



FIGURE 5.8 A direct-mapped cache with eight entries showing the addresses of memory words between 0 and 31 that map to the same cache locations. Because there are eight words in the cache, an address X maps to the direct-mapped cache word $X \bmod 8$. That is, the low-order $\log_2(8) = 3$ bits are used as the cache index. Thus, addresses 00001_{two} , 01001_{two} , 10001_{two} , and 11001_{two} all map to entry 001_{two} of the cache, while addresses 00101_{two} , 01101_{two} , 10101_{two} , and 11101_{two} all map to entry 101_{two} of the cache.