended to use lowercase letters for file and directory names,
* Alphanumeric characters
* Hyphens or dashes: we can use hyphens (-) or dashes (\_) to separate words. Example: my\_directory, my-file.txt
* Short and descriptive names: this helps in quickly identifying and understanding the purpose of a particular file or directory
* Avoid reserved words: root, tmp, dev, etc
* File extensions:

1. The data center is a dedicated facility that houses a large number of computer servers, storage systems, networking equipment, and other components necessary for managing, storing processing and distributing data.
2. The terminal is a text-based interface that allow users to interact with a computer system by typing commands.
3. Difference between Linux and windows:

* Kernel: Linux use the Unix-like kernel. Windows use Windows NT kernel
* User interface: Linux offers a variety of desktop environments and window managers. Windows provides consistent GUI
* Licensing: Linux is open source. Windows is proprietary software
* File systems: windows use NTFS. Linux supports a variety of file systems

1. Some pros of cloud computing are: scalability, cost savings, accessibility and convenience, disaster recovery and business continuity, automatic software updates, elasticity and resource optimization, innovation and agility
2. The kernel in Linux refers to the core component of the operating system that acts as an interface between the hardware and software layers.
3. The most popular shell in Linux is Bash (Bourne Again Shell) because is highly compatible with the bourne shell, is widely available and pre-installed on most Linux distributions, bash has a large and active community of users and developers, bash is a powerful scripting language that allows users to automate tasks
4. The difference between the regular user and the root user are:

* Privileges: regular users have limited privileges, the root user has full administrative privileges and unrestricted access to all files, directories and system resources.
* System security: regular users are an important security measure in linux, the root user has the power to make any changes
* User management: regular users can create and manage their own files and directories within their designated home directories; the root user has the authority to create, modify, and delete user accounts, including granting or revoking administrative access for other users
* System configuration: regular users can customize their own environment; the root user can modify system files, install system-wide software, and make change that affect the entire system.

1. The difference between command and option are:

* Command refers to an executable program or a built-in shell command that performs a specific action. Example: ls, cp, mv, mkdir, grep, rm, awk
* Options or flags are additional parameters that modify the behavior of a command

1. The difference between the root and the home directory are:

* Root directory (/) is the top-level directory in linux file system hierarchy and contains all other directories and files in the system
* Home directory (¬) is a directory assigned to each user in the system and is specific to that user.

1. To get help in Linux you can use: man pages, command –help, info command.
2. Some communication tools are: gmail, whatsapp, Microsoft team, slack, facebook, zoom, google meet, skype
3. In my current file I use: ChatGPT, Google
4. Under the root directory which can have: /bin, /boot, /dev, /etc /home, /lib, /lib64, /media, /root, /sbin, /tmp, /usr, /var
5. To keep track in use the log (/var/log), the command history (history), process monitoring (ps, top)