BINARY to BCD Conversion

31 July 2020

SI → 0000.

Cx → 04

ACTUAL DATA ←

09	0B	03	06
1001	1011	0011	0110

0 1 2 3 / 4 5 6 7 / 8 9 10 11 / 12 13 14 15

9B36

FIRST: BX ← 00 H

AX ← [0000th] ← 0D01.

ROR AX, 1 ⇒ 1000 carry 1

BX ← 00 + 08 ← 08 H.

L1:   SI → 0001

AX ← 0000.

ROR AX, 1 → 0000, carry 0

L2:   SI → 0002

AX ← 0000.

ROR AX, 1 → 0000, carry 0.

L3:   SI → 0003

AX → 0001

ROR AX, 1 ← 1000 carry 1.

BX ← BX + 01 ← 08 + 01 ← 09 A

L4:   [DI] ← 09.

DI ← 0001

SI ← 0004

Cx ← 03.

Not 0 so goto FIRST

———— × ————

FIRST: BX ← 00 H

AX ← [0004th] ← 0D01

ROR AX, 1 ← 1000, carry 1

BX ← BX + 08 ⇒ 08 H.

L1:   SI → 0005

AX ← 0000

ROR AX, 1 → 0000, carry 0

L2:   SI → 0006

AX ← 0001

ROR AX, 1 ← 1000, carry 1

BX ← BX + 02 = 08 + 2 = 0A

L3:   SI → 0007

AX ← 0001

ROR AX, 1 ← 1000, carry 1

BX ← 0A + 01 ← 0B

L4:   DI ← 0B

INC DI → 0002

SI → 0008

Cx → 02.

Cx NOT 0 ∴ goto first.

———— × ————

BX ← 00 H

AX ← [0008] ← 00 H

ROR AX, 1 ← 0000, carry 0

L1:   SI → 0009

AX ← 00 H

ROR AX, 1 ← 0000, carry 0

L2:   SI → 000A

AX ← 0001

ROR AX, 1 ← 1000, carry 1

BX ← 00 + 02 ⇒ 02.

L3:   SI → 000B

AX ← 0001

ROR AX, 1 ← 1000, carry 1

BX ← 02 + 01 ← 03

L4:   [DI] ← 03, DI → 0001

SI ← 000C, Cx ← 01 ⇒ not 0

Goto first.