The System Memory Map

On the original IBM PC, the 1 MB address space of the 8088 was split into several functional areas. (See Figure 1-6.) This memory map has been carried forward for compatibility in all subsequent PC and PS/2 models.

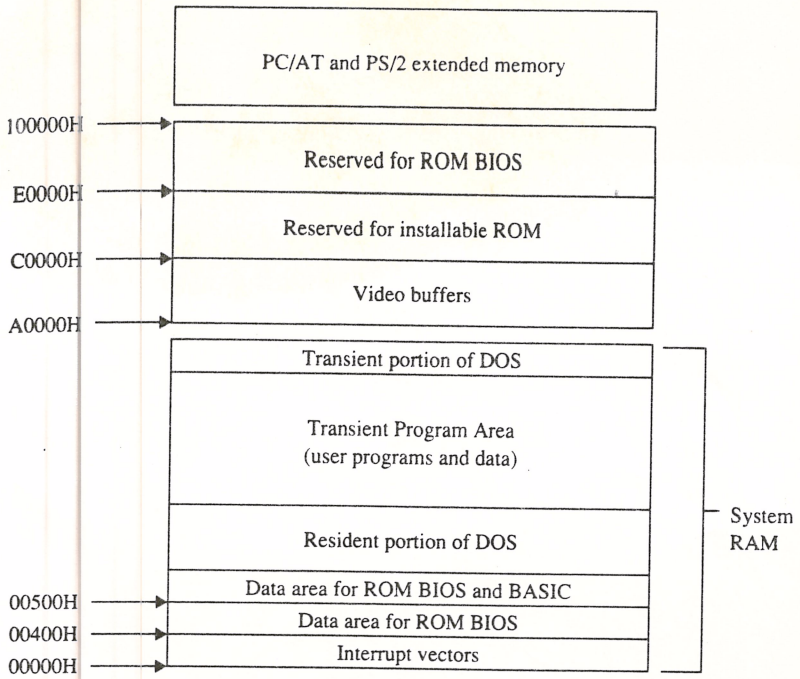

Figure 1-6. *An outline of memory usage in PCs and PS/2s.*

Some of the layout of the PC and PS/2 memory map is a consequence of the design of the 8086 microprocessor. For example, the 8086 always maintains a list of *interrupt vectors* (addresses of interrupt handling routines) in the first 1024 bytes of RAM. Similarly, all 8086-based microcomputers have ROM memory at the high end of the 1 MB address space, because the 8086, when first powered up, executes the program that starts at address FFFF0H.

The rest of the memory map follows this general division between RAM at the bottom of the address space and ROM at the top. A maximum of 640 KB of RAM can exist between addresses 00000H and 9FFFFH. (This is the memory area described by the DOS CHKDSK program.) Subsequent memory blocks are reserved for video RAM (A0000H through BFFFFH), installable ROM modules (C0000H through DFFFFH), and permanent ROM (E0000H through FFFFFH). We'll explore each of these memory areas in greater detail in the chapters that follow.