

OPERATING SYSTEMS

OPERATING SYSTEMS AND STRUCTURES

S.Thenmozhi

Department of Computer Applications

OPERATING SYSTEMS

Types of System Calls

- System calls can be grouped roughly into six major categories:
 - Process Control
 - File Management
 - Device Management
 - Information Maintenance
 - Communication
 - Protection

Process Control

- create process, terminate process
- end, abort
- load, execute
- get process attributes, set process attributes
- wait for time
- wait event, signal event
- allocate and free memory

File Management

- create file, delete file
- open, close file
- read, write, reposition
- get and set file attributes

Device Management

- request device, release device
- read, write, reposition
- get device attributes, set device attributes
- logically attach or detach devices

Information Maintenance

- get time or date, set time or date
- get system data, set system data
- get and set process, file, or device attributes

Communication

- create, delete communication connection
- send, receive messages
- create and gain access to memory regions
- transfer status information
- attach and detach remote devices

Protection

- Control access to resources
- Get and set permissions
- Allow and deny user access

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System Calls – Windows and Unix



| | Windows | Unix |
|-------------------------|---|--|
| Process Control | CreateProcess() ExitProcess() WaitForSingleObject() | fork() exit() wait() |
| File Manipulation | CreateFile() ReadFile() WriteFile() CloseHandle() | open() read() write() close() |
| Device Manipulation | SetConsoleMode() ReadConsole() WriteConsole() | ioctl() read() write() |
| Information Maintenance | GetCurrentProcessID() SetTimer() Sleep() | getpid() alarm() sleep() |
| Communication | CreatePipe() CreateFileMapping() MapViewOfFile() | pipe() shmget() mmap() |
| Protection | SetFileSecurity() InitializeSecurityDescriptor() SetSecurityDescriptorGroup() | chmod() umask() chown() |

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System Program

- System calls are just functions
- The program that includes the system calls are system programs
- System programs provide a convenient environment for program development and execution.
- They can be divided into: File manipulation, Status information, Programming language support, Program loading and execution, Communications, Background services, Application programs



THANK YOU

S. Thenmozhi

Department of Computer Applications

thenmozhis@pes.edu

+91 80 6666 3333 Extn 393