

DATE:5-10-20

## DAC INTERFACING

EXNO: 9

### **AIM:**

To write the assembly code to generate the following waves using DAC interface:

- Triangular wave using register delay
- Triangular wave using timer delay
- Square wave using register delay
- Square wave using timer delay
- Trapezoidal wave using register delay
- Trapezoidal wave using timer delay

### **TRIANGULAR WAVE USING REGISTER DELAY:**

#### **MNEUMONICS:**

```
ORG 0000H
CLR P0.7
MOV P1,#00H
REPEAT:ACALL DELAY
SJMP REPEAT
DELAY:MOV R1,#00H
INCR:MOV P1,R1
INC R1
CJNE A,#010H,INCR
DECR:MOV P1,R1
DEC R1
CJNE R1,#00H,DECR
RET
END
```

**OUTPUT:**

<https://drive.google.com/file/d/1-AXv9cL2Fo42D6TRMJ8EWUusoA4QM0LT/view?usp=sharing>

**TRIANGULAR WAVE USING TIMER DELAY:****MNEUMONICS:**

ORG 00H

CLR P0.7

MOV P1,#00000000H

MOV TMOD,#02H

AGAIN:

ACALL LOOP

SJMP AGAIN

LOOP:

UP:

MOV P1,A

INC A

CJNE A,#010H,UP

ACALL DELAY

DOWN:

MOV P1,A

DEC A

CJNE A,#00H,DOWN

ACALL DELAY1

RET

DELAY:MOV TH0,#1H

```
SETB TR0
BACK:JNB TF0,DOWN
DELAY1:MOV TH0,#1H
SETB TR0
HERE:JNB TF0,UP
CLR TR0
CLR TF0
RET
```

### **OUTPUT:**

<https://drive.google.com/file/d/1-JuRINAIfDA0RQE3XJQwyonoUksU9kCQ/view?usp=sharing>

### **SQUARE WAVE USING REGISTER DELAY:**

#### **MNEUMONICS:**

```
ORG 0000H
CLR P0.7
MOV P1,#00H
REPEAT: ACALL SQUAREWAVE
SJMP REPEAT
SQUAREWAVE:MOV P1,#025H
ACALL DELAY
MOV P1,#00H
ACALL DELAY
RET
```

DELAY:MOV r0,#15H

HERE:DJNZ R0,HERE

RET

END

**OUTPUT:**

[https://drive.google.com/file/d/1-8\\_X60y3Gzn60W-J9hGCpFNY-7tpv1P/view?usp=sharing](https://drive.google.com/file/d/1-8_X60y3Gzn60W-J9hGCpFNY-7tpv1P/view?usp=sharing)

**SQUARE WAVE USING TIMER DELAY:**

**MNEUMONICS:**

ORG 0000H

CLR P0.7

MOV P1,#00000000B

MOV TMOD,#00000001B

MAIN:SETB P1.6

ACALL DELAY

CLR P1.6

ACALL DELAY

SJMP MAIN

DELAY:MOV TH0,#0FFH

MOV TL0,#0CEH

SETB TR0

HERE:JNB TF0,HERE

CLR TR0

CLR TF0

SETB P1.6

RET

END

**OUTPUT:**

<https://drive.google.com/file/d/1-7xDfZAn-IsUF7Yk1JH7w0uZLsNSbGwN/view?usp=sharing>

**TRAPEZOIDAL WAVE USING REGISTER DELAY:****MNEUMONICS:**

```
ORG 0000H
CLR P0.7
MOV P1,#00H
REPEAT:ACALL TRIAPEWAVE
SJMP REPEAT
TRIAPEWAVE:MOV A,#00H
INCR:MOV P1,A
INC A
CJNE A,#020H,INCR
ACALL DELAY
DECR:MOV P1,A
DEC A
CJNE A,#00H,DECR
ACALL DELAY
RET
DELAY:MOV R1,#20
HERE: DJNZ R1,HERE
RET
END
```

**OUTPUT:**

<https://drive.google.com/file/d/1-7vG0Fyt1R4Rf8M4qAmudre5gCNwQEL/view?usp=sharing>

## **TRAPEZOIDAL WAVE USING TIMER DELAY:**

### **MNEUMONICS:**

```
ORG 0000h
CLR P0.7
MOV TMOD,#01
MOV P1,#00H
REPEAT:ACALL TRAPEWAVE
SJMP REPEAT
TRAPEWAVE:
MOV A,#00H
INCR:MOV P1,A
INC A
CJNE A,#020H,INCR
MOV TLO,#0CEH
MOV TH0,#0FFH
ACALL DELAY
DECR:MOV P1,A
DEC A
CJNE A,#00H,DECR
MOV TLO,#0CEH
MOV TH0,#0FFH
ACALL DELAY
RET
DELAY:
SETB TR0
AGAIN: JNB TF0,AGAIN
CLR TR0
CLR TF0
RET
```

END

**OUTPUT:**

<https://drive.google.com/file/d/1-OiLx0rdZKGz57Elax0Q9hAKNWcKwilR/view?usp=sharing>

**RESULT:**

The above waves were obtained on DAC.

DATE:12-10-20

## ADC INTERFACING

EXNO: 10

### **AIM:**

To do ADC interfacing

- a ) Convert the analog voltage to digital voltage and pass to DAC(interrupt ADC at every 30 sec)
- b) Enter an analog signal in ADC ,if voltage is greater than 3.0v then ON LED
- c) Generate a square wave ,display in DAC and give input in ADC

**A ) CONVERT THE ANALOG VOLTAGE TO DIGITAL VOLTAGE AND PASS TO DAC(INTERRUPT ADC AT EVERY 30 SEC)**

### **MNEUMONICS:**

```
ORG 0
JMP MAIN
ORG 3
JMP ext0ISR
ORG 0BH
JMP timer0ISR
ORG 30H
MAIN: SETB ITO
      SETB EX0
CLR p0.7
MOV TMOD,#2
MOV TH0,#0E4H
SETB TR0
SETB ET0
SETB EA
JMP $
```



timer0ISR: CLR P3.6

SETB P3.6

RETI

ext0ISR: CLR p3.7

MOV P1,P2

SETB P3.7

RETI

### **OUTPUT:**

<https://drive.google.com/file/d/1-Q44pTYFDhMZijl5FMyLEjELCV3G-eqA/view?usp=sharing>

**B) ENTER AN ANALOG SIGNAL IN ADC ,IF VOLTAGE IS GREATER THAN 3.0V THEN ON LED**

### **MNEUMONICS:**

ORG 0

JMP MAIN

ORG 3

JMP ext0ISR

ORG 0BH

JMP timer0ISR

ORG 30H

MAIN: SETB IT0

SETB EX0

CLR p0.7

```
MOV TMOD,#2
MOV TH0,#0E4H
SETB TR0
SETB ET0
SETB EA
JMP $
timer0ISR: CLR P3.6
SETB P3.6
RETI
ext0ISR: CLR P3.7
MOV A,P2
MOV R0,P2
CLR C
CJNE A,#099H,HERE
SJMP HERE1
HERE: JC HERE1
MOV R1,#6
MOV P1,#00
RETI
HERE1:
MOV P1,#0FFH
MOV R1,#7
SETB P3.7
RETI
```

**OUTPUT:**

<https://drive.google.com/file/d/1-g4FOyqCVD8VZYvMkFb8Ee8vZ0uY2iTD/view?usp=sharing>

### **C) GENERATE A SQUARE WAVE ,DISPLAY IN DAC AND GIVE INPUT IN ADC**

#### **MNEUMONICS:**

```
ORG 0
JMP MAIN
ORG 3
JMP ext0ISR
ORG 0BH
JMP timer0ISR
ORG 30H
MOV A,#00H
MAIN: SETB IT0
      SETB EX0
      CLR p0.7
      MOV TMOD,#2
      MOV TH0,#0E4H
      SETB TR0
      SETB ET0
      SETB EA
      JMP $
timer0ISR: CLR P3.6
          SETB P3.6
          RETI
ext0ISR: CLR P3.7
        MOV A,P2
        MOV P1,A
```

```
MOV R0,#20h
HERE: DJNZ R0,HERE
CPL A
MOV P1,A
MOV R0,#20h
HERE1: DJNZ R0,HERE1
SETB P3.7
RETI
```

### **OUTPUT:**

[https://drive.google.com/file/d/1-feusJ5liAvj7HNAAi5FivyTF62AesF /view?usp=sharing](https://drive.google.com/file/d/1-feusJ5liAvj7HNAAi5FivyTF62AesF/view?usp=sharing)

### **RESULT:**

The ADC interfacing is done and verified.