

## DAC 0800

**Problem Statement:** Write 8086 ALP to interface DAC and generate following waveforms on oscilloscope.

- i. Triangular wave
- ii. Square wave
- iii. Ramp wave
- iv. Stair case wave

### A) Coding to generate Triangular Wave

**Dyna-86>** A 1000

```
0000:1000>  MOV AL, 89      ;Initialize 8255
                OUT 67, AL
                MOV AL, 01  ;Enable latch
                OUT 63, AL

L3:  MOV AL, 00      ;Write 00 to port A
L1:  OUT 61, AL
      INC AL          ;Increment AL
      CMP AL, FF      ;Compare with FFh
      JNZ L1          ;(200Ah)

L2:  OUT 61, AL
      DEC AL          ; decrement AL
      CMP AL, 00h     ; compare with 00h
      JNZ L2          ;(2012h)
      JMP L3          ;(2008 h) Repeat for continuous wave
      INT 3
```

### B ) Coding to generate Square Wave

**Dyna-86>**A 1000

```
0000:1000>  MOV AL, 89      ;Initialize 8255 by writing CW to CWR
                OUT 67, AL
                MOV AL, 01  ;Enable latch
                OUT 63, AL

P3:  MOV AL, 00      ;write 00 to port A
      OUT 61, AL

      MOV CL, FF      ;Insert Delay
P1:  DEC CL
      JNZ P1          ;100Eh

      MOV AL, FF      ;write FF to port A
      OUT 61, AL
```

```

        MOV CL, FF          ; Insert Delay
P2:     DEC CL
        JNZ P2              ;1018h

        JMP P3              ;1008h Repeat for continuous wave
        INT 3

```

### c) ) Coding to generate Ramp Wave

```

Dyna-86> A 1000
0000:1000> MOV AL, 89      ; Initialize 8255 by writing CW to CWR
              OUT 67, AL
              MOV AL, 01     ; Enable latch
              OUT 63, AL

A2:     MOV AL, 00           ; write 00 to port A
A1:     OUT 61, AL
              INC AL         ; increment AL
              CMP AL, FF     ; Compare with FFh
              JNZ A1
              JMP A2         ;Repeat for continuous wave
              INT 3

```

### D) ) Coding to generate Staircase Wave

```

Dyna-86>A 1000
0000:1000> MOV AL, 89h     ; Initialize 8255 by writing CW to CWR
              OUT 67h, AL
              MOV AL, 01h   ; Enable latch
              OUT 63h, AL

              MOV AL, 00h   ; write 00 to port A
Back:   OUT 61h, AL

              ADD AL, 40h
              CALL 5000      ; Insert Delay

              JMP Back       ;1008h
              INT 3

```

### Delay Routine:

```

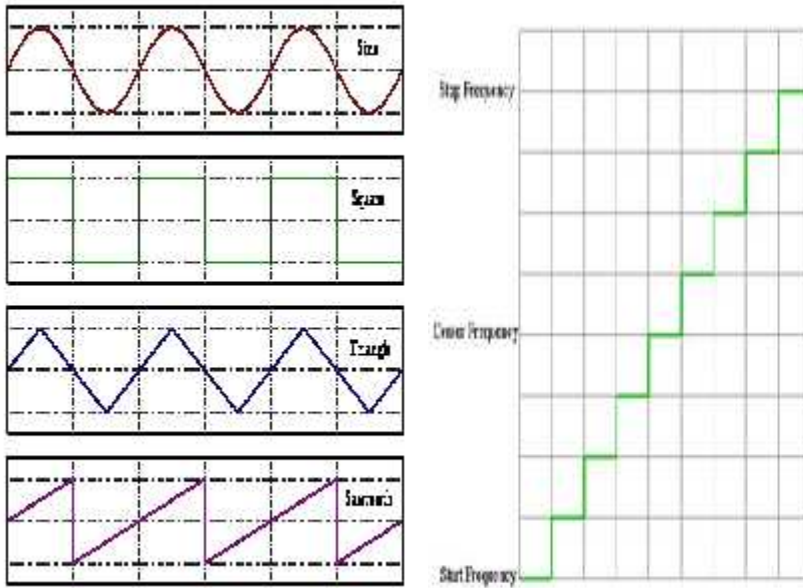
Dyna-86> A 5000
0000:5000> MOV DL, FFh
              MOV CL, FFh
              DEC CL
              JNZ 5004h

```

```
DEC DL
JNZ 5008h
RET
```

### OUTPUT:

Join CRO & Run the above coding separately.  
Observe the following waveform on CRO



➤ *Observe Triangular, Square, Ramp wave on CRO*