Character Input and Output Encyclopedia Article

Character Input and Output

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Character Input and Output

Character **input and output** are **programming** terms, referring to the addition (writing) or retrieval (reading) of a character.

A character is any symbol that requires a **byte** of storage. Characters include all the **ASCII** and extended ASCII characters and, in character-based software, everything that appears on the computer screen, including any graphical characters. In graphics-based **applications**, a character typically denotes letters, numbers and punctuation marks.

Character input and output is the lowest level of input and output, being a manual process. By its manual nature, however, character input and output does allow the user to exert a great deal of control of the input and output processes. Typically, computers handle character input and output by use of a process called buffering. This means that the computer will not start reading any input until the return key is pressed, and characters will not be printed on the **terminal** until there is a whole line to be printed.

In the Disk Operating System (**DOS**), the lowest level of character input and output is called Basic Input/Output System, or **BIOS**. BIOS is responsible for managing devices such as the keyboard, display screen, disk drives, serial communications, and some miscellaneous functions at their most rudimentary levels. For example, a BIOS output would constitute the formation and execution of a command to acquire target **data** from a target location. This is achieved partly by software in **read-only memory** (**ROM**), and partly by BIOS extensions that load when the system first starts up.

Codes for character input and output exist in the various programming languages. For example, the getchar **function** reads and returns the next character from the input, while putchar would write the character "c" to standard output.

Character input and output can also be of the formatted or whole line varieties. With these, the input and output of characters occurs in a hands-off fashion and involves blocks of characters. As its name implies, in the formatted version of input or output, the data is formatted during the performance of the function. In whole line input or output, formatting is accomplished later.