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QUESTION

- 1. GENERATE A SQUARE WAVEFORM OF 5ms.**
- 2. GENERATE A SINE WAVEFORM OF 5ms.**
- 3. GENERATE A TRIANGULAR WAVEFORM OF 5ms.**
- 4. GENERATE A SAW TOOTH WAVEFORM OF 5ms.**

Q1) GENERATE A SQUARE WAVEFORM OF 5ms

Code:

```
#include<at89c51xd2.h>

sbit LED_pin=P1^5;

void DELAY_HARDWARE_5ms(void);

void main(void){
    while (1){

        LED_pin=0;
        DELAY_HARDWARE_5ms();

        LED_pin=1;
        DELAY_HARDWARE_5ms();}

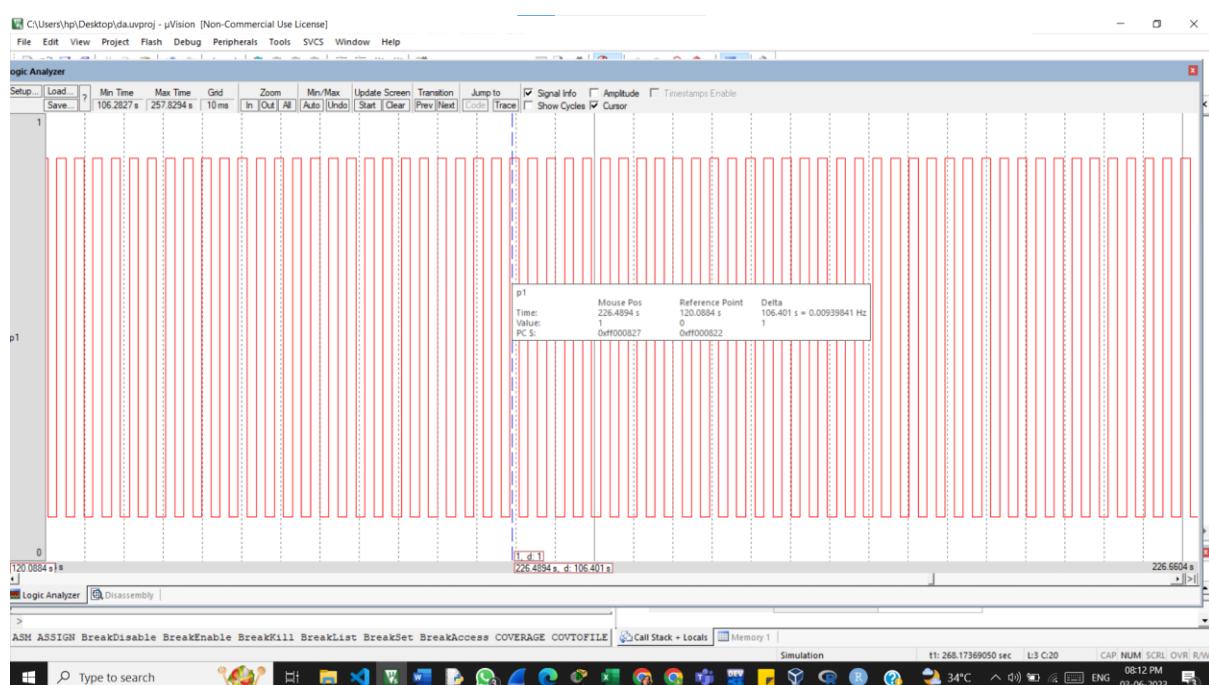
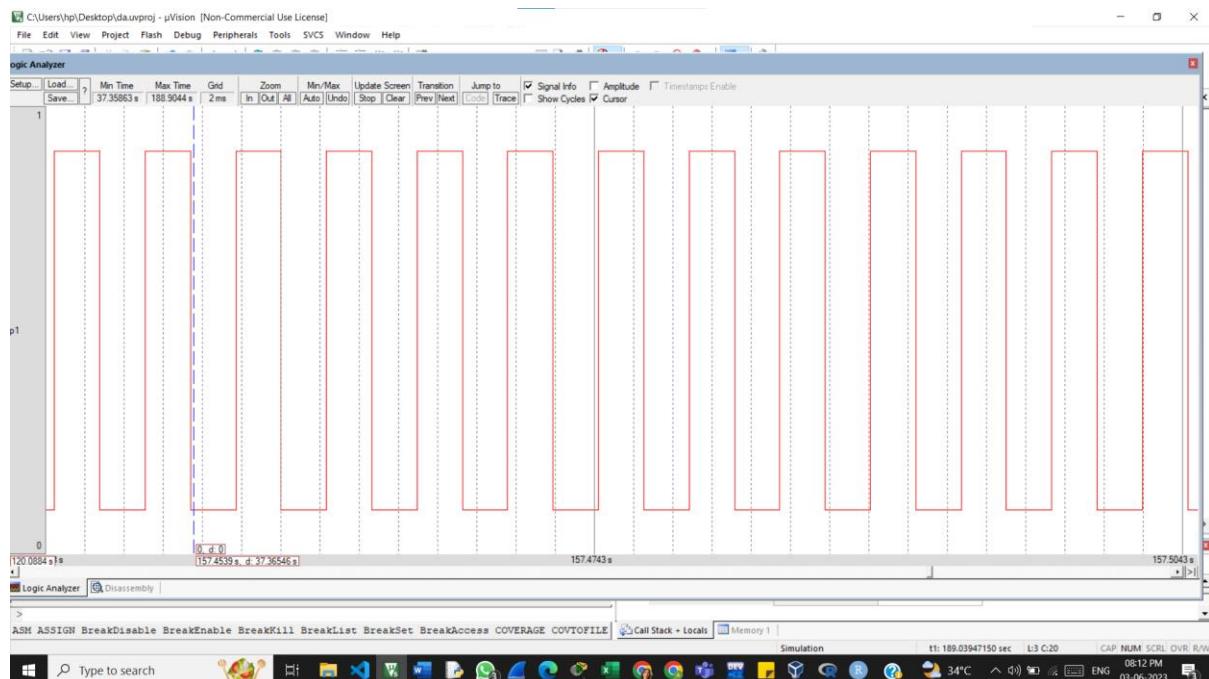
    void DELAY_HARDWARE_5ms(void){

        TMOD &=0xF0;
        TMOD |=0x01;
        ET0=0;
        TH0=0xEE;
        TL0=0x00;
        TF0=0;
        TR0=1;

        while(TF0==0);

        TR0;
    }
}
```

Output:



Q2) GENERATE A SINE WAVEFORM OF 5ms

Code:

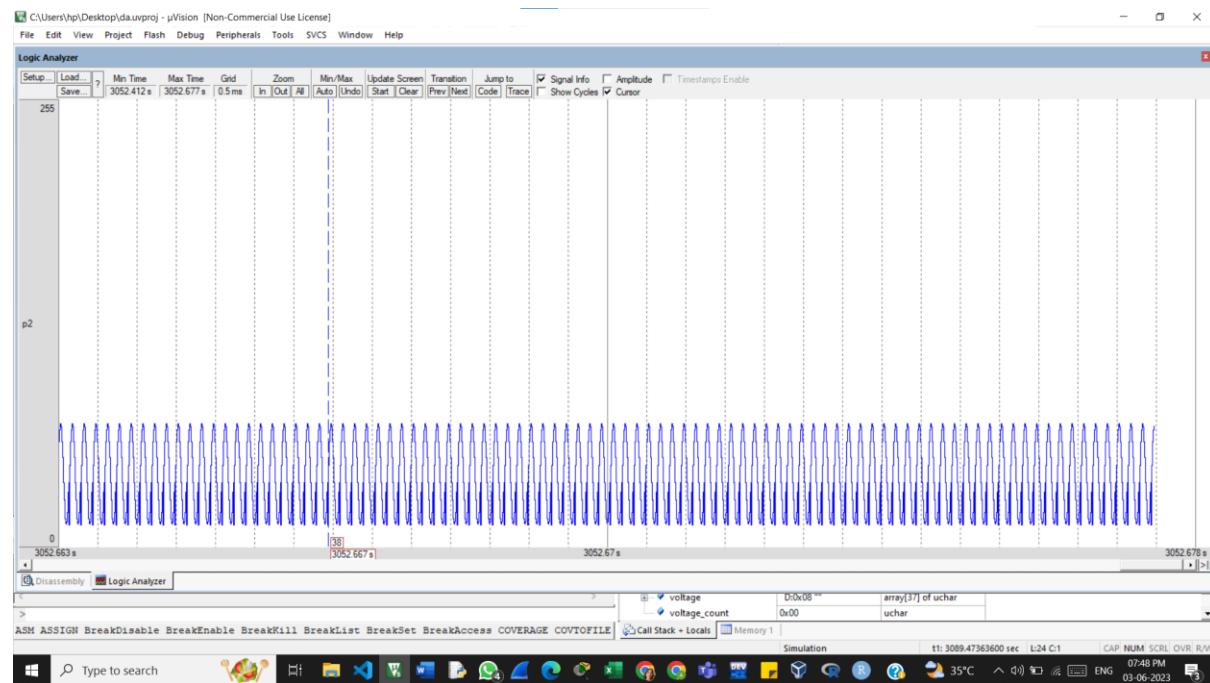
```
#include <at89c51xd2.h>
void delay();
void main(void)
{
    unsigned char voltage[37] = {32, 38, 43, 48, 53, 57, 60, 62, 63, 64, 63, 62, 60, 57, 53, 48, 43, 38,
                                32, 27, 21, 16, 12, 0x08, 0x04, 0x02, 0x01, 0x00, 0x01, 0x02, 0x04, 0x08, 12, 16, 21, 27};
```

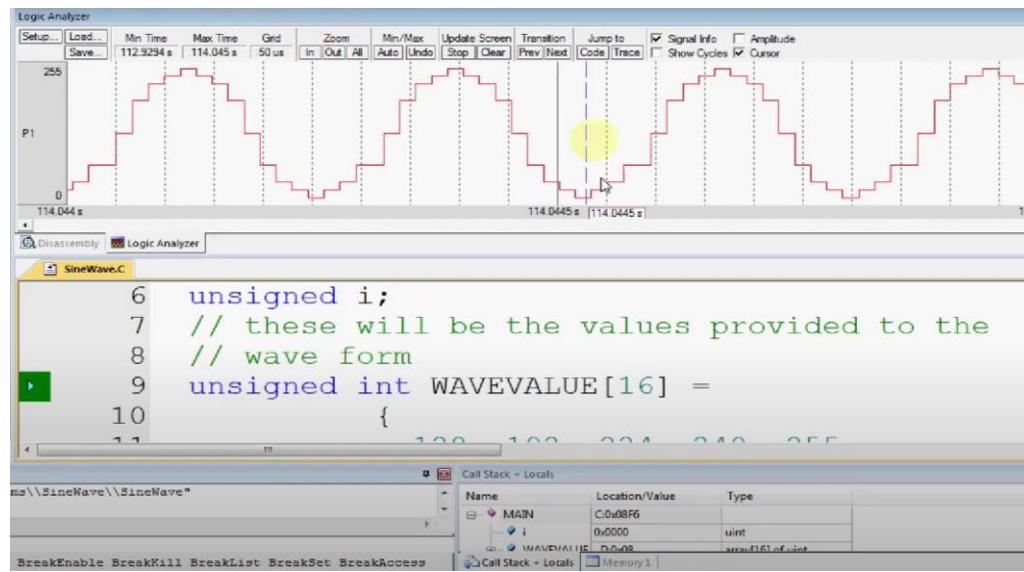
```

unsigned char voltage_count;
while(1)
{
    voltage_count = 0;
    while(voltage_count < 37)
    {
        P2 = voltage[voltage_count];
        voltage_count += 1;
    }
}
void delay()
{
    unsigned int i,j;
    for(i=0;i<10000;i++)
        for(j=0;j<10000;j++);
}

```

Output:





Q3) GENERATE A TRIANGULAR WAVEFORM OF 5ms

Code:

```
#include <at89c51xd2.h>

void DELAY_HARDWARE_5ms(void);

void main(void){
    unsigned char input;

    while (1){
        for (input=0;input<0xFF;input++)
        {
            P2=input;
            DELAY_HARDWARE_5ms();
        }
        for (input=0xFF;input>0;input--)
    }
}
```

```

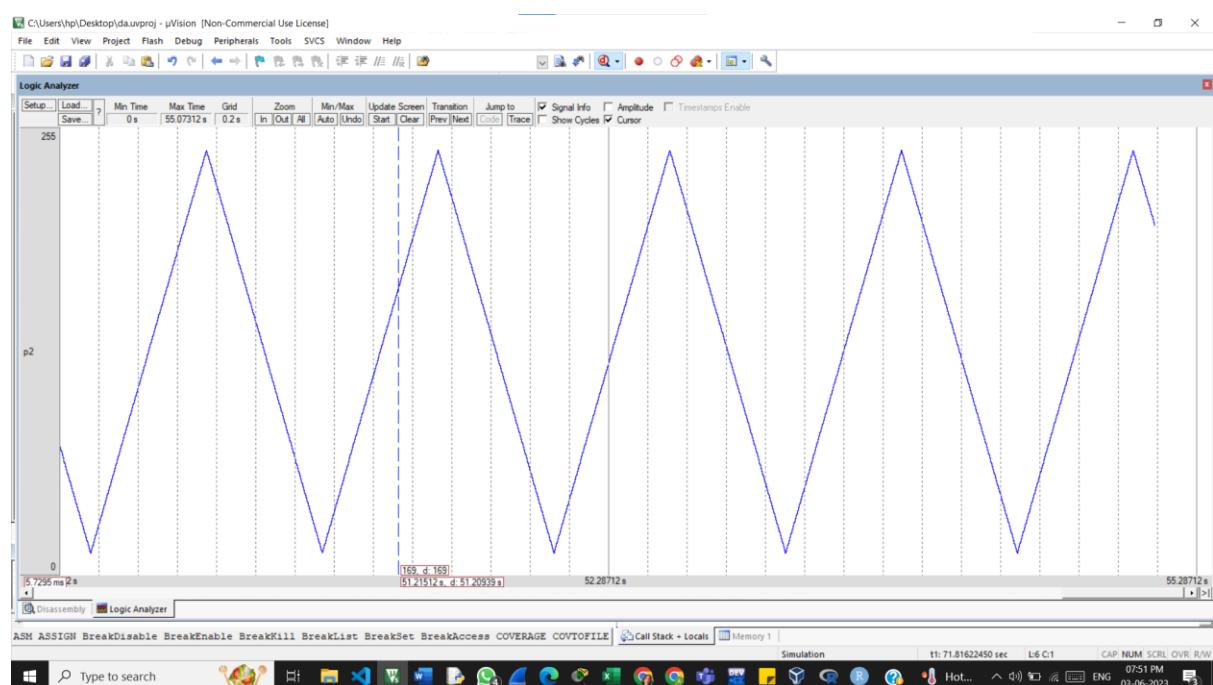
    {
        P2=input;
        DELAY_HARDWARE_5ms();
    }

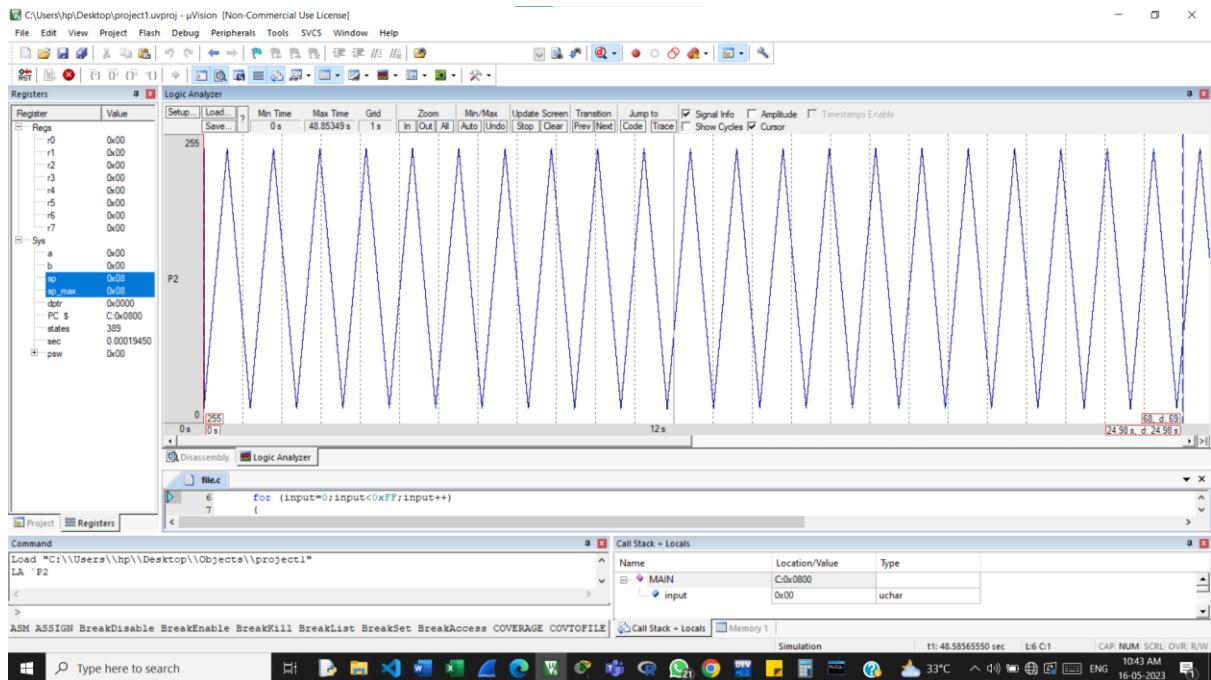
}

void DELAY_HARDWARE_5ms(void)
{
    TMOD &=0xF0;
    TMOD |=0x01;
    ET0=0;
    TH0=0xEE;
    TL0=0x00;
    TF0=0;
    TR0=1;
    while(TF0==0);
    TR0=0;
}

```

Output:





Q4) GENERATE A SAWTOOTH WAVEFORM OF 5ms

Code:

```
#include <at89c51xd2.h>

void DELAY_HARDWARE_5ms(void);

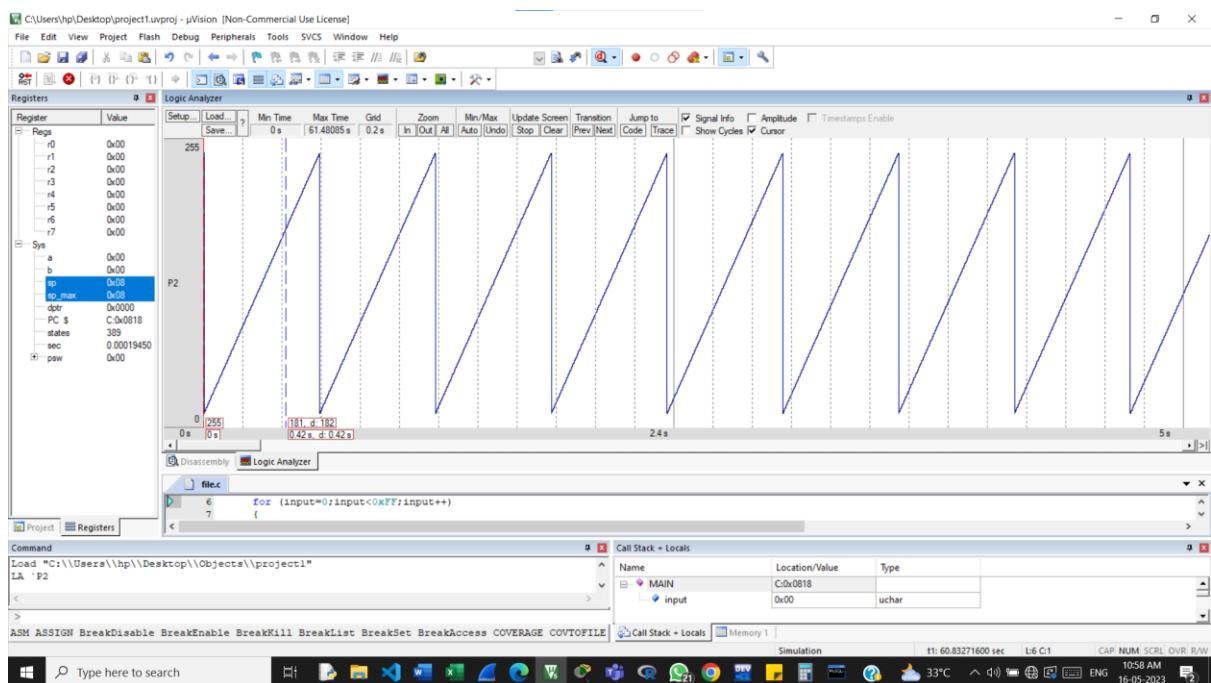
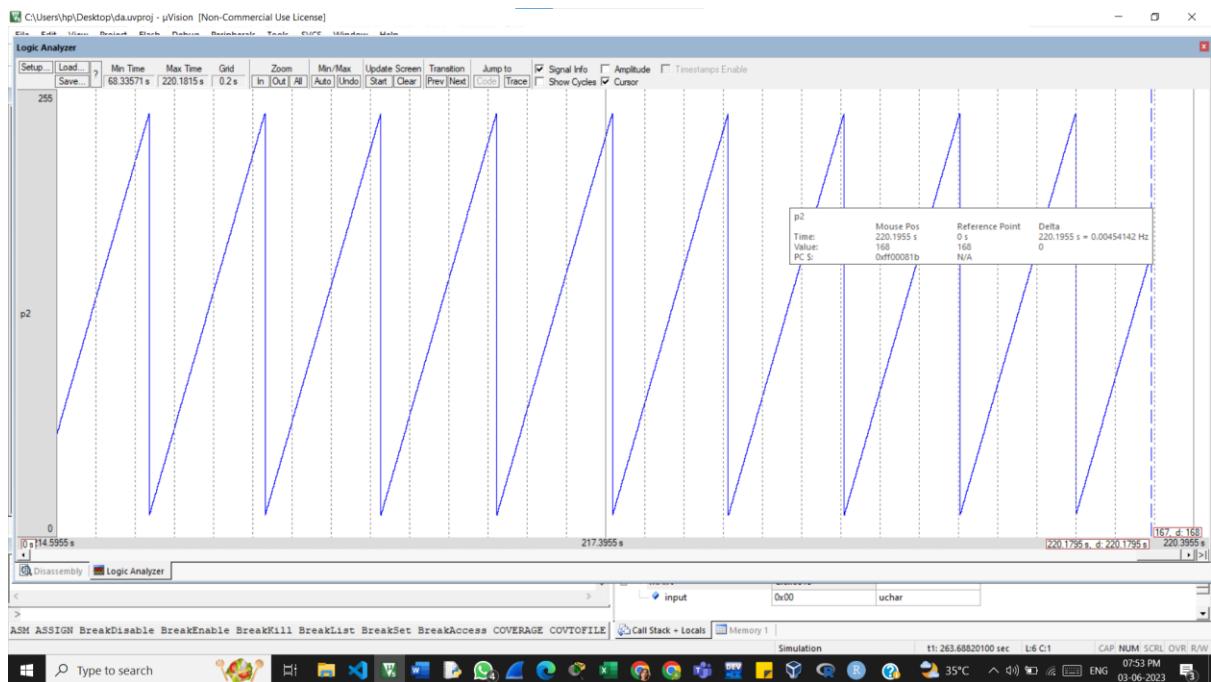
void main(void){
    unsigned char input;

    while (1){
        for (input=0;input<0xFF;input++)
        {
            P2=input;
            DELAY_HARDWARE_5ms();
        }
    }
}
```

```
    }

void DELAY_HARDWARE_5ms(void)
{
    TMOD &=0xF0;
    TMOD |=0x01;
    ET0=0;
    TH0=0xEE;
    TL0=0x00;
    TF0=0;
    TR0=1;
    while(TF0==0);
    TR0=0;
}
```

Output:



THANK YOU !