



Activity 4.1 System software

4.1.1 Define each task in your own words and provide an example.

TASK	DEFINITION AND EXAMPLE
Hardware management	
Graphics User Interface (GUI) management	
I/O management	
Process management	
File management	
Memory management	
Disk management	
Storage management	

4.1.2 What is the advantage of the storage management system recording the date that a file was changed?

4.1.3 Use your computer to complete the following activity.

- List the steps you should follow to see your computer's performance (using the *Task Manager*).
- Open the *Task Manager* on Microsoft Windows and write down your computer's current usage for the following hardware.

i. CPU

ii. Memory

iii. Primary HDD

iv. Network



Solutions

Any of the following answers could suffice

4.1.1

(i) **Hardware management:**

- ✓ The OS will manage the different pieces of hardware that can be used on the computer system.
- ✓ The OS is response for the selection of different hardware that are installed and used on the computer installation.
- ✓ The OS will manage the interaction between hardware and software and as well as the different hardware devices
- ✓ An OS manages device communication via their respective drivers. It performs the following activities for device management. Keeps tracks of all devices connected to system. designates a program responsible for every device known as the Input/Output controller. Allocates devices in an effective and efficient way. Deallocates devices when they are no longer required.

(ii) **GUI Management:**

- ✓ The OS provides and manages the user interface that interacts with graphics and visual content on a computing device.
- ✓ An OS provides an interface between user and machine. This interface can be a graphical user interface (GUI) in which users click onscreen elements to interact with the OS or a command-line interface (CLI) in which users type commands at the command-line interface (CLI) to tell the OS to do things.

(iii) **I/O Management;**

- ✓ The Operating System is responsible for handling all sort of inputs, i.e, from keyboard, mouse, desktop, etc. The Operating System does all interfacing in the most appropriate manner regrading all kind of Inputs and Outputs.
- ✓ For example, there is difference in nature of all types of peripheral devices such as mouse or keyboard, then Operating System is responsible for handling data between them.
- ✓ The Operating System will manage the signals received from an input device and sending the correct signals to an output device.

(iv) **Process Management:**

- ✓ The OS will control applications and the resources used by applications (Apps) on a computing device.
- ✓ For example, in a multi programming environment, the OS decides the order in which processes have access to the processor, and how much processing time each process has. This function of OS is called **process scheduling**. An Operating System performs the following activities for processor management.



- ✓ Keeps tracks of the status of processes. The program which perform this task is known as **traffic controller**. Allocates the CPU that is processor to a process. De-allocates processor when a process is no more required.

(v) File Management

- ✓ The OS will manage the storage of files and folders on your storage device.
- ✓ For example, the OS displays structure/directories for data management. We can view file and folder listings and manipulate on those files and folders like (move, copy, rename, delete, and many others).

(vi) Memory Management

- ✓ The OS will manage the data stored on a computing device's memory and once the processing is complete, this function tends to free up some space.
- ✓ The operating system manages the Primary Memory or Main Memory. Main memory is made up of a large array of bytes or words where each byte or word is assigned a certain address. Main memory is a fast storage and it can be accessed directly by the CPU. For a program to be executed, it should be first loaded in the main memory. An Operating System performs the following activities for memory management:
- ✓ It keeps tracks of primary memory, i.e., which bytes of memory are used by which user program. The memory addresses that have already been allocated and the memory addresses of the memory that has not yet been used. In multi programming, the OS decides the order in which process are granted access to memory, and for how long. It Allocates the memory to a process when the process requests it and deallocates the memory when the process has terminated or is performing an I/O operation.

(Vii) Disk Management

- ✓ This OS facility is used to manage the drives installed in a computer e.g. partition drives, format drives, assign drive letters.
- ✓ Disk Management is a system utility in Windows that enables you to perform advanced storage tasks. Here are some of the things Disk Management is good for:
 - To setup a new drive.
 - To extend a volume into space that's not already part of a volume on the same drive.
 - To shrink a partition, usually so that you can extend a neighbouring partition,
 - To change a drive letter or assign a new drive letter.

(viii) Storage Management

- ✓ The OS provides processes that are used to improve the performance of data storage resources.



- ✓ **Memory management** is the functionality of an **operating system** which handles or manages primary **memory** and moves processes back and forth between main **memory** and disk during execution.
- ✓ The file **system** provides the mechanism for on-line **storage** of and access to both data and programs residing on the disks. A file is a collection of related information defined by its creator. The files are mapped by the **operating system** onto physical devices.

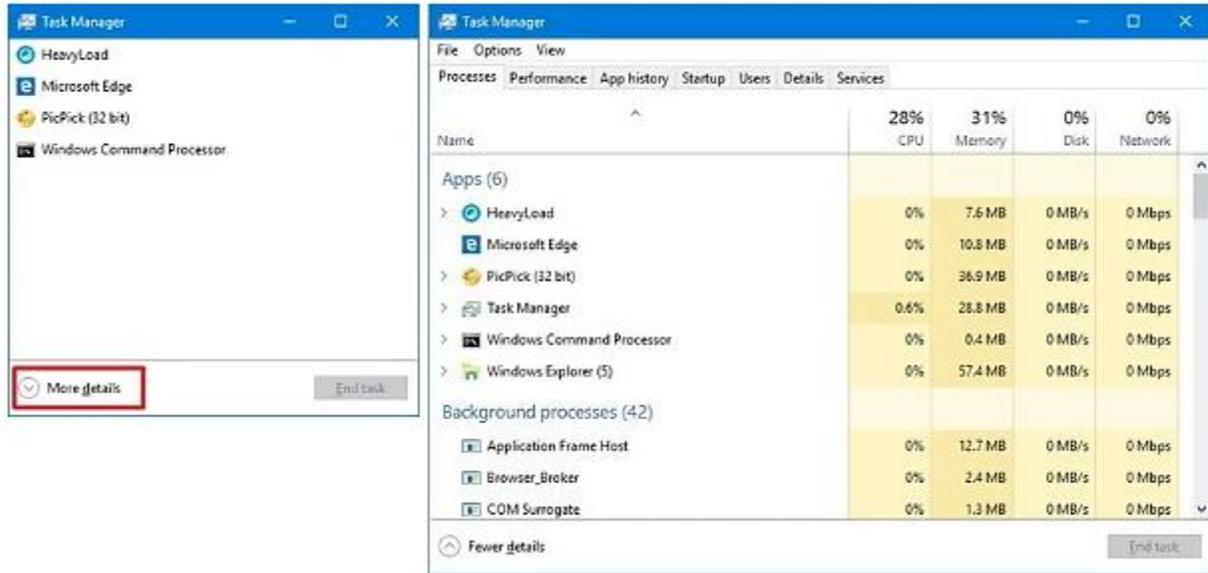
4.1.2. the advantages of the storage management system recording the date that a file was changed include:

- ✓ Furnishing a complete record of what has happened during and after operations. Some details of this log may be stored for accounting purposes.

4.1.3

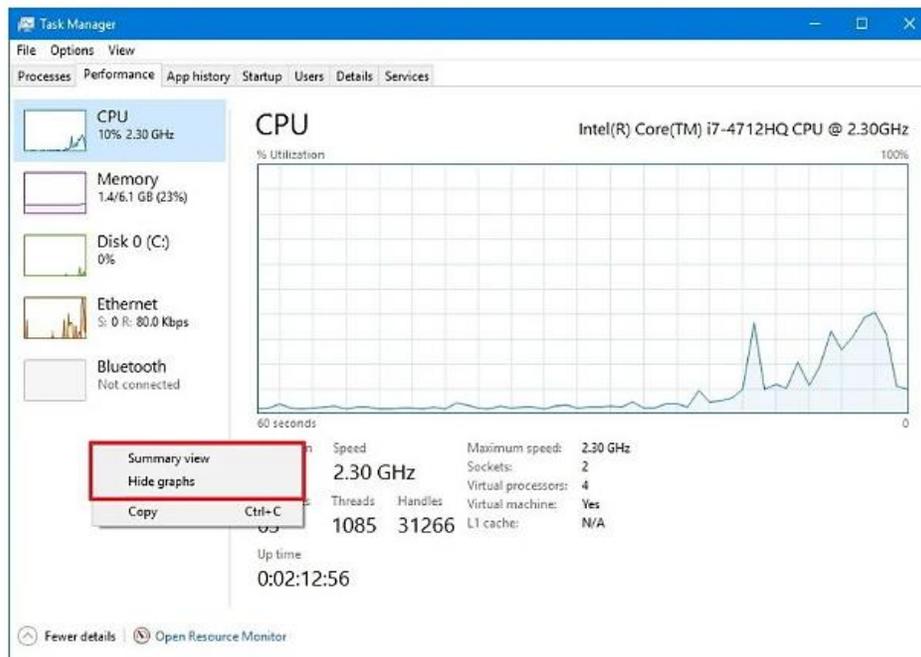
(a) List the steps you should follow to see your computer's performance (using the Task Manager).

- ✓ On Windows 10, you can use Task Manager for an array of tasks, including to view real-time data on your computer's performance, but first, you need to know how to open the tool. Below are a few ways to open Task Manager:
 1. Right-click the **Taskbar** and click on **Task Manager**.
 2. Open Start, do a search for **Task Manager** and click the result.
 3. Use the **Ctrl + Shift + Esc** keyboard shortcut.
 4. Use the **Ctrl + Alt + Del** keyboard shortcut and click on **Task Manager**.
 5. Use the **Windows key + X** keyboard shortcut to open the power-user menu and click on **Task Manager**.
- ✓ If you never open this tool before, you're likely to see Task Manager in compact mode. To get to Performance, you need to click the **More details** button, and then click on the **Performance** tab.



Task Manager compact mode (left), Task Manager advanced mode (right)

- ✓ **How to monitor system performance**
- ✓ In the **Performance** tab, you can monitor four main components, including processor, memory, hard drive, network (and Bluetooth).
- ✓ On the left pane by default, you'll see all the components with small graphs displaying their current activity in percentage for CPU, Memory, and Disk, and Kilobits per second for network adapters and Bluetooth devices providing visuals to quickly identify any spikes on resources.





b. Open the Task Manager on Microsoft Windows and write down your computer's current usage for the following hardware. *This task requires one to pick out their Computer's individual features. For Example, my computer has the following features as required by the task.*

To get some of these features to be displayed on your computer, you need to right-click the Computer Directory or this PC as it is with my case and select Properties.

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System

Processor:	Intel(R) Xeon(R) CPU E3-1220 v3 @ 3.10GHz 3.10 GHz
Installed memory (RAM):	4.00 GB
System type:	64-bit Operating System, x64-based processor
Pen and Touch:	No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

i. CPU

ii. Memory

iii. Primary HDD

iv. Network

Local Disk (C:) Properties

General	Tools	Hardware	Sharing	Security	NFS Sharing
<p>Type: Local Disk</p> <p>File system: NTFS</p> <p>Used space: 671,680,376,832 bytes 625 GB</p> <p>Free space: 1,129,542,500,352 bytes 1.02 TB</p> <p>Capacity: 1,801,222,877,184 bytes 1.63 TB</p> <p>Drive C: Disk Cleanup</p>					
<p><input type="checkbox"/> Compress this drive to save disk space</p> <p><input checked="" type="checkbox"/> Allow files on this drive to have contents indexed in addition to file properties</p>					