Difference Between Kernel and Shell

The main difference between Kernel and Shell is that Kernel is not used to take inputs, whereas a Shell is used for it. The comparison of kernel and shell is important for the GATE CS exam. The basic difference in the table below helps us understand why Kernel is called the Heart of the OS.

Kernel vs. Shell

Kernel and Shell

Kernel	Shell
All the tasks of the OS are controlled by the Kernel.	They maintain the connection between Kernel and OS.
Called the Heart of OS.	The interface of the Kernel and OS.
They are low-level program.	They are CLI.
Kernel are used to perform the management of memory.	The shell executes the already assigned commands.
Management of the process is done by the kernel.	Various specific operations are performed by the shells.
The innermost layer of the OS is the kernel.	The outmost layer of the OS is a shell.
The Shell-generated language is interpreted by the Kernel.	Helps in generating user-friendly language.
Types of kernels are Micro kernels, Monolithic Kernels, Hybrid kernels, etc.	Types of Shells are Bourne Shell, Korn Shell, C shell, etc.

Kernel and Shell

Both Kernel and Shell are essential parts of the operating system. They are quite important for the execution of the operations assigned to the OS. They are must-have components of the OS and can not be absent. Both Kernal and Shell are used to perform tasks as the shell takes the inputs and the kernel manages the connection between OS and user.

What is Kernel?

Kernel is the innermost layer and center of the OS. These are the heart of the OS. These are used to establish the connection between the OS and the hardware system. The Kernel works after the shell. Information received by the Shell from the user is transferred to the Kernel, which is then managed and executed carefully.

Kernel is also used to manage memory-based tasks along with the management and execution of the received information. The allocation of the memory to the respective component is allowed by the Kernel as per the requirements. It is also used to manage the calls generated by the system and the various resources.

What is Shell?

Shell is called the interpreter of the information between the Kernal and the user. This is an interface that acts between them. Various components of a shell are:

- Shell Prompt
- Shell script

Shell Prompt

The shell prompt is designed to read the information and the instructions given by the user. These are the customizable components. Shell prompt is mentioned in the GATE syllabus. Users are allowed to modify the shell prompt as per their needs.

- The prompt symbol of the bourne shell is $.
- The prompt symbol of C type shell is %.

Shell Script

The Shell script is the customized pre-recorded execution command. These commands are run after accepting the command from the shell prompt. Other shell scripts are used in the system which is used to execute commands.