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**Class:** 3rd year B. Tech CSE

Experiment 10: Design and implement an Embedded System that toggle only pin P 1.5 continuously every 250ms using 8051 board. Take crystal frequency=11.0592 MHz.

1 Using timer 0, mode 1

2 Using timer 1, mode 2

**Stuff Required:** KEIL µVISION IDE, 8051 microcontrollers.

**Program:**

C code:

1. Timer 0 , Mode 1

#include<p89v51rd2.h>

sbit flag = P1^5;

void T1M2Delay(){

TMOD=0x20; // Timer 1, mode 2

TH1=0x1A; // 1A for 250micro sec

TR1=1;

while (TF1==0);

TR1=0;

TF1=0;

}

void T0M1Delay(void)

{

TMOD=0x01;

TL1=0xFE;

TH1=0xA5; // A5FE F0R 25 m sec

TR1=1;

while (TF1==0);

TR1=0;

TF1=0;

}

void main(void)

{

unsigned int x;

while (1)

{

flag=~flag;

for (x=0;x<10;x++) // 25 m sec

T0M1Delay();

}

}

HEX code:

:10082800758920758D1AD28E308FFDC28EC28F22A7

:10081500758901758BFE758DA5D28E308FFDC28EC3

:03082500C28F225D

:10080000B295E4FFFE1208150FBF00010EEF640A57

:050810004E70F280EBC8

:03000000020838BB

:0C083800787FE4F6D8FD75810702080007

:00000001FF

1. Timer 1, Mode 2

#include<p89v51rd2.h>

sbit flag = P1^5;

void T1M2Delay(){

TMOD=0x20; // Timer 1, mode 2

TH1=0x1A; // 1A for 250micro sec

TR1=1;

while (TF1==0);

TR1=0;

TF1=0;

}

void T0M1Delay(void)

{

TMOD=0x01;

TL1=0xFE;

TH1=0xA5; // A5FE F0R 25 m sec

TR1=1;

while (TF1==0);

TR1=0;

TF1=0;

}

void main(void)

{

unsigned int x;

while (1)

{

flag=~flag;

for (x=0;x<1000;x++) // 250 micro sec

T1M2Delay();

}

}

Hex Code:

:10082800758920758D1AD28E308FFDC28EC28F22A7

:10081500758901758BFE758DA5D28E308FFDC28EC3

:03082500C28F225D

:10080000B295E4FFFE1208280FBF00010EBE03F5EB

:05081000BFE8F280EBDF

:03000000020838BB

:0C083800787FE4F6D8FD75810702080007

:00000001FF

**Result:**

Pin P1.5 was toggled using both timers after 250ms.