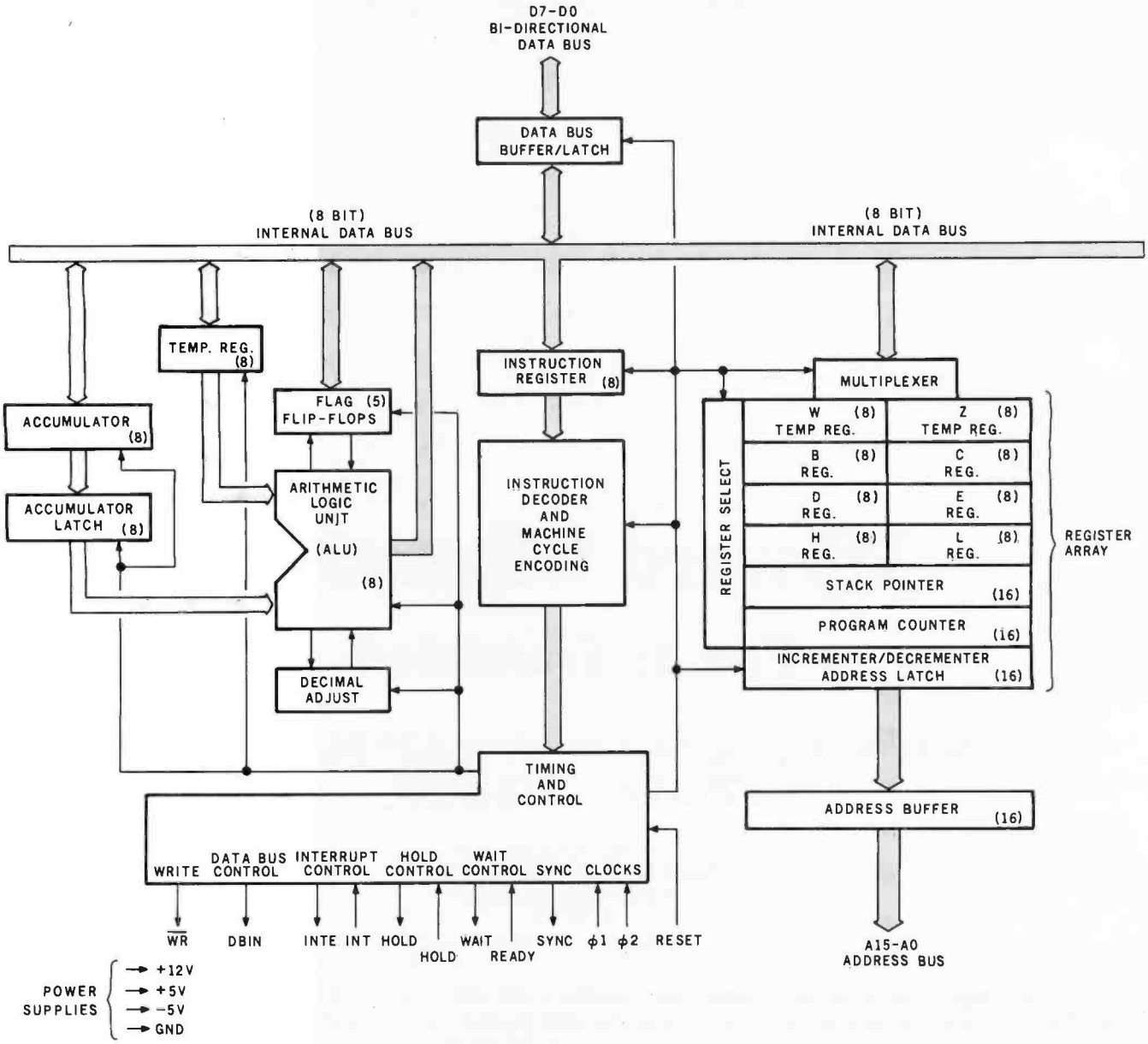

Figure 1: *Architecture of the 8080 microprocessor showing the internal registers.*

show the output that each of the three translators produced from the same original code. In addition, we'll make some observations about the differences in adapting the translated code to CP/M-86 and MS-DOS. Next month, we'll take a closer (although still not comprehensive) look at CP/M-86 and MS-DOS.

Orientation to the 8086

The first thing we have to do is examine the differences between the familiar 8080 and Z80 microprocessors and the 8086. For reference, figure 1 shows the registers and architecture of the 8080; figure 2 shows the registers and architecture of the Z80. We'll make few comments about these registers because they are familiar to you if you have 8080 or Z80 source code that you want to translate.

Figure 3 shows the registers and architecture of the 8086. Since the 8086 is less familiar, we'll take a brief look at it for orientation. (For further enlightenment, see *The 8086 Book*, Russell Rector and George Alexy, Osborne/McGraw-Hill, 1980, and *The 8086 Primer*, Stephen P. Morse, Hayden, 1980.) The 8086 is, of course, a 16-bit microprocessor. The 8088 is the same as the 8086 internally. Externally, however, they appear different due to the 8-bit bus of the 8088 and the 16-bit bus of the 8086. This means that programs that run on the 8088 will also run on the 8086 assuming that the memory resources and peripheral resources are the same. In general, statements in this article that apply to the 8086 apply to the 8088 as well.

The 8086 can access up to 1 megabyte of memory and as many as 65,000 input/output ports. The megabyte of memory is 2^{20} 8-bit bytes; any two consecutive bytes are a 16-bit word. Some 8086 instructions access bytes; others access words.