

Input-Output Buffers

An I/O Buffer is a small amount of memory used to store data, that is being input or output through I/O devices, temporarily. For example, a Printer buffer is a small memory area within the printer. Information to be printed is first directed from the computer to the printer buffer. The printer then extracts the information from the buffer and prints it. When all information in buffer has been printed, the printer informs the computer to fill the buffer again. This technique is used to make-up for the great difference in operating speed between the I/O devices (slow) and the CPU (fast).

Print spooling – Print spooling is used when a number of computers make use of one printer. Print jobs from various computers are directed to a file (called the spool file) stored on a hard disk and not to the actual printer. The spool file queues the print jobs and when the printer is free the next print job in the spool file is sent to the printer.

Cache Memory

Cache memory is a small but very fast memory (very small access time) found between the CPU and the main memory unit. Sections of the program and its data are copied in cache from main memory to take advantage of its short access time. Therefore the CPU will fetch the program instructions from cache memory and thus reducing the execution time of a program. However cache memory is small (about 512 KB) because it is expensive.

Disk Cache

This is a small amount of memory used to speed up access to data on a disk. The memory can be part of the disk drive itself (sometimes called a hard disk *cache* or *buffer*) or it can be general-purpose RAM in the computer that is reserved for use by the disk drive. Nearly all modern disk drives include a small amount of internal cache. A disk cache works by storing the most recently accessed data in it. When a program needs to access new data, the operating system first checks to see if the data is in the cache before reading it from the disk. Because computers can access data from RAM much faster than from a disk, disk caching can significantly increase performance.