**TYPES OF SYSTEM CALLS**

System calls can be grouped into six major categories:

1. Process control
2. File manipulation
3. Device manipulation
4. Information maintenance
5. Communication
6. Protection.

**1)Process Control:**

These system calls are used to create, manage, and control processes.

System calls related to Process control are:

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

**2)File Manipulation:**

The most used system calls for file manipulation are creating the file and deleting the file. For file manipulation, the system calls either use the name of the file, or it may use any of the file’s attributes. The created file also needs to be opened, read, write or reposition and after the usage, the file needs to be closed.

System calls related to File manipulation are:

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

**3)Device Manipulation:**

A process may need several resources to execute—main memory, disk drives, access to files, and so on. If the resources are available, they can be granted, and control can be returned to the user process. Otherwise, the process will have to wait until sufficient resources are available. The various resources controlled by the operating system can be thought of as devices. Some of these devices are physical devices (for example, tapes), while others can be thought of as abstract or virtual devices (for example, files). If there are multiple users of the system, the system may require us to first request the device, to ensure exclusive use of it. After we are finished with the device, we release it. These functions are similar to the open and close system calls for files.

System calls related to Device manipulation are:

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

**4)Information Maintenance:**

Some information maintenance system calls are used for transferring information between the user program and the operating system. Some information maintenance system calls return system information such as the amount of free memory, your system configuration, the number of current users of the system, etc.

System calls related to information maintenance are:

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

**5)Communication:**

There are two common models of inter process communication:

1)Message passing model (Client-server model)

2)Shared-memory model.

In the message-passing model, the communicating processes exchange messages with one another to transfer information. Messages can be exchanged between the processes either directly or indirectly through a common mailbox. Before communication can take place, a connection must be opened. The name of the other communicator must be known, be it another process on the same system or a process on another computer connected by a communications network.

In the shared-memory model, processes use shared memory create and shared memory attach system calls to create and gain access to regions of memory owned by other processes.

System calls related to Communication are:

* create, delete communication connection
* send, receive messages
* transfer status information
* attach or detach remote devices

**6)Protection:**

Protection provides a mechanism for controlling access to the resources provided by a computer system. Protection was a concern only on multi-programmed computer systems with several users.

System calls related to Protection are:

* set permission() and get permission(), which manipulate the permission settings of resources such as files and disks.
* allow user() and deny user() system calls specify whether particular users can—or cannot—be allowed access to certain resources.

