MICROCONTROLLER AND ITS APPLICATIONS

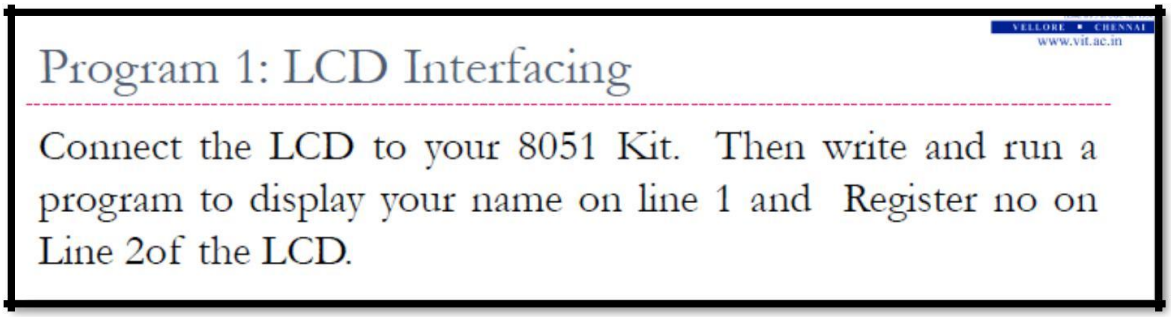
VARUN AGARWAL

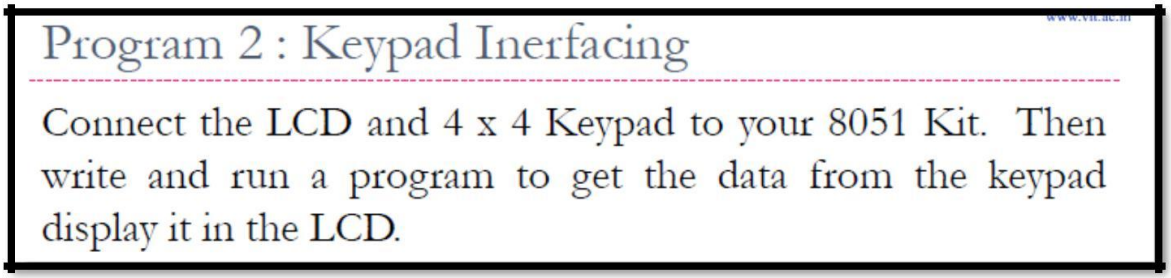
16BEC0450

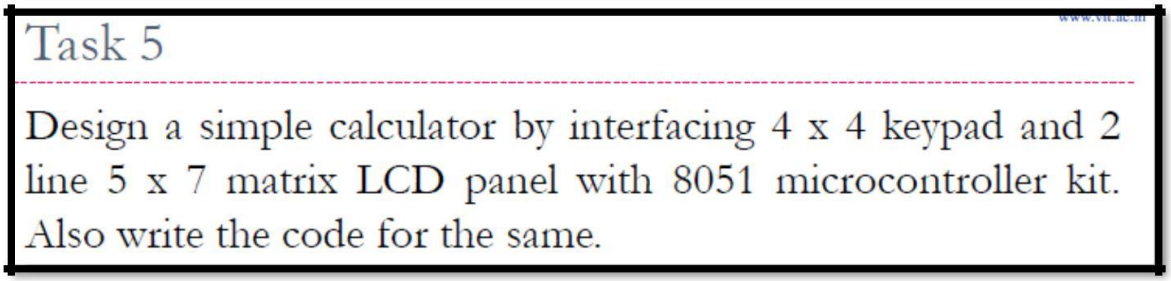
Slot : L37+38

Faculty: Prof.Chitra P.

TASK 5



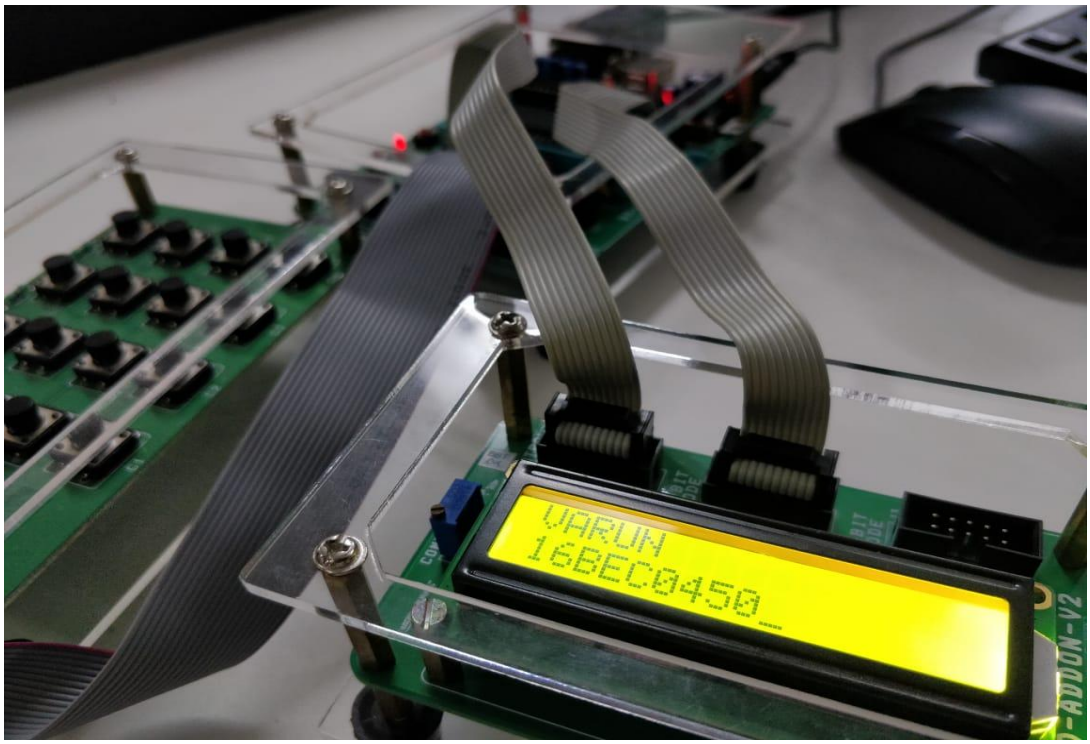




PROGRAM 1

```
ORG 0H
MOV A,#38H
ACALL CMDWRT
ACALL DELAY
MOV A,#0EH
ACALL CMDWRT
ACALL DELAY
MOV A,#01H
ACALL CMDWR
ACALL DELAY
MOV A,#06H
ACALL CMDWRT
ACALL DELAY
MOV A,#084H
ACALL CMDWRT
ACALL DELAY
MOV A,#'V'
ACALL DATAWRT
ACALL DELAY
MOV A,#'A'
ACALL DATAWRT
ACALL DELAY
MOV A,#'R'
ACALL DATAWRT
ACALL DELAY
MOV A,#'U'
ACALL DATAWRT
ACALL DELAY
MOV A,#'N'

MOV A,#0C4H
ACALL CMDWRT
ACALL DELAY

MOV A,#'1'
ACALL DATAWRT
ACALL DELAY
MOV A,#'6'
ACALL DATAWRT
ACALL DELAY
MOV A,#'B'
ACALL DATAWRT
ACALL DELAY
MOV A,#'E'
```

```
ACALL DATAWRT
ACALL DELAY
MOV A,#'C'
ACALL DATAWRT
ACALL DELAY
MOV A,#'0'
ACALL DATAWRT
ACALL DELAY
MOV A,#'4'
ACALL DATAWRT
ACALL DELAY
MOV A,#'5'
ACALL DATAWRT
ACALL DELAY
MOV A,#'0'
ACALL DATAWRT
ACALL DELAY
AGAIN: SJMP AGAIN

CMDWRT:MOV P1,A
CLR P2.0
CLR P2.1
SETB P2.2
ACALL DELAY
CLR P2.2
RET

DATAWRT:MOV P1,A
SETB P2.0
CLR P2.1
SETB P2.2
ACALL DELAY
CLR P2.2
RET

DELAY:MOV R3,#255
HERE2: MOV R4,#255
HERE:DJNZ R4,HERE
DJNZ R3,HERE2
RET
END
```

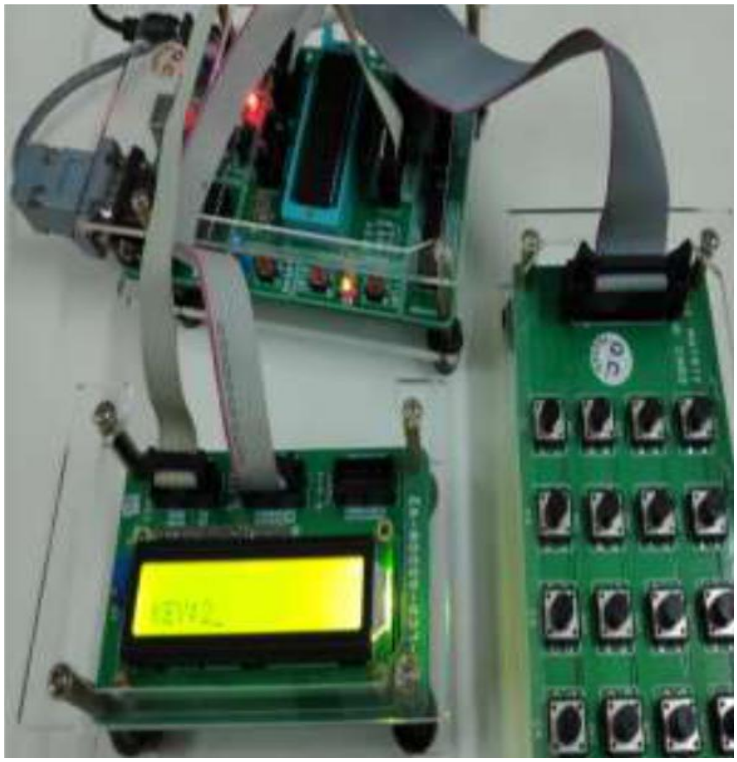


PROGRAM 2

```
ORG   0H
START:
ACALL LCDINIT
ACALL GETKEY
AGAIN: SJMP AGAIN
LCDINIT:      MOV   A,#38H
ACALL COMNWRT
ACALL DELAY
MOV   A,#0EH
ACALL COMNWRT
ACALL DELAY
MOV   A,#01
ACALL COMNWRT
ACALL DELAY
MOV   A,#06H
ACALL COMNWRT
ACALL DELAY
MOV   A,#0C0H
ACALL COMNWRT
ACALL DELAY
```

```
MOV   A,#'K'
ACALL DATAWRT
ACALL DELAY
MOV   A,#'E'
ACALL DATAWRT
ACALL DELAY
MOV   A,#'Y'
ACALL DATAWRT
ACALL DELAY
MOV   A,#':'
ACALL DATAWRT
ACALL DELAY
RET
COMNWRT:MOV   P1,A
CLR   P2.0
CLR   P2.1
SETB  P2.2
ACALL DELAY
CLR   P2.2
RET
DATAWRT:MOV   P1,A
SETB  P2.0
CLR   P2.1
SETB  P2.2
ACALL DELAY
CLR   P2.2

RET
DELAY:MOV   R3,#50
HERE2:MOV   R4,#255
HERE:DJNZ  R4,HERE
DJNZ  R3,HERE2
RET

GETKEY:       MOV P0,#0FH
REP:MOV P0,#0FH
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,OVER
SJMP REP
OVER:ACALL DELAY
MOV P0,#0FH
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,OVER1
SJMP REP
OVER1:CLR  P0.4
SETB P0.5
SETB P0.6
SETB P0.7
MOV A,P0
ANL A,#0FH
```

```
CJNE A,#0FH,ROW0
CLR P0.5
SETB P0.7
SETB P0.6
SETB P0.4
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW1
CLR P0.6
SETB P0.7
SETB P0.5
SETB P0.4
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW2
CLR P0.7
SETB P0.4
SETB P0.6
SETB P0.5
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW3
SJMP REP
MOV R0,#04H
ROW0:MOV DPTR,#KCODE0
SJMP FIND



ROW1:MOV DPTR,#KCODE1
SJMP FIND
ROW2:MOV DPTR,#KCODE2
SJMP FIND
ROW3:MOV DPTR,#KCODE3
FIND:RRC A
JNC MATCH
INC DPTR
DJNZ R0,FIND
MATCH:MOV   A,#0C4H
ACALL COMNWRT
ACALL DELAY
CLR  A
MOVC A,@A+DPTR
ACALL DATAWRT
ACALL DELAY
LJMP REP
ORG  300H
KCODE0: DB   'F','B','8','4' ;ROW 0
KCODE1: DB   'E','A','7','3' ;ROW 1
KCODE2: DB   'D','0','6','2' ;ROW 2
KCODE3: DB   'C','9','5','1' ;ROW 3
END
```



Program 3

```
ORG 0000H
MOV DPTR,#MYCOM
C1: CLR A
MOVC A,@A+DPTR
ACALL COMNWRT
ACALL DELAY
INC DPTR
JZ SEND_DAT1
SJMP C1
SEND_DAT1:
MOV DPTR,#MYDATA
D1: CLR A
MOVC A,@A+DPTR
ACALL DATAWRT
ACALL DELAY
INC DPTR
JZ NEXT
SJMP D1
NEXT: ACALL GETKEY
```

```
SUBB A,#30H
MOV R5,A
MOV DPTR,#MYDATA2
MOV A,#0C0H
ACALL COMNWRT
ACALL DELAY
D2: CLR A
MOVC A,@A+DPTR
ACALL DATAWRT
ACALL DELAY
INC DPTR
JZ NEXT2
SJMP D2
NEXT2: ACALL GETKEY
SUBB A,#30H
MOV R6,A
ACALL DELAY
MOV DPTR,#MYCOM
C2: CLR A
MOVC A,@A+DPTR
ACALL COMNWRT
ACALL DELAY
INC DPTR
JZ ADDITION
SJMP C2
ADDITION:MOV A,#080H
ACALL COMNWRT
ACALL DELAY
MOV DPTR,#MYDATA3
D3:CLR A
MOVC A,@A+DPTR
ACALL DATAWRT
ACALL DELAY
INC DPTR
JZ NEXT3
SJMP D3
NEXT3:
MOV A,R6
ADDC A,R5
ADDC A,#30H
ACALL DATAWRT
ACALL DELAY
MOV DPTR,#MYCOM
C3: CLR A
MOVC A,@A+DPTR
ACALL COMNWRT
ACALL DELAY
INC DPTR
JZ MULTIPLICATION
SJMP C3
```

```
MOV DPTR,#MYCOM
MUL:MOV A,#080H
ACALL COMNWRT
ACALL DELAY
MOV DPTR,#MYDATA5
D5:CLR A
MOVC A,@A+DPTR
ACALL DATAWRT
ACALL DELAY
INC DPTR
JZ NEXT5
SJMP D5
NEXT5:MOV A,R6
MOV B,R5
MUL AB
ADDC A,#30H
ACALL DATAWRT
ACALL DELAY
AGAIN:SJMP AGAIN
GETKEY:MOV P0,#0FH
REP:MOV P0,#0FH
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,OVER
SJMP REP
OVER:ACALL DELAY
MOV P0,#0FH
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,OVER1
SJMP REP
OVER1:CLR P0.4
SETB P0.6
SETB P0.7
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW0
CLR P0.5
SETB P0.7
SETB P0.6
SETB P0.4
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW1
CLR P0.6
SETB P0.7
SETB P0.5
SETB P0.4
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW2
```

```
CLR P0.7
SETB P0.4
SETB P0.6
SETB P0.5
MOV A,P0
ANL A,#0FH
CJNE A,#0FH,ROW3
SJMP REP
MOV R0,#04H
ROW0:MOV DPTR,#KCODE0
SJMP FIND
ROW1:MOV DPTR,#KCODE1
SJMP FIND
ROW2:MOV DPTR,#KCODE2
SJMP FIND
ROW3:MOV DPTR,#KCODE3
FIND:RRC A
JNC MATCH
INC DPTR
DJNZ R0,FIND
MATCH:CLR A
MOVC A,@A+DPTR
ACALL DATAWRT
ACALL DELAY
RET
COMNWRT:MOV   P1,A
CLR    P2.0
CLR    P2.1
SETB P2.2
ACALL DELAY
CLR    P2.2
RET
DATAWRT:MOV   P1,A
SETB P2.0
CLR    P2.1
SETB P2.2
ACALL DELAY
CLR    P2.2
RET
DELAY:
MOV  R3,#150
HERE2:MOV     R4,#255
HERE:DJNZ R4,HERE
DJNZ R3,HERE2
RET
```

```
ORG 200H
MYCOM: DB 38H,0EH,01,06,80H,0
MYDATA: DB 'INPUT 1 ',0
MYDATA2: DB 'INPUT 2 ',0
MYDATA3: DB 'ADDITION ',0
MYDATA5: DB 'MUL ',0


ORG 300H
KCODE0: DB    '4','3','2','1' ;ROW 0
KCODE1: DB    '8','7','6','5' ;ROW 1
KCODE2: DB    '3','2','1','9' ;ROW 2
KCODE3: DB    '7','6','5','4' ;ROW 3
END
```