OS & NW

QUIZ - 2

SNEHAL KUMAR
2019101003

Q.1. Explain merits and demerits of synchronous and asynchronous communication.

A: Synchronous communication is a type of message passing ~~which is~~ when it is blocked.

- It's benefit is that is allows a rendezvous between a sender and receiver.
- This reduces overhead and load on queue, when both sender and receiver block messages
- The demerit of synchronous communication is that a rendezvous maynot be required and that the hardware of OS may allow message passing to be done asynchronously.

Asynchronous is when message passing is non blocking.

- Process resumes after sending the message so ~~it~~ more execution can be done in lesser time.
- The clocks are independent of each other allowing more flexibility.
- It's demerits include long queues could pile up if message not transmitted properly.
- There is lot of overhead from transmission bits.

Q.2. Explain role of short term scheduler.

A: A short term scheduler is used to select the process from the ready queue requesting I/O services and put them in the I/O queue. It maintains which process is to be allocated CPU time and does this in ~100 milliseconds.

Q.3. Consider a multiprocessor system and multithreaded program.

No of kernel threads is equal to no of processors.

A: The multithreaded program will ~~use~~ allocated the user level threads to the kernel threads for multiprocessing. Since there are more user level threads, these threads will have to wait for the kernel threads to be freed which will be notified through an upcall. Since there are as many processors as there are kernel threads, all the processors can be used at the same time. In case of an abnormal

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issue or block of kernel thread, the corresponding processor would then remain idle.

Q.4 What will happen if you design OS based on policy decisions?

A: If an OS is designed based on policy decisions, there will be a need to change the mechanisms frequently according to the various policies. This will lead to lot of overhead and is undesirable. Since policies change a lot, the hardware and mechanism will cause slower CPU time as the changes will be large scale.

Q.5. What are the advantages of 'layered design'?

A: The advantages of layered design are:

- The maintainence and construction is relatively easy.
- Since each layer only uses and depends on the layer beneath it, the development becomes easier.
- The process of debugging is simpler as, if we check the layer 'p' we can assume the error lies in it as the p beneath layers will be correctly functioning as we debug from the lowest layer.

Q.6. Explain the notion of process? Explain the reason for intro of process concept.

A: Process is an active entity which is the execution of a program. This forms the basis of all computation. They can be processes for OS execution, file mangement, job scheduling and includes the activity of the program, its contents, registers, stack and program counter specifying the instructions and resources allocated. The need to understand and define a process for proper functioning of OS and computer in general helps in designing and managing the services of the computer. This has given the rise for introduction of process concept to better take care of the efficient resources and CPU allocation in execution.

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