OPERATING SYSTEM

ASSIGNMENT - 01

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Question # 01 - What is multiprocessing? Describe the difference between symmetric and asymmetric multiprocessing. What are the advantages and disadvantages of multiprocessor.

Multiprocessing: When the computer has more than one processing engine combined with operating system that can execute more than one machine instruction at instant. There are two types of multiprocessors.

1- Symmetric multiprocessor
2- Asymmetric multiprocessor

SYMMETRIC MULTIPROCESSOR	ASYMMETRIC MULTIPROCESSOR
1- Processor executes the task in OS.	**1-** Master processor executes the task of OS.
2- All the processors are handled equally.	**2-** The processors are not handled equally.
3- The process is carried out as ready queue.	**3-** The process arranging method used is master slave.
4- Processors has same architecture.	**4-** Processors has different architecture.
5- It is complicated, each processor must be synchronized to keep the load balance.	**5-** It is simple as master processor way in the data structure.
6- Processors connect with each other by a shared memory.	**6-** Processor don't require to connect with each other as they are regulated by master processor.
7- If a processor fails, then processing capacity of the system decreases.	**7-** If a master processor fails, a slave is becoming master processor to maintain the execution.
8- Processors are suitable for homogenous and heterogenous cores.	**8-** Processors are suitable for homogenous core.

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ADVNATAGE	DISADVANTAGE
1- More reliable system, even if one processor fails, the system will not stop.	**1-** These are more complex to schedule processes.
2- The throughput of the system increases if the processors are operating in cycle.	**2-** Large memory required as compared to single processor systems.
3- Multiprocessors are cheaper then single processor system.	**3-** It is much cheaper to purchase a simple processor system than a multiprocessor system.

Question # 02 - Explain the difference between Hard Disk and Solid-State Disk.

HARD DISK	SOLID STATE DISK
1- It contains mechanical parts.	**1-** It doesn't contain mechanical parts.
2- It has higher latency.	**2-** It has lower latency.
3- It has fragmentation.	**3-** It doesn't have fragmentation.
4- The transfer of data is sequential.	**4-** The transfer of data is random access.
5- It is cheaper per unit storage.	**5-** It is costlier per unit storage.
6- The data retrieving speed is slow as compared to solid state disks.	**6-** The data retrieving speed is much higher as compared to hard disk.
7- The performance suffers because of fragmentation.	**7-** The performance doesn't suffer because of fragmentation.

Question # 03 - How do the clustered systems different from multiprocessor systems? What is required for two machines belonging to a cluster to cooperate to provide highly available service?

CLUSTERED SYSTEM	MULTIPROCESSOR SYSTEM
1- These systems are built by merging multiple computers into a single system to perform a computational task.	**1-** These systems could be a single physical entity comprising multiple CPUs.
2- It is less tightly connected than a multiprocessor system.	**2-** It is more tightly connected than clustered systems.
3- It communicates using messages.	**3-** It could communicate using shared memory.

- For two machines belonging to a cluster to cooperate to provide highly available service, it must be simulated and must be consistently renovated. When one of the machines fails, the other could take over the functionality of the failed machine.

Question # 04 - Discuss the real time embedded systems and multimedia systems.

01. REAL TIME EMBEDDED SYSTEMS

Those systems that work within strict time constraints and deliver within a specific time estimate for crucial state. Embedded systems give a certain function in a much larger system. When there is an embedded component in a real time system, it is known as real time embedded systems. They are categorized based on the sort of real-time response they provide.

CLASSIFICATION

There are three types of real time operating system that are different differ in function based on the time constraint associated with their application.

- Hard RTOS
- Firm RTOS
- Soft RTOS

HARD RTOS

It executes when it is critical that no deadlines are missed in all tasks are achieved within the specified time.

EXAMPLE

- Vehicle airbag, a missed deadline implies that the airbag was not utilized in the time to protect passenger in the accident.

FIRM RTOS

If errors are infrequently premises but there is a perception that miss deadline effect reduced execution of the device.

EXAMPLE

- A manufacturing assembly with robotic module.

SOFT RTOS

Enhanced experience, when tasks are achieved on time, but execution is not totally reduced when are missed.

EXAMPLE

- A cardiac pacemaker.

02. MULTIMEDIA SYSTEMS

Multimedia as a term includes any visual or audio source. These systems can store, retrieve, and manage various kind of media, image, text, graphic, audio etc. Users can create, process, share and display information in variety of formats.

PURPOSE

These systems are used for security to keep intruders out of a system of and to protect stored documents. Where there is a requirement for merging text, picture, sound, and animation multimedia system are discovered.

EXAMPLE

- Multimedia systems are utilized in organizations, for all forms of information system from transaction processing system to implementing decision support system.
- In industries such as accounting, education, medical, rerailing, real estate etc.

THE END