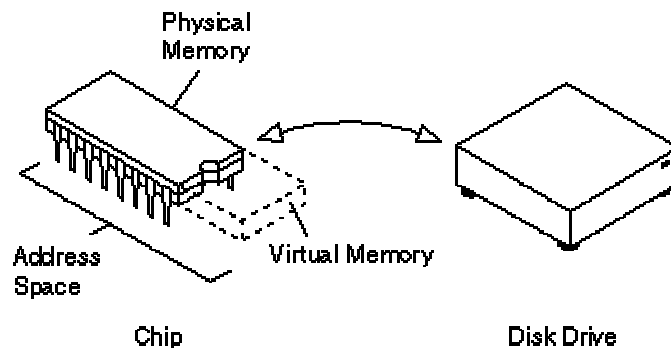


virtual memory

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An imaginary memory area supported by some operating systems (for example, Windows but not and DOS) in conjunction with the hardware. You can think of virtual memory as **an alternate set of memory addresses**. Programs use these *virtual addresses* rather than real addresses to store instructions and data. When the program is actually executed, the virtual addresses are converted into real memory addresses.

The purpose of virtual memory is to **enlarge the *address space***, the set of addresses a program can utilize. For example, virtual memory might contain twice as many addresses as main memory. A program using all of virtual memory, therefore, would not be able to fit in main memory all at once. Nevertheless, *the computer could execute such a program by copying into main memory those portions of the program needed at any given point during execution.*

To facilitate copying virtual memory into real memory, the operating system divides virtual memory into *pages*, each of which contains a fixed number of addresses. **Each page is stored on a disk until it is needed.** When the page is needed, the operating system copies it from disk to main memory, translating the virtual addresses into real addresses.

The process of *translating* virtual addresses into real addresses is called *mapping*. The **copying** of virtual pages from disk to main memory is known as **paging** or **swapping**.