IES Practical’s

Practical 1 -

```
// LED Blinking

#include<reg51.h>

void delay(unsigned int x){
  unsigned int i=0;
  for(i;i<=x;i++){}
}

void main(){
  while(1){
    P3=0x00;
    delay(50000);
    P3=0xFF;
    delay(50000);
  }
}
```

```
// Odd LED Blinking

#include<reg51.h>

void delay(unsigned int x){
  unsigned int i=0;
  for(i;i<=x;i++){}
}

void main(){
  while(1){
    P3=0xAA;
    delay(50000);
    P3=0x55;
    delay(50000);
  }
}
```

Practical 2 -

```
// Write a code to create a running tick √ from left to right and right to left.

// From left to Right -

#include<reg51.h>

void main(void){
  unsigned int i;
  while(1){
    P1=0x01;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x02;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x04;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x08;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x10;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x20;
```

```
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x40;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
    P1=0x80;
    for(i=0;i<30000;i++);
    P1=0x00;
    for(i=0;i<30000;i++);
  }
}

// From  Right to Left -

#include <reg51.h>

void delay(int time){
    int i,j;
    for(i=0;i<time;i++);
    for(j=0;j<1275;j++);
}

void main (void) {
  unsigned char j;

  while (1){
    for (j=0x01; j< 0x80; j<<=1){
      P1 = j;
      delay(500);
   }

    for(j=0x80; j> 0x01; j>>=1){
      P1 = j;
      delay(500);
    }
  }
}
```

```
// Write a code to create a binary counter to count binary values from 00 to FF H.

#include<reg51.h>

void delay(unsigned int x){
  unsigned int i;
  for(i=0;i<=x;i++){;}
}

void main(){
  while(1){
    unsigned int j;
    for(j=0;j<=256;j++){
      P1=j;
      delay(90000000);
      delay(90000000);
      delay(90000000);
      delay(90000000);
      delay(90000000);
      delay(90000000);
    }
  }
}
```

Practical 3 -

```
// Write a code to generate a square wave on port of microcontroller

#include<reg52.h>

Delay (unsigned int y){
  unsigned int i;7
  for (i=0;i<y;i++){;}
}

void main(){
  while (1){
    P1=0x00; // Low level
    Delay (1000);
    P1=0xFF; // High level
    Delay (1000);
```

```
  }
}
```

```
// Write a code to generate a triangular wave on port  of microcontroller

#include<reg51.h>

void main(){
  P1 = 0x00;
  while(1){
    do{
    P1 += 0x05;
    }while(P1 < 0xFF);
    P1 = 0x00;
  }
}
```

```
// Write a code to generate a sine wave on port 1 of microcontroller

#include<reg51.h>

int main(){
 int j;
 int c[37]={128,150,172,192,210,226,239,248,254,255,254,248,239,226,210,192,172,150,128,106,84,64,46,30,17,8,2,0,2,8,17,30,46,64,84,10

  while(1){
   for(j=0;j<36;j++){
     P1=c[j];
    }
   P1=128;
   }
}
```

Practical 4 -

```
// Write a code to blink tick √ of port 2 of 8051 ON and OFF with delay of 1 ms using on board timer delay

#include<reg51.h>

void delay(){
  TMOD=0x01;
  TH0=0xFC;
  TL0=0x66;
  TR0=1;

  while(TF0==0);
  TR0=0;
  TF0=0;
}

void main(){
  while(1){
     P2=0x00;
     delay();
     P2=0xFF;
     delay();
  }
}
```

```
// Write a code to create a binary counter to count binary values from 00 to FF H using on board timer delay

#include<reg51.h>

void delay(){
  TMOD=0x01;
  TH0=0xEE;
  TL0=0x00;
  TR0=1;

  while(TF0==0);
  TR0=0;
  TF0=0;
}

void main(){
  while(1){
```

```
    P2=0x00;
    delay();
    P2=0xFF;
    delay();
  }
}
```

Practical 5 -

```
// Write a code to blink on board LED of Arduino UNO with delay of 2 ms and 5 ms.

void setup(){;}

void loop(){
  digitalWrite(13,HIGH);
  delay(1000);
  digitalWrite(13,LOW);
  delay(1000);
```

```
// Interface external LED with Arduino UNO and write a code to blink LED.

void setup() {;}

void loop(){
  digitalWrite(13,HIGH);
  delay(1000);
  digitalWrite(13,LOW);
  delay(1000);
```

```
/*
Interface external LED with Arduino UNO and write a code to change
the intensity of LED from zero to maximum and maximum to zero gradually.
*/

int led=11;
int brightness=0;
int fadeAmount=5;


void setup(){
  pinMode(led,OUTPUT);
}

void loop(){
analogWrite(led,brightness);

// 1. Zero to Maximum
for(brightness;brightness<=255;brightness+=10){
  delay(40);
  analogWrite(led,brightness);
}

// 2. Maximum to Zero
brightness=255;
for(brightness;brightness>=0;brightness-=10){
  delay(40);
  analogWrite(led,brightness);
```