OS Assignment.

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Resume

"Process and Threads"

Processes are one of the oldest and most important abstraction that operating system provide. They support the ability to have (pseudo) concurrent operation even when there is only one CPU available. They turn a single CPU into multiple virtual CPU. All runnable software on the computer (including OS) is organized into a number of sequential processes

There are four principal events cause processes to be created: system initicalization, execution of a process-creation system call by a running process, a user request to create a new process and a initiation of a batch job. When an operating system is booted, typically numerous processes are crected, such as background process (daemons). Each process has its own address space

Processes can communicete with one another using interprocess communication primitives, for example: semaphores, monitors or messages. These primitives are used to ensure that no two processes are ever in their critical resions at the same time, a situation that leads to chaos. A process can be running, runneble or blocked and can change state when it or another process executes one of the interprocess communication primitives. Interthread communication is similar

TO implement the process model, the operating system maintains a table (an array of structures), called the "process table", with one entry per process / process control blocks. This entry contains important information about the process state, including it's program counter, stack pointer, memory allocation, the status of its open files, its accounting, etc

A process within a process or we can say like miniprocesses is called a threads. The main reason for having threads is that in many application, multiple activities are going on at once By decomposing such an application into multiple sequential threads that run in quasi-parallel, the programming model becomes simpler.

The process model is based on two independent concepts: resource grouping and execution. putting all resources that includes open files, child processes and more into one form of a process so that they can be managed more easily. The other concept process has is a thread of execution (thread). The thread has a program counter that keeps tracks of which instruction to execute next. The term "multi-threading" is used to describe the situation of allowing multiple threads in the same process.

To make it possible to write portable threaded programs, IEEE has defined a standard for threads in IEEE standa the threads package it defines is called "Pthreads". Example of the call, such as Pthread_create, Pthread_exi and 58 more calls. All Ptreads threads have certain properties.

A great many scheduling algorithms have been studied. Some of these are primarily used for batch systems, such as shortest-job first scheduling. Others are common in both batch systems and interactive systems these algorithms include round robin, priority scheduling, multilevel queues, guaranteed scheduling, lottery scheduling and fair-share scheduling. Some systems make a clean seperation between the scheduling mechanism and the scheduling policy, which allow users to have control of the scheduling algorithm.