CS311-D

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Task 1:

Window 10/11 home and pro version only 1-2 physical CPU where else window 10/11 Pro workstation can support up to 4 CPUs. However, for a higher-end server requirement Window server edition can support more than 4 CPUs.

a) Performance can be significantly increased by increasing the number of CPUs, particularly for jobs that support parallelism. However, the speed increases might not be significant for routine jobs or software that does not make good use of several processors. It's important to maintain a balance between the number of CPUs and the program environment and workload.

   Here is how the number of CPUs can affect performance:

   - **Parallel Processing:** Multiple CPUs means it can perform more processes simultaneously, increasing the processing speed.
   - **Task Distribution:** complex tasks can be divided among the CPUs, resulting in faster completion time.
   - **Responsiveness:** improves system responsiveness as multiple CPUs can easily handle multiple requests.

b)

Edition	**Max Physical CPU**	**Max cores/CPU**
10/11 Home	1	Up to 64
10/11 Pro	2	Up to 64
10/11 Pro for Workstation	4	Up to 64
Window server edition	Up to 64	Up to 64

c)

Windows Server Editions: Multiple CPU capability is available for Windows Server 2012 R2, Windows Server 2016, and Windows Server 2019 (particularly the Datacentre and Standard editions).

Consumer Editions: Although Windows 10 Home and Pro can support multiple CPUs, they might not perform as well as server editions, particularly when dealing with heavy workloads.

d)

Software Compatibility: Most contemporary software programs are made to be multiprocessor compatible. Nevertheless, less sophisticated or outdated software might not make the most of the available computing power.

Hardware Compatibility: The number of CPUs we plan to employ must be compatible with the motherboard, CPU sockets, and other parts. Make sure the hardware on our system can accommodate several CPUs.

e)

Number of Processors: Select a version that is compatible with the quantity of CPUs in the system.
Workload: Consider the kinds of jobs system will be handling. Demanding workloads are best suited for server editions.
Features: Consider features like virtualisation, remote management, and security that are provided by various editions.
Cost: To determine which edition is the most economical, compare the license fees of the various editions.
Support: Consider the degree of updates, patches, and technical support offered by the selected edition.

Task 2:

a)

Network Interface Card driver is a software component that act as the bridge between OS and the physical NIC hardware. It manage the communication between the computer and network such as packet transmission, packet reception, protocol handling etc.

b)

Signs such as

- No network connectivity
- Intermittent connectivity
- Slow network speed.

c)

Device Manager**:** This tool provides information about all hardware devices connected to the computer, including the NIC. You can check the driver status, update the driver, or uninstall it if necessary.

Network Connections**:** This control panel applet lists all active network connections. You can right-click on the network connection and select "Status" to view detailed information about the connection, including the driver status.

Command Prompt**:** Use the ipconfig /all command to display detailed information about the network configuration, including the NIC driver status and IP address.

d) Yellow exclaimation mark which indicates driver issues. The system also may display driver errors such as driver not found etc. The driver may also be using incorrect network settings preventing them to connect to the internet.

e)

- Update the driver
- Uninstall and reinstall the driver
- Hardware issues

Task 3:

a)

Windows 10 is designed to automatically adjust the system time and date based on the user's location for eg

- GPS: If the device has GPS capabilities, it can determine the location based on satellite signals.
- IP address: The IP address can provide a general location based on the geographic region associated with the IP range.
- Network time protocol (NTP): Windows can synchronize with NTP servers to obtain accurate time and date information.

b) Open control panel and go to Clock language and region section. From there go to Date and time. Then in the internet time tab check the box "automatically adjust daylight saving time" and click "update now". Also make sure to enable location services.

c) While window itself does not support this feature there are couple of third-party app that will assist you with this feature.

d) It uses a combination of GPS,IP address and NTP servers to determine the user location and adjust the time accordingly.

e) Yes, there are several third-party apps available that can help with automatic time zone changes.
Time Zone Helper: A simple tool that automatically adjusts the system time zone based on the user's location.
World Time Buddy: A more comprehensive app that allows you to add multiple time zones and track time differences between different locations.
Time and Date: A versatile app that offers various features, including time zone conversion, world clock, and alarm.