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 1 /*
 2  *  Experiment No. 7
 3  *  Program statement: Interface serial communication port(USART) of PIC18
 4  *  with PC and write an embedded C program for PIC18 to transfer the
 5  *  information serially form microcontroller to PC for various baudrates.
 6  *  Roll no.- 312046     Batch no.- B2
 7  *  Date of performance- 05/09/2018
 8  */
 9
10
11 #include "LCD.h"
12 #define COL PORTB
13 #define ROW PORTB
14 unsigned char colLoc,rowLoc;
15 unsigned char keypad[4][4] = {
16 {'0','1','2','3'},
17 {'4','5','6','7'},
18 {'8','9','A','B'},
19 {'C','D','E','F'}
20                                 };
21
22 void main(void){
23 TRISB = 0x00;                    //Initialse PORTB as o/p
24 initLCD();
25 displayMsg(1,0,"Anil Rajpurohit");
26 displayMsg(2,0,"Roll No.:");
27 COL = 0xF0;                      //Initialse cloumns as i/p
28
29 while(1){
30
31 do{                             //Check all keys open
32 ROW = 0xF0;
33 colLoc = COL;            // read all columns
34 colLoc &=0xF0;           //Masking of unused bits
35 }while(colLoc != 0xF0);
36
37 do{
38 do{
39 milliDelay(20);         //Added delay
40 colLoc = COL;           //Read all columns
41 colLoc &=0xF0;
```

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42 }while(colLoc == 0xF0);
43 milliDelay(20);              //Added delay for debounce
44 colLoc = COL;               //Read all columns
45 colLoc &=0xF0;
46 }while(colLoc == 0xF0);
47
48 while(1){                        //Key detection by grounding rows
49 ROW = 0xFE;
50 colLoc = COL;
51 colLoc &= 0xF0;
52 if(colLoc != 0xF0){        //Key detected from row 0
53 rowLoc = 0;
54 break;
55 }
56 ROW = 0xFD;
57 colLoc = COL;
58 colLoc &= 0xF0;
59 if(colLoc != 0xF0){        //Key detected from row 1
60 rowLoc = 1;
61 break;
62 }
63 ROW = 0xFB;
64 colLoc = COL;
65 colLoc &= 0xF0;
66 if(colLoc != 0xF0){        //Key detected from row 2
67 rowLoc = 2;
68 break;
69  }
70 ROW = 0xF7;
71 colLoc = COL;
72 colLoc &= 0xF0;
73 if(colLoc != 0xF0){        //Key detected from row 3
74 rowLoc = 3;
75 break;
76  }
77 ROW = 0xF7;
78 colLoc = COL;
79 colLoc &= 0xF0;
80 if(colLoc == 0xE0)
81 sendData(keypad[rowLoc][0]);
82 if(colLoc == 0xD0)
```

```
83 sendData(keypad[rowLoc][1]);
84 if(colLoc == 0xB0)
85 sendData(keypad[rowLoc][2]);
86 if(colLoc == 0x70)
87 sendData(keypad[rowLoc][3]);
88 }
89 }
90 }
```