

■ Reading: OS Concepts Appendix A, Sections 1-4, pp.807-827 (available online)

- A time-sharing, interactive operating system developed by programmers for programmers which has it's source available online



Design Principles

- Designed as a time sharing system

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- Designed with simplicity in mind

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- However initially there was no formal design

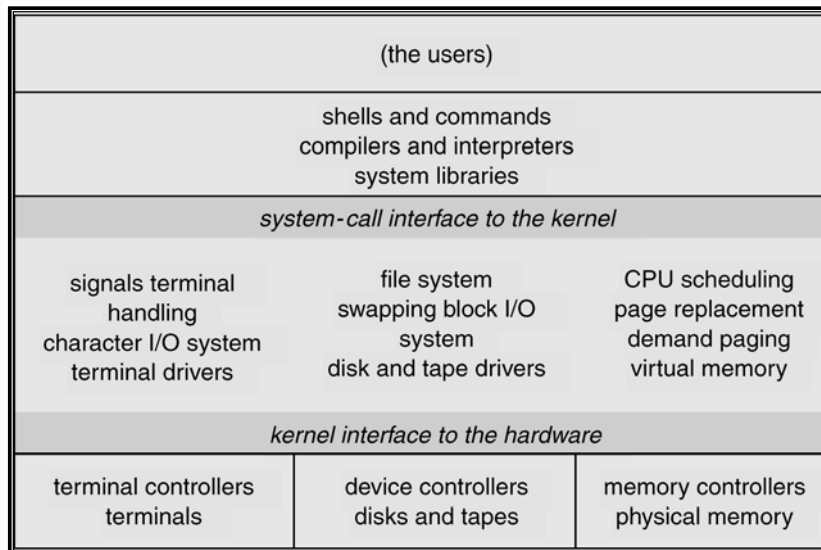
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- Portable

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Layer Structure



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4.3BSD Layer Structure

System Programs

■ Provide facilities for users for

- _____
- _____
- _____
- _____

■ Provide the User Interface via

- _____
- _____

- _____

System Calls

■ Kernel

- _____
- _____

■ System calls fall into 3 main categories:

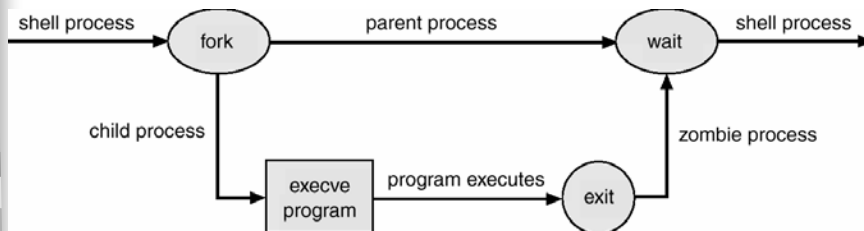
- File & device manipulation: _____
- Process control: _____
- Information manipulation: _____

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- Some system calls:
 - creat, open, read, write, close, trunc
 - mkdir, rmdir, opendir, readdir, closedir
 - link, unlink, lseek, dup,
 - stat, chmod, chown

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- System calls for
 - Creating & terminating processes
 - Executing program
 - Waiting for processes
 - Setting and getting UID and GIDs.

Information manipulation

■ Some system calls:

- gettimer / settimer
- gettimeofday / settimeofday
- getpid / getgid / gethostname

Kernel Functionality

- Process Management
 - CPU scheduling
- File System Management
- Memory Management
- Device Management
- User Management

Homework

- Log on to your UNIX system. Familiarise yourself with it.
- Write and test a program to open a file, and display the contents to the screen.
 - You should use system calls:
 - `int open(const char* path ...`
 - `ssize_t read(int fildes, char* buf, ...`
 - `ssize_t write(int fildes, char* buf, ...`
 - `int close(int fildes);`
 - `man -s2`
 - `HelloWorld.C`
 - `make & Makefile`
- Bring a printout of solution to the tutorial next week

HelloWorld example

```
#include <unistd.h>
#include "General.h"

main()
{
    char* output_string = "Hello World.\n";
    if (write( STDOUT_FILENO,
              output_string,
              strlen(output_string) ) == -1)
        syserr("Write failed");
}
```