

Technical Papers Operating Systems: Operating System Part II

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What are demand-and pre-paging?

With demand paging, a page is brought into memory only when a location on that page is actually referenced during execution. With pre-paging, pages other than the one demanded by a page fault are brought in. The selection of such pages is done based on common access patterns, especially for secondary memory devices.

Paging a memory management function, while multiprogramming a processor management function, are the two interdependent?

Yes.

What is page cannibalizing?

Page swapping or page replacements are called page cannibalizing.

What has triggered the need for multitasking in PCs?

Increased speed and memory capacity of microprocessors together with the support fir virtual memory and

Growth of client server computing

What are the four layers that Windows NT have in order to achieve independence?

- Hardware abstraction layer
- Kernel
- Subsystems
- System Services.

What is SMP?

To achieve maximum efficiency and reliability a mode of operation known as symmetric multiprocessing is used. In essence, with SMP any process or threads can be assigned to any processor.

What are the key object oriented concepts used by Windows NT?

- Encapsulation

- Object class and instance

Is Windows NT a full blown object oriented operating system? Give reasons.

No Windows NT is not so, because its not implemented in object oriented language and the data structures reside within one executive component and are not represented as objects and it does not support object oriented capabilities.

What is a drawback of MVT?

It does not have the features like

ability to support multiple processors

virtual storage

source level debugging

What is process spawning?

When the OS at the explicit request of another process creates a process, this action is called process spawning.

How many jobs can be run concurrently on MVT?

15 jobs

List out some reasons for process termination.

- Normal completion
- Time limit exceeded
- Memory unavailable
- Bounds violation
- Protection error
- Arithmetic error
- Time overrun
- I/O failure
- Invalid instruction
- Privileged instruction
- Data misuse
- Operator or OS intervention
- Parent termination.

What are the reasons for process suspension?

- swapping
- interactive user request
- timing
- parent process request

What is process migration?

It is the transfer of sufficient amount of the state of process from one machine to the target machine

What is mutant?

In Windows NT a mutant provides kernel mode or user mode mutual exclusion with the notion of ownership.

What is an idle thread?

The special thread a dispatcher will execute when no ready thread is found.

What is FtDisk?

It is a fault tolerance disk driver for Windows NT.

What are the possible threads a thread can have?

- Ready
- Standby
- Running
- Waiting
- Transition
- Terminated.

What are rings in Windows NT?

Windows NT uses protection mechanism called rings provides by the process to implement separation between the user mode and kernel mode.

What is Executive in Windows NT?

In Windows NT, executive refers to the operating system code that runs in kernel mode.

What are the sub-components of I/O manager in Windows NT?

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- Network redirector/Server
- Cache manager.
- File systems
- Network driver
- Device driver

What are DDks? Name an operating system that includes this feature.

DDks are device driver kits, which are equivalent to SDKs for writing device drivers. Windows NT includes DDks.

What level of security does Windows NT meets?

C2 level security.