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Name : Patil suraj shantaram.	REMARKS
Class : sybcs Roll No. : Batch :	
Experiment No. : Performed Date : / /20	
Title of Experiment : digital to analog converter to 8051 microcontroller.	

Aim :- To study how to interface DAC to 8051 microcontroller.

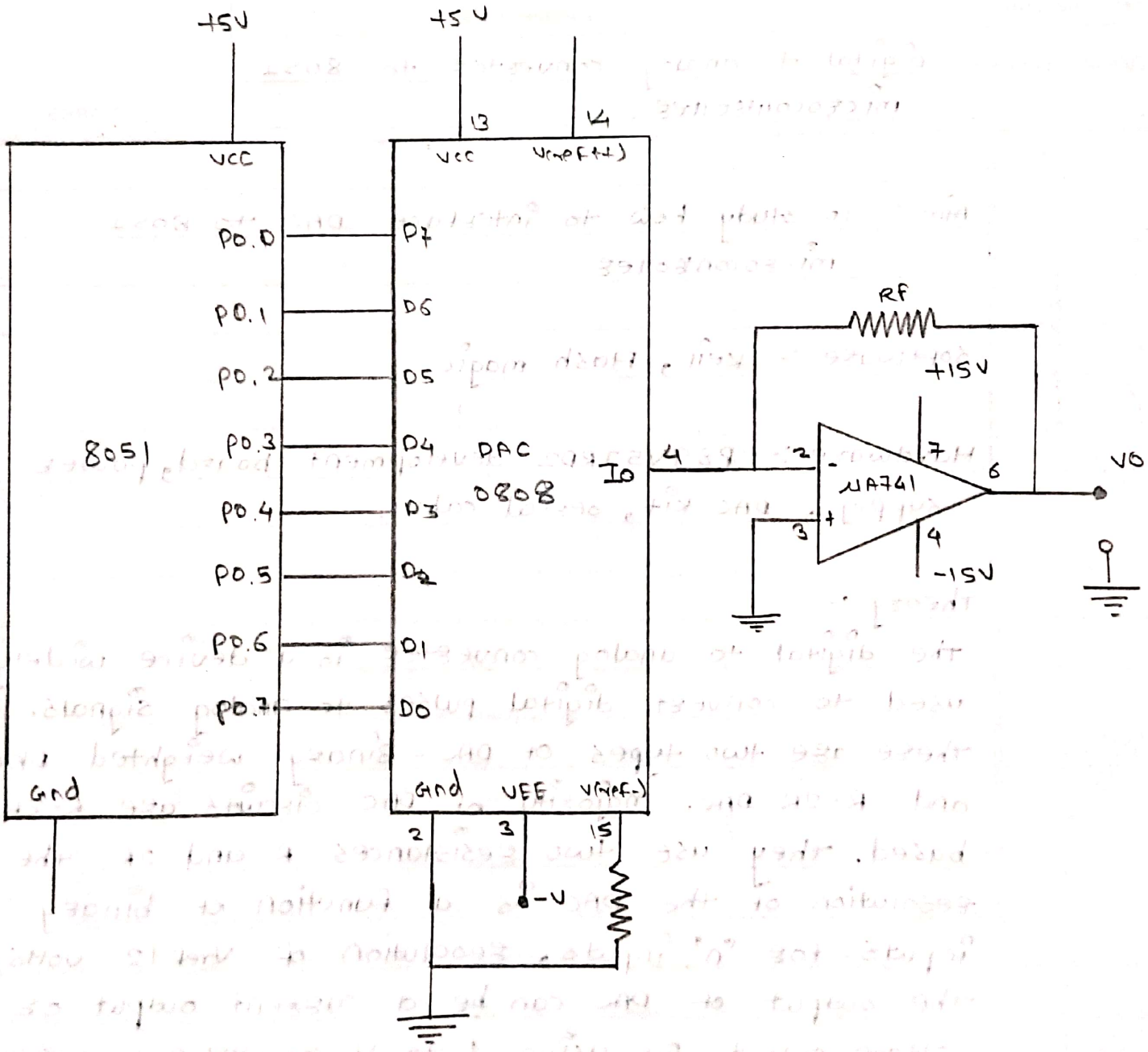
Software :- Keil, Flash magic.

Hardware :- P89V51RD2 development board, power supply, DAC kit, serial cable.

Theory :-
The digital to analog converter is a device widely used to convert digital pulses to analog signals. there are two types of DAC - Binary weighted DAC and R-2R DAC. majority of DAC circuits are R-2R based. they use two resistances R and 2R. the resolution of the DAC is a function of binary inputs. for 'n' inputs, resolution of Vref/2 volts. the output of DAC can be a current output or voltage output. By using I to V convertor a current output can be converted to the corresponding voltage output.

In DAC0808, the digital inputs are converted

Block Diagram :-

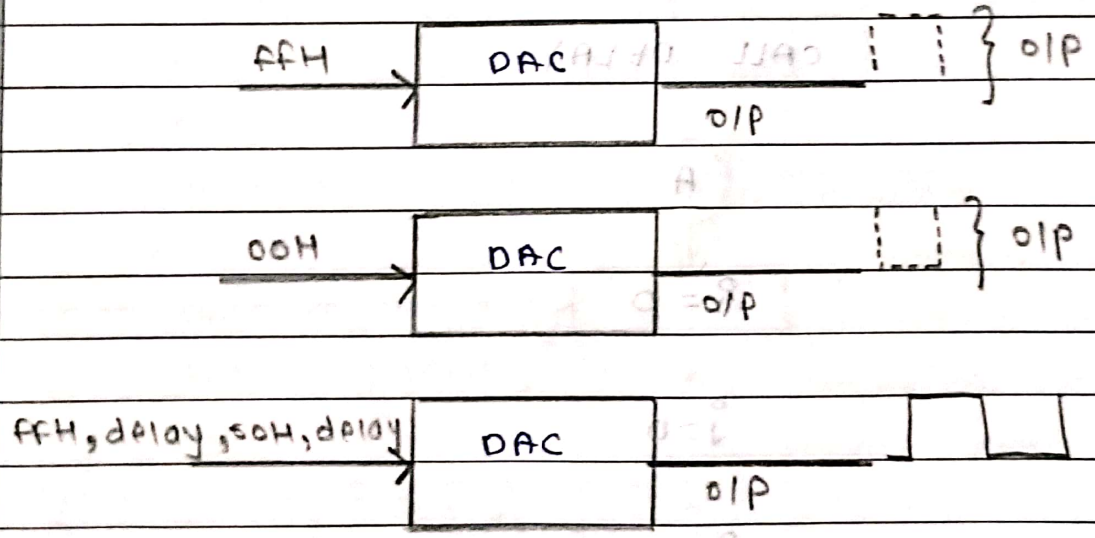


to current (I_o), and by connecting a resistor to the I_o pin, it can be converted into voltage. for an 8-bit R-2R network providing current outputs the analog current I_o is given by,

$I_o = I_{ref}[D7/2 + D6/4 + D5/8 + D4/16 + D3/32 + D2/64 + D1/128 + D0/256]$

where D7 to D0 represent digital data, Iref is the reference current.

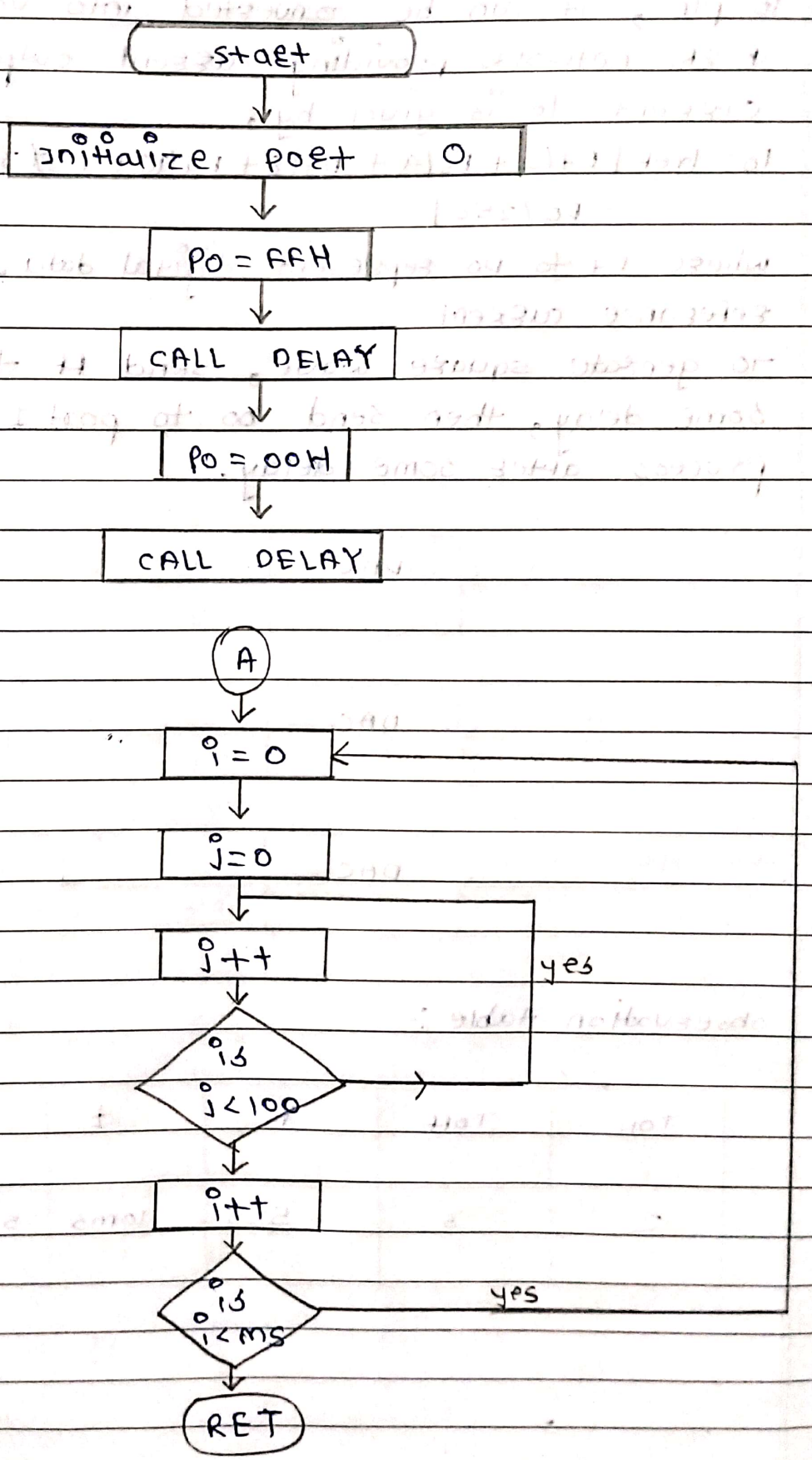
To generate square wave, send ff to port 1 give some delay, then send 00 to port 1 and repeat the process after some delay.



observation table :-

TON	TOFF	λ	t	T	frequency
2	3	5	10ms	50 ms	20 HZ

flowchart :-


start
initialize port 0
P0 = FFH
CALL DELAY
P0 = 00H
CALL DELAY
A
i = 0
j=0
j++
yes
is
j<100
i++
is
i<MS
yes
RET

DAC program :-

```
#include <reg51.h>
void delay_ms(unsigned int);
void main(void)
{
   P0 = 0xff;
   while (1)
   {
     P0= 0xff;
     delay_ms(10);
     P0 = 0x00;
     delay_ms(10);
   }
}
void delay_ms(unsigned int ms)
{
 unsigned int i,j;
 for(i=0; i<ms; i++)
  {
    for(j=0; j<0x100; j++);
  }
}
```

Result :- $T = 50\ ms$

$$f = \frac{1}{T} = \frac{1}{50\ ms}$$

$$= 0.02 \times 10^3$$

$$= 20\ Hz$$

conclusion :-

1] we have studied and executed peogeam foe DAC.

2] By using DAC, we can geneate different types of wavefoem such as squaee, teaingulae and sine wove.

3] we can vaey the peeiod of sequence wave using conteol delay.