Answers to Self-Test Questions

Tutorial 4: Using Direct Addressing

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1.	The instruction `LACC` means Load accumulator.
2.	The term *direct addressing* means that the data memory address used with the instruction is supplied by the operand. For example, the instruction `LACC 52h` uses the data at data memory address 52h.
3.	If data memory address 70h contains 3333h, then after the instruction `LACC 70h`, data memory address 70h still contains 3333h. The accumulator contains 00003333h.
4.	a) `LAC 17  ; Incorrect. Should be LACC.` b) `LACC 0h  ; Correct syntax.` c) `LACC 128 ; Incorrect. Operand too large.` d) `LACC -1  ; Incorrect. Operand must be positive.`
5.	The instruction `LDP` means Load Data Page.
6.	When the value of `DP` is out of range, the result of a read / write is likely to be unreliable. This is because there may be no RAM at the data memory address being used.
7.	The `CNF` flag of the TMS320F243 maps the data memory block B0 either into program memory (for certain instructions) or into data memory (for general purpose).
8.	To change the value of `CNF`, the instructions `CLRC CNF` and `SETC CNF` are used.
9.	The instruction `SACL` means Store Accumulator Low. It is used to store the low (left-most 16 bits) of the accumulator in data memory.
10.	The instruction `SACH` means Store Accumulator High. It is used to store the high (right-most 16 bits) of the accumulator in data memory.

11.	To store the full the full 32 bits of the accumulator at data memory addresses 240h and 241h we write:
	`CLRC CNF ; Map Block B0 into data memory`
	`LDP #4   ; Data page 4. Addresses 200h to 27Fh.`
	`SACL 40h ; Save at 200h + 40h = 240h.`
	`SACH 41h ; Save at 200h + 41h = 241h.`

12.	The instruction `SPLK` means Store Long-immediate value to data memory. It is used to fill a data memory (RAM) address with a known value.
13.	A *load* instruction is used to put a value into the accumulator. The value can be either an immediate value (e.g. the number 10) or the contents of a data memory address. On the other hand a *store* instruction copies a value to a data memory address, either from the accumulator or an immediate value.

14.	To store the value 1234h at data memory address 342h and to store the value 5678h at data memory address 343h we can write:
	`LDP #6h ; 300h to 37Fh.`
	`SPLK #1234h, 42h ; 300h + 42h = 342h.`
	`SPLK #5678h, 43h ; 300h + 43h = 343h.`