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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>

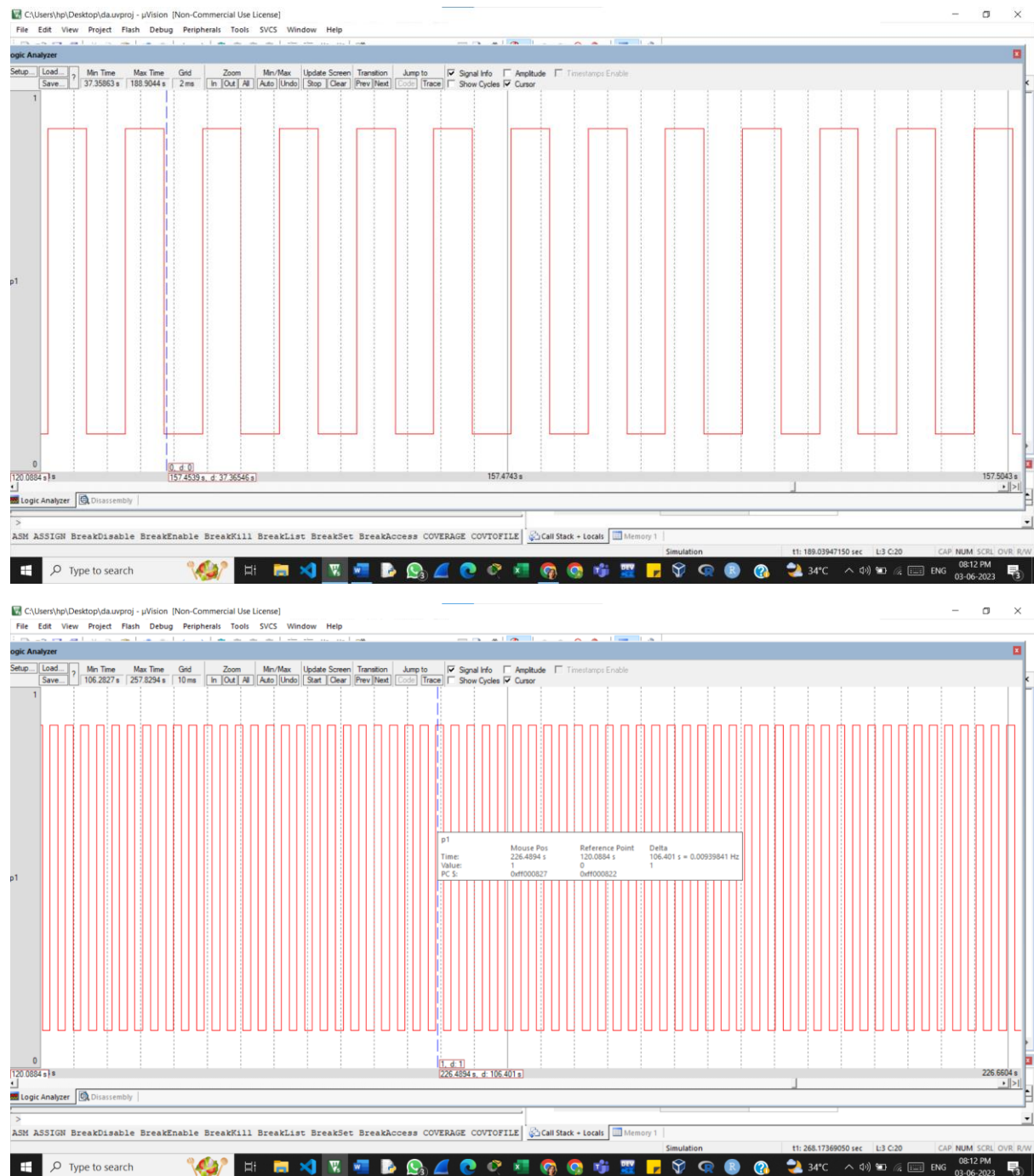
sbit LED_pin=P1^5;

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};
```

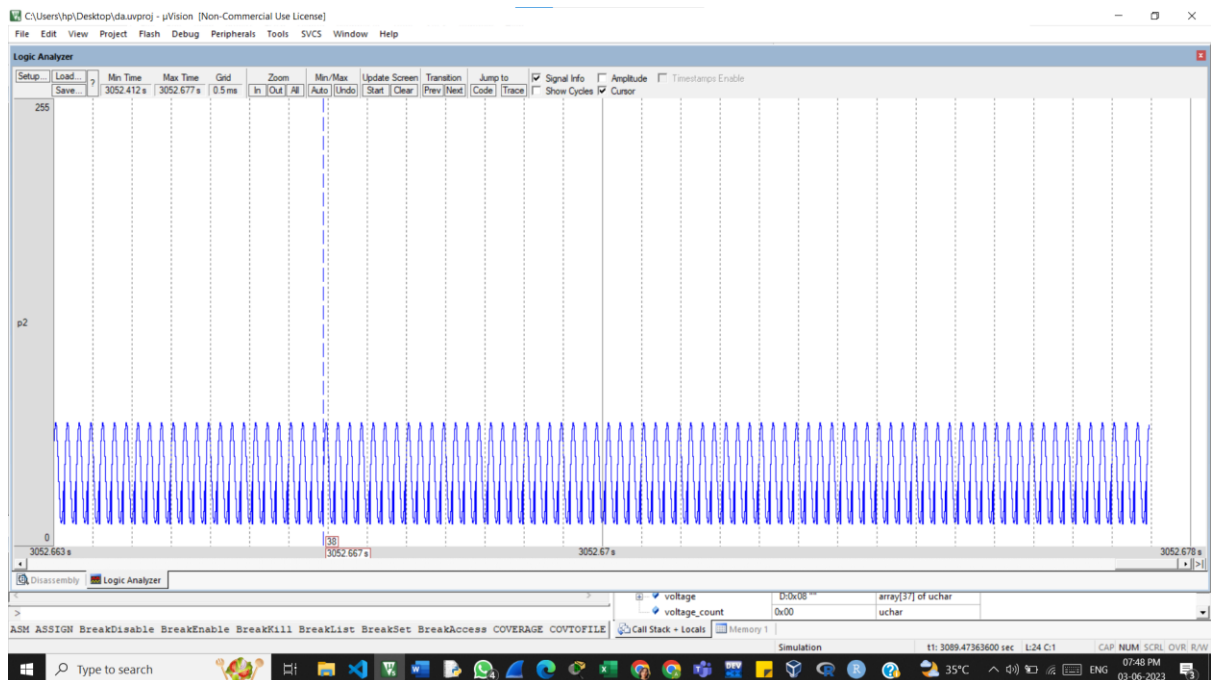
```

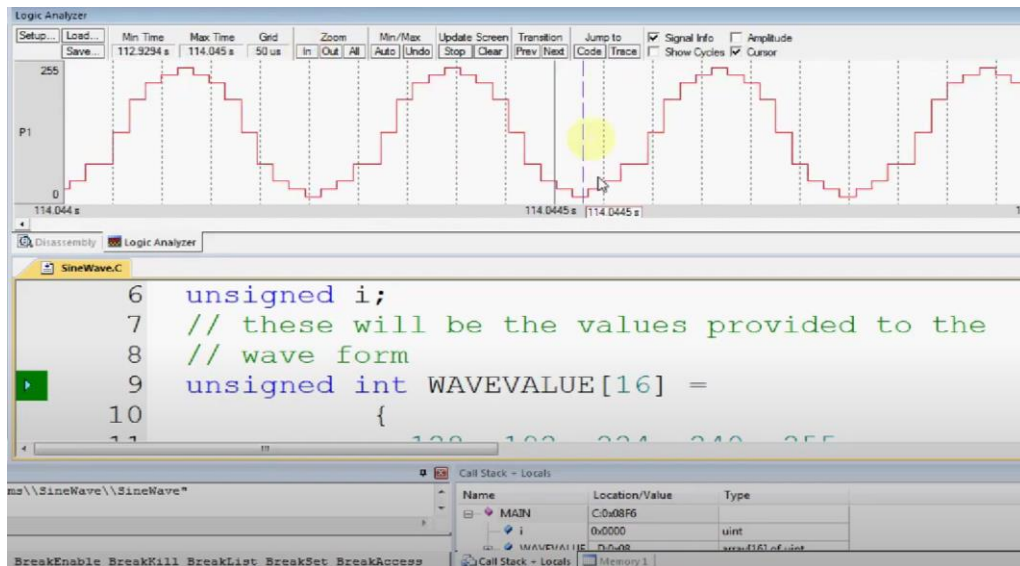
unsigned char voltage_count;
while(1)
{
    voltage_count = 0;
    while(voltage_count < 37)
    {
        P2 = voltage[voltage_count];
        voltage_count += 1;
    }
}

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;

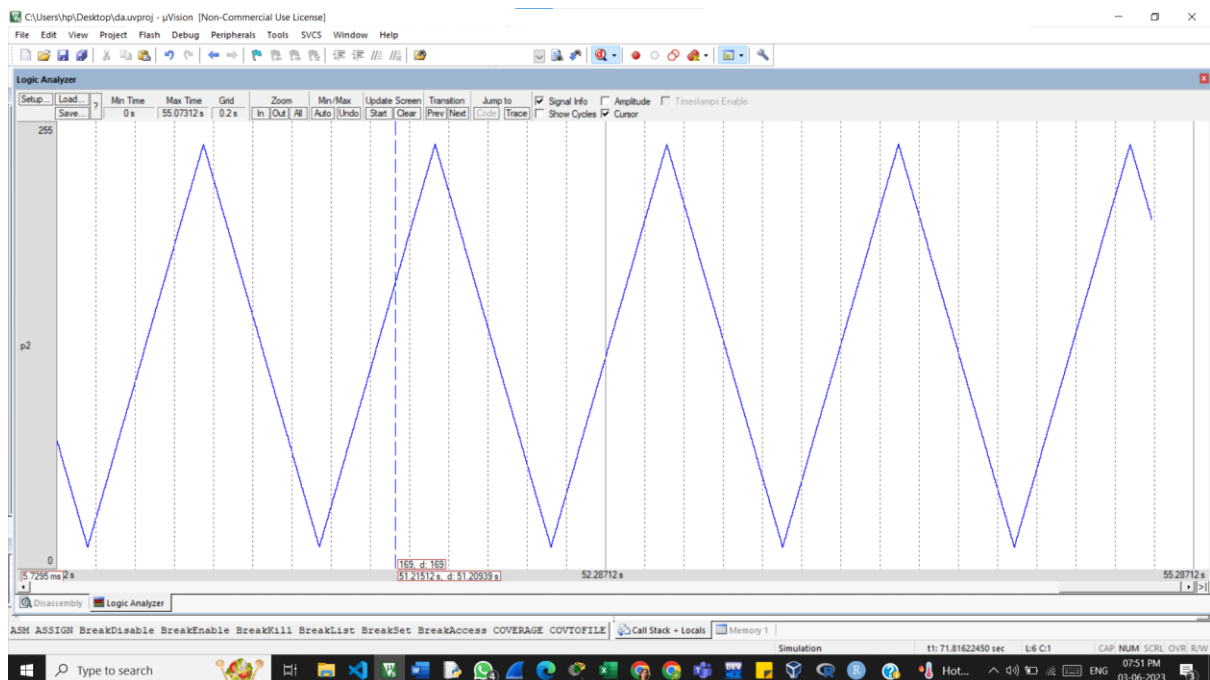
    TR0=1;

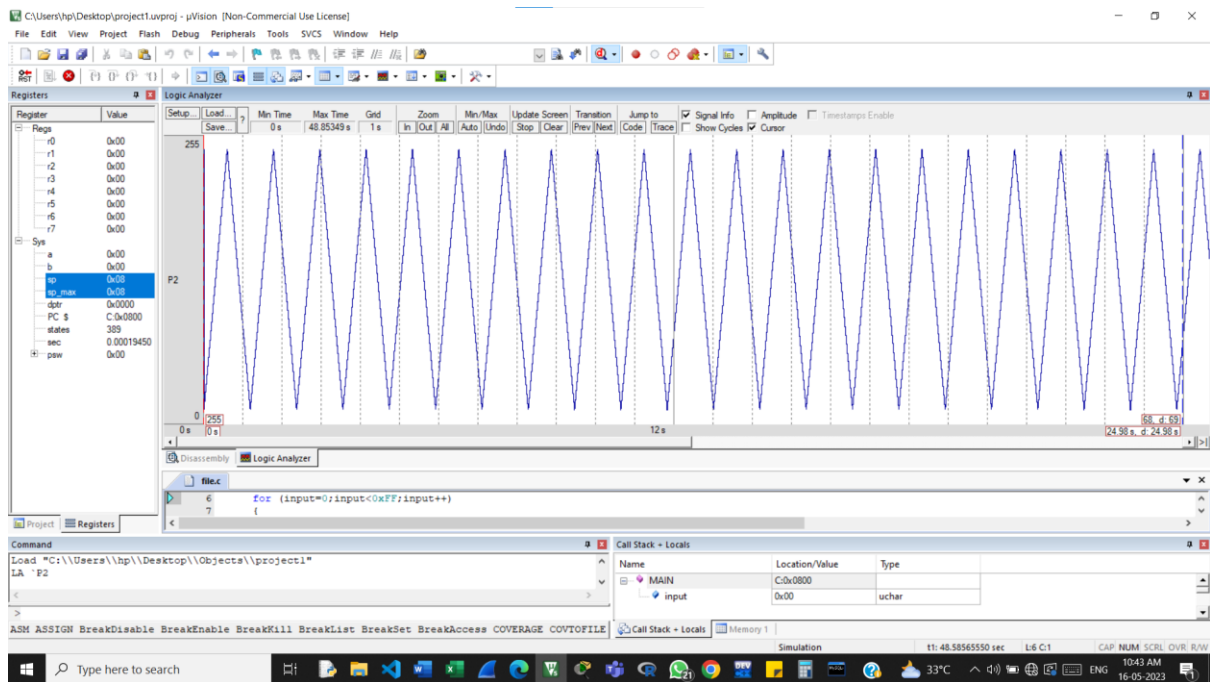
    while(TF0==0);

    TR0=0;}

```

Output:





Q4) GENERATE A SAWTOOTH WAVEFORM OF 5ms

Code:

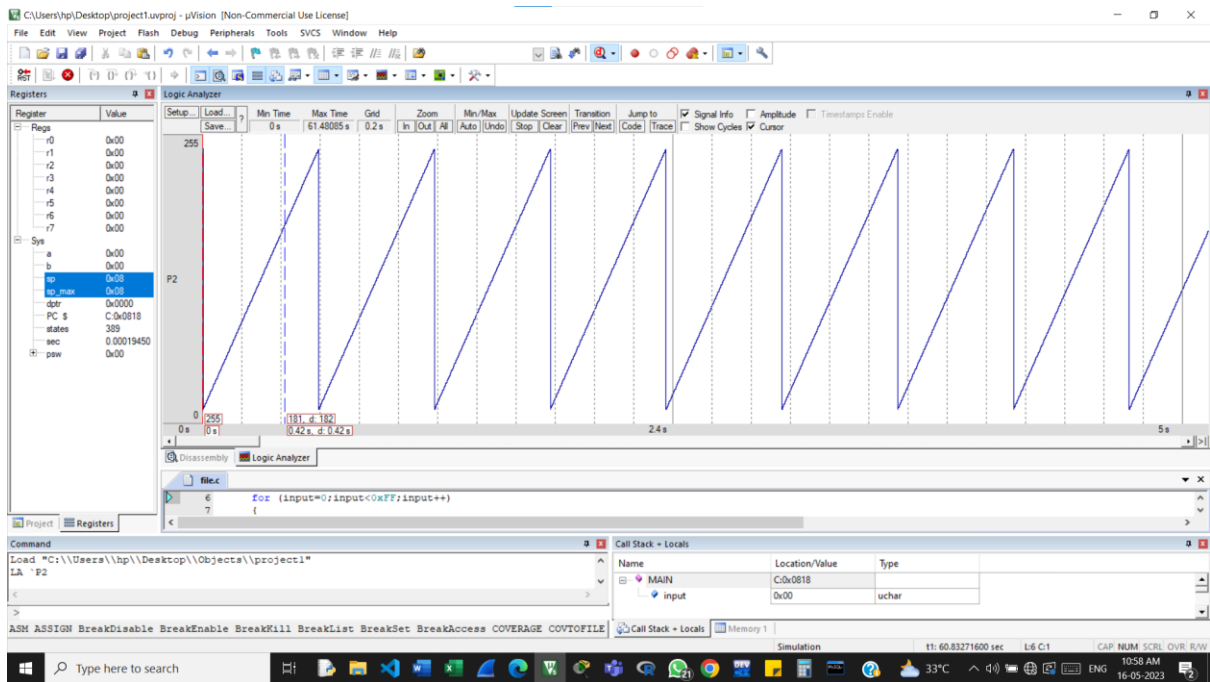
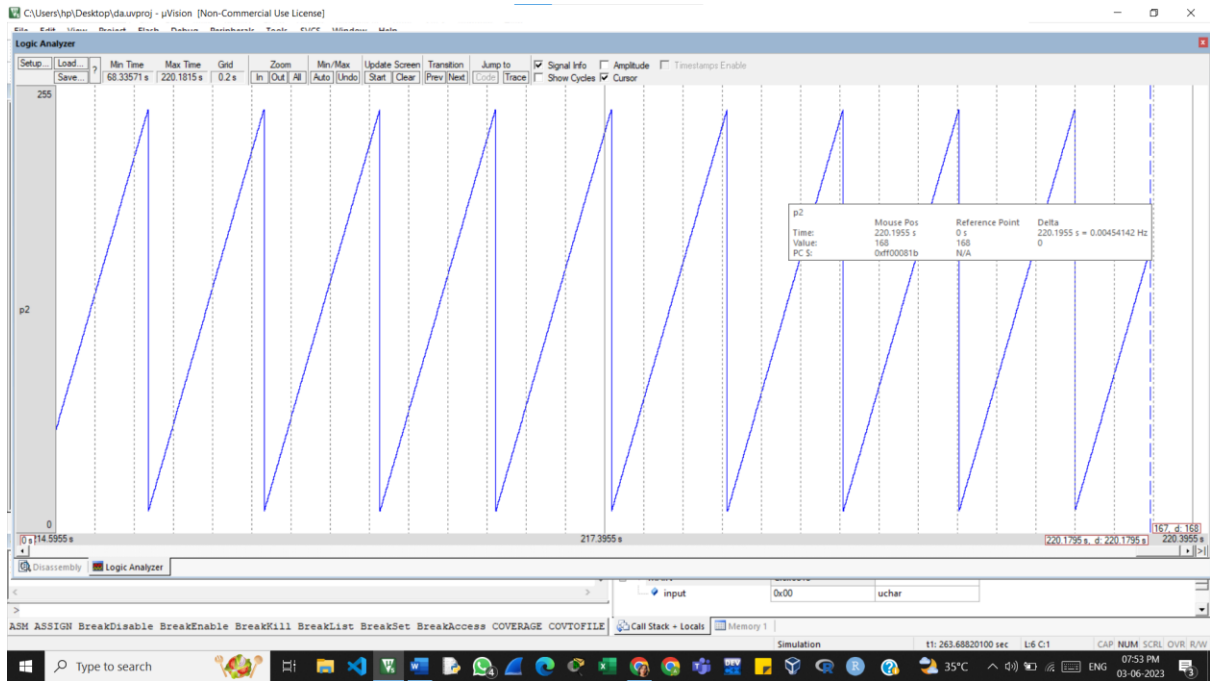
```
#include <at89c51xd2.h>

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 !