

Define process and thread. What is PCB ? Explain its various entries with their usefulness ?

Process and Thread:

A process is a program in execution. It is an instance of a program that consists of one or more threads and has its own virtual address space, system resources, and state information.

A thread, on the other hand, is a lightweight process that shares the same virtual address space and system resources as other threads within the same process. Multiple threads can exist within a single process and execute concurrently.

PCB:

A Process Control Block (PCB) is a data structure used by the operating system to store information about a process. It contains various entries that are used by the operating system to manage the process and track its state.

The following are some common entries in a PCB:

1. Process ID (PID): A unique identifier assigned to each process by the operating system.
2. Program Counter (PC): A pointer to the next instruction that will be executed by the process.
3. CPU Registers: A set of registers that store the current values of the CPU registers when the process was interrupted.
4. CPU Scheduling Information: Information about the process's priority, scheduling class, and current status.

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5. Memory Management Information: Information about the process's virtual address space, including the base address and limits of each segment.

6. I/O Status Information: Information about the I/O devices that are being used by the process.

7. Accounting Information: Information about the process's resource usage, such as CPU time, memory usage, and I/O operations.

Usefulness:

The usefulness of these entries varies depending on the operating system and the specific needs of the process management system. The PCB is a crucial data structure for the operating system to manage the process, allocate resources, and keep track of the process's state. By maintaining information about the process, the operating system can efficiently manage the execution of multiple processes and provide a secure and stable environment for applications to run.

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9. How many page faults
10. Process State Diagram
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12. FIFO page replacement algorithm
13. LRU page replacement algorithms
14. Optimal page replacement algorithm
15. SRTF shortest remaining time first
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17. OS 3
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62. Explain concept of a process with its components ?
63. Explain the following in brief Contiguous and Linked list allocation for implementing file system?
64. Explain various Disk scheduling algorithms with Illustrations ?
65. Discuss advantages and disadvantages of the Buffer cache ?
66. Explain different types of OS with examples of each ?
67. What is an Operating System? Write down its desirable characteristics ?
68. Define a deadlock ? Write down the conditions responsible for deadlock? How can we recover from deadlock ?
69. What are the various services provided by Operating system ?
70. What do you mean by PCB? Where is it used? What are its contents? Explain.
71. What is Binary and Counting semaphores ?
72. What is File? What are the different File attribute and operations?
73. What are System call? Explain briefly about various types of system call provided by an Operating System?
74. Describe necessary conditions for deadlocks situation to arise.
75. What are points to be consider in file system design? Explain linked list allocation in detail?
76. Write a Semaphore solution for dining Philosopher's problem?
77. Consider the following page reference string:1,2,3,4,5,3,4,1,2,7,8,7,8,9,7,8,9,5,4,5.
How many page faults would occur for the following replacement algorithm, assuming four frames:a) FIFO b) LRU
78. Explain CPU schedulers in operating system?
79. Write the different state of a process with the help of Process state diagram?
80. What is Mutex in operating system?
81. Explain Network operating system?
82. What do you mean by paging in operating system ?