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To make the microcontroller more marketable, most ports can be software-specified to be either inputs or outputs. Microcontrollers use the concept of a **direction register** to determine whether a pin is an input (direction register bit is 0) or an output (direction register bit is 1), as shown in Figure 6.7. We define an initialization **ritual** as a program executed during start up that initializes hardware and software. If the ritual software makes direction bit zero, the port behaves like a simple input, and if it makes the direction bit one, it becomes a readable output port. Each digital port pin has a direction bit. This means some pins on a port may be inputs while others are outputs. The digital port pins on most microcontrollers are bidirectional, operating similar to Figure 6.7.

Help

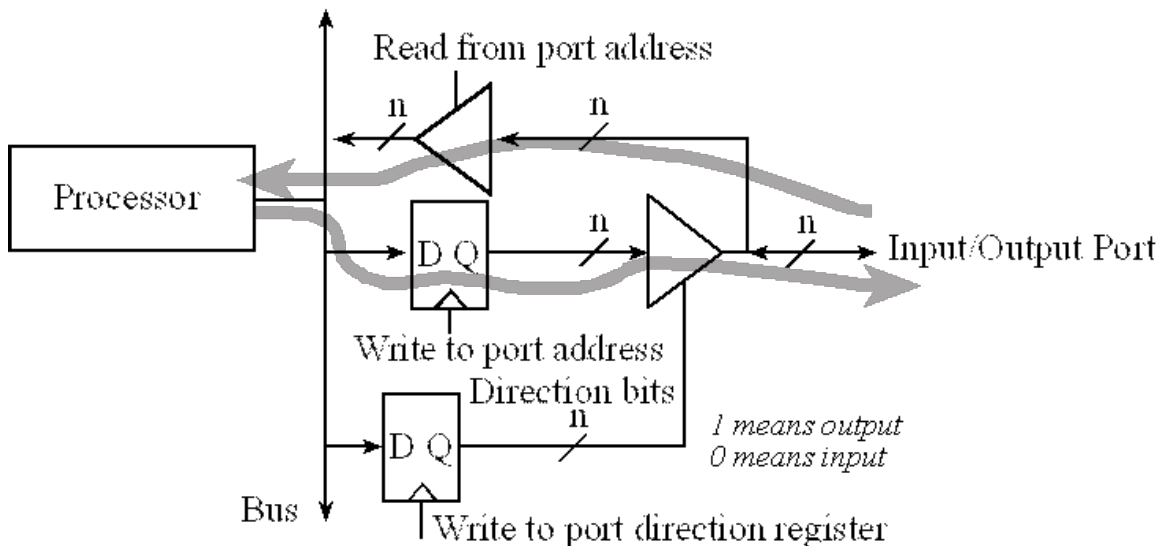


Figure 6.7. A bidirectional port can be configured as a read-only input port or a readable output port.

Common Error: Many program errors can be traced to confusion between I/O ports and regular memory. For example, you should not write to an input port, and sometimes we cannot read from an output port.





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