CODE CONVERSIONS LECTURE 1

Dronacharya Group of Institutions

BCD to Binary Conversion

A BCD number between 0 and 99 is stored in an R/W memory location called the input buffer (UNBUF). WAP and a conversion subroutine (BSDBIN) to convert the BCD number into its equivalent binary number. Store the result in a memory location defined as Output Buffer(OUTBUF).

```
START:  LXI SP,STACK
        LXI H,INBUF
        LXI B,OUTBUF
        MOV A,M
        CALL BCDBIN
        STAX B
        HLT
```

(CONT.)

```
BCDBIN: PUSH B
        PUSH D
        MOV B,A
        ANI 0FH
        MOV C,A
        MOV A,B
        ANI F0H
        JZ BCD1
        RRC
        RRC
```

(CONT.)

```
        RRC
        RRC
        MOV D,A
        XRA A

        MVI E,OAH
SUM:    ADD E
        DCR D
        JNZ SUM
BCD1:   ADD C
        POP D
        POP B
        RET
```

BCD to Binary

- The main program initializes the stack pointer and two memory indexes. It brings BCD number into the accumulator and passes that parameter into subroutine.
- After returning from the subroutine ,the main program stores the binary equivalent in output buffer memory.
- Subroutine saves the content of BC and DE because these registers are used in the subroutine. The acc contents are not saved because that information is passed on to the subroutine.
- The conversion from BCD to binary is illustrated in subroutine 72 BCD converted to binary.

Binary to BCD Conversion

A binary group is stored in memory location BINBYT. Convert the number into BCD, and store each BCD as two unpacked BCD digits in the output buffer. To perform this task, WAP two subroutines: one to supply the powers of ten, and the other to perform the conversion.

```
START:    LXI SP,STACK
          LXI H,BINBYT
          MOV A,M
          CALL PWRTEN
          HLT
PWRTEN:   LXI H,OUTBUF
          MVI,64H
          CALL BINBCD
          MVI B,0AH
```

(Cont.)

```
            CALL BINBCD
            MOV M,A
            RET
BINBCD:     MVI M,FFH
NXTBUF:     INR M
            SUB B
            JNC NXTBUF
            ADD B
            INX H
            RET
```