DAA — Decimal Adjust Accumulator A — DAA

Operation: The following table summarizes the operation of the DAA instruction for all legal combinations of input operands. A correction factor (column 5 in the following table) is added to ACCA to restore the result of an addition of two BCD operands to a valid BCD value and set or clear the carry bit.

State of C Bit Before DAA (Column 1)	Upper Half-Byte of ACCA (Bits [7:4]) (Column 2)	Initial Half-Carry H Bit from CCR (Column 3)	Lower Half-Byte of ACCA (Bits [3:0]) (Column 4)	Number Added to ACCA by DAA (Column 5)	State of C Bit After DAA (Column 6)
0	0-9	0	0-9	00	0
0	0-8	0	A-F	06	0
0	0-9	1	0-3	06	0
0	A-F	0	0-9	60	1
0	9-F	0	A-F	66	1
0	A-F	1	0-3	66	1
1	0-2	0	0-9	60	1
1	0-2	0	A-F	66	1
1	0-3	1	0-3	66	1

NOTE: *Columns (1) through (4) of the above table represent all possible cases which can result from any of the operations ABA, ADD, or ADC, with initial carry either set or clear, applied to two binary-coded-decimal operands. The table shows hexadecimal values.*

Description: If the contents of ACCA and the state of the carry/borrow bit C and the state of the half-carry bit H are all the result of applying any of the operations ABA, ADD, or ADC to binary-coded-decimal operands, with or without an initial carry, the DAA operation will adjust the contents of ACCA and the carry bit C in the CCR to represent the correct binary-coded-decimal sum and the correct state of the C bit.

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DAA

Decimal Adjust Accumulator A (Continued)

DAA

Condition Codes and Boolean Formulae:

S	X	H	I	N	Z	V	C
—	—	—	—	↕	↕	?	↕

N R7
Set if MSB of result is set; cleared otherwise.

Z $\overline{R7} \cdot \overline{R6} \cdot \overline{R5} \cdot \overline{R4} \cdot \overline{R3} \cdot \overline{R2} \cdot \overline{R1} \cdot \overline{R0}$
Set if result is $00; cleared otherwise.

V ?
Not defined

C See table above

Source Form: DAA

Addressing Modes, Machine Code, and Cycle-by-Cycle Execution:

Cycle	DAA (INH)		
	Addr	Data	R/W
1	OP	19	1
2	OP+1	—	1

For the purpose of illustration, consider the case where the BCD value $99 was just added to the BCD value $22. The add instruction is a binary operation, which yields the result $BB with no carry (C) or half carry (H). This corresponds to the fifth row of the table on the previous page. The DAA instruction, therefore, will add the correction factor $66 to the result of the addition, giving a result of $21 with the carry bit set. This result corresponds to the BCD value $121, which is the expected BCD result.

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