

操作系统原理

Operating System Principle

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2-3 操作系统服务

the goals of the OS must be well defined
before the design begins

three vantage points

01

services it provides
提供的服务

02

interface to users and programmers
为用户和程序提供的接口

03

components and their interconnections
各组成部分及其相互连接

Operating System Services

操作系统服务

for user (What can do?)

User interface

Almost all operating systems have a user interface (UI)

- Varies between Command-Line (CLI), Graphics User Interface (GUI), Batch

I/O operations

since user programs cannot execute I/O operations directly, the operating system must provide some means to perform I/O.

I/O操作 - 由于用户程序不能直接执行I/O操作，操作系统必须提供手段完成I/O操作

Program execution

system capability to load a program into memory and to run it.

程序执行 - 调入一个程序进内存并运行之的系统能力

File-system manipulation

program capability to read, write, create, and delete files.

文件系统操作 - 读、写、创建和删除文件的能力

Operating System Services

操作系统服务

for user (What can do?)

Communications

exchange of information between processes executing either on the same computer or on different systems tied together by a network. Implemented via shared memory or message passing.
通信 - 运行的进程在同一计算机或由网络连接的不同系统中交换信息。
通过共享存储器或消息传递实现

Error
detection

ensure correct computing by detecting errors in the CPU and memory hardware, in I/O devices, or in user programs.
出错检测 - 探测在CPU与内存硬件中, 在I/O设备中, 或在用户程序中的错误, 确保正确运算

Additional Operating System Service

其他操作系统服务

Additional functions exist not for helping the user, but rather for ensuring efficient system operations.
其他的功能不是用于帮助用户，而是为了系统效率：

Resource allocation



allocating resources to multiple users or multiple jobs running at the same time.

资源分配 - 把资源分配给多个用户或多个同时运行的作业

Accounting



keep track of and record which users use how much and what kinds of computer resources for account billing or for accumulating usage statistics.

帐务 - 跟踪和记录用户对资源的使用，用于帐单和统计

Protection



ensuring that all access to system resources is controlled.

保护 - 确保对资源的所有访问均在控制中

A View of Operating System Services

