Answers to Self-Test Questions

Tutorial 5: Using Input and Output Ports

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1.	The term *port* when applied to TMS320F24x hardware means an interface to the outside world. It is similar to the parallel printer port of a computer.

2.	After the following two instructions have been executed
	`LACC #1234h`
	`AND #F00Fh`
	the accumulator will contain `00001004h`.

3.	After the following two instructions have been executed
	`LACC #5678h`
	`OR #0FF0h`
	the accumulator will contain `00005FF8h`.

4.	When the value 0000h is written to PBDATDIR and then read back, the value at the port pins of Input Output Port B (IOPB) will be read. If the inputs are not connected, then the value read back will probably be 00FFh.
5.	If we were to configure Port A of the TMS320F243 DSK as an output port, the debugger stops working. This is because two of the pins are used for communications with the host computer. Two pins of IOPA used for the serial interface are therefore unavailable for general purpose.
6.	The abbreviation IOPB means Input Output Port B.
7.	When applied to an Input Output Port, the term *direction* means which way the data is moved. It can be from the TMS320F24x to the outside world, or in the opposite direction.
8.	When applied to an Input Output Port, the term *data* means the information sent out to the outside world, or read in from the outside world.
9.	Input Output Ports power up as inputs because that is a safe condition for the hardware. If the ports powered up as outputs, they could be driving into the power rails, which could well cause damage to the silicon.
10.	If we inadvertently change the direction bits of PBDATDIR, then what was intended to be an input port can become an output port and vice versa. Consequently, the circuit will not work correctly.
11.	A hardware design is likely to have a different number of inputs to outputs. This means that on one or more port we would need to have some pins assigned as inputs and others as outputs.
12.	After the instruction `LACC #01h, 4` the accumulator contains the value 0001h shifted four places to the left, which is 0010h. The accumulator therefore contains 00000010h.