

Operating Systems Services

Following are the five services provided by an operating systems to the convenience of the users.

Program Execution

The purpose of a computer systems is to allow the user to execute programs. So the operating systems provides an environment where the user can conveniently run programs. The user does not have to worry about the memory allocation or multitasking or anything. These things are taken care of by the operating systems.

Running a program involves the allocating and deallocating memory, CPU scheduling in case of multiprocess. These functions cannot be given to the user-level programs. So user-level programs cannot help the user to run programs independently without the help from operating systems.

I/O Operations

Each program requires an input and produces output. This involves the use of I/O. The operating systems hides the user the details of underlying hardware for the I/O. All the user sees is that the I/O has been performed without any details. So the operating systems by providing I/O makes it convenient for the users to run programs.

For efficiency and protection users cannot control I/O so this service cannot be provided by user-level programs.

File System Manipulation

The output of a program may need to be written into new files or input taken from some files. The operating systems provides this service. The user does not have to worry about secondary storage management. User gives a command for reading or

writing to a file and sees his her task accomplished. Thus operating systems makes it easier for user programs to accomplish their task.

This service involves secondary storage management. The speed of I/O that depends on secondary storage management is critical to the speed of many programs and hence I think it is best relegated to the operating systems to manage it than giving individual users the control of it. It is not difficult for the user-level programs to provide these services but for above mentioned reasons it is best if this service is left with operating system.

Communications

There are instances where processes need to communicate with each other to exchange information. It may be between processes running on the same computer or running on the different computers. By providing this service the operating system relieves the user of the worry of passing messages between processes. In case where the messages need to be passed to processes on the other computers through a network it can be done by the user programs. The user program may be customized to the specifics of the hardware through which the message transits and provides the service interface to the operating system.

Error Detection

An error is one part of the system may cause malfunctioning of the complete system. To avoid such a situation the operating system constantly monitors the system for detecting the errors. This relieves the user of the worry of errors propagating to various part of the system and causing malfunctioning.

This service cannot be handled by user programs because it involves monitoring and in cases altering area of memory or deallocation of memory for a faulty process. Or may be relinquishing the CPU of a process that goes into an infinite loop. These tasks are too critical to be handed over to the user programs. A user program if given these privileges can interfere with the correct (normal) operation of the operating systems.

Source:

<http://www.personal.kent.edu/~rmuhamma/OpSystems/Myos/sysService.htm>