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Micro Processor & Embedded Systems Lab EXPERIMENT 6

Aim:

Write a program for blinking LED(s) at any GPIO pins of 8051 Microcontroller (AT89C51).

Apparatus:

Keil software for writing programs and build the program to generate a hex file. (Link: https://www.keil.com/download/product/)

Theory:

8051 Microcontroller is a programmable device which is used for controlling purpose. Basically 8051 controller is Mask programmable means it will programmed at the time of manufacturing and will not programmed again, there is a derivative of 8051 microcontroller, **89c51 micro controller** which is re-programmable. AT89C51 89c51 is 8-bit device means it is capable of doing 8-bit operations. It have 4 ports which are used as input or output according to our need.

Procedure:

- ✓ Open Keil C51 Software.
- ✓ Create a new project LedBlink.
- ✓ Create a new text file, write the source code in the file and save it as .c extension.
- ✓ Add the existing .c file to the source group 1 in the project section.
- ✓ Start debugging and remove all the errors. Stop debugging after all the errors are removed.
- ✓ Go to Flash->configure Flash Tools->Output and then Select create Hex file option.
- ✓ Now go to rebuild to build the program.
- ✓ A message for Creating Hex File will be displayed in the Build Output Section.

Program Code:

```
# include<reg51.h>
void delay();
void main()
{
    while(1)
    {
        P0=0X01;
        delay();
        P0=0X02;
        delay();
        P0=0X04;
        delay();
        P0=0X08;
        delay();
        P0=0X10;
        delay();
        P0=0X20;
```

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```
delay();
P0=0X40;
delay();
P0=0X80;
delay();
}}
void delay()
{
int i;
for(i=0;i<=30000;i++);
}</pre>
```

Output:

Keil Software Build Ouput

```
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help

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     Project 4 LedPgm.c
    ☐ 🍪 Project: LedBlink
           Target 1
Source Group 1
STARTUP.A51
                                                                                                                              3 void delay();
                                                                                                                              5 void main()
                                 ⊕ 📗 LedPgm.c
                                                                                                                             9 while (1)
                                                                                                                        9 while (1)
10
11 {
12
13 PO=0X01;
                                                                                                                          14
15 delay();
                                                                                                                          16
17 PO=0X02;
18
19 delay();
                                                                                                                         20
21 PO=0X04;
                                                                                                                         23 delay();
                                                                                                                        23 delay();
24
25 P0=0X08;
26
27 delay();
28
                                                                                                                         29 P0=0X10;
                                                                                                                          31 delay();
                                                                                                                          32
33 PO=0X20;
34
35 delay();
   E Pr... 3 B... 3 F... 
Program Size: data=9.0 xdata=0 code=80 creating hex file from ".\Objects\LedBlink"...
".\Objects\LedBlink" - 0 Error(s), 0 Warning(s).
Build Time Elapsed: 00:00:02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         L:1 C:1 CAP NUM SCRL OVR R/W
```