CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The smart car parking system had successfully been designed and developed. The control strategy for the traffic flow to the smart car parking system was designed using microcontroller. A demonstration has been done for four cars. DC motors are used to provide movements to transport the vehicle in the parking system. The main advantages are space optimization, cost effectiveness and security.

5.2 recommendations

After research is complete we recommended:

- ✓ Credit card payment option can be added for easy and fast payment.
- ✓ Online booking of parking slot in advance.
- ✓ Increase a demonstration for more than four cars.

REFERENCES

[1] Katsuhiko Ogata “modern control engineering” university of Minnesota

[2] Paul Horowitz and Winfield Hill” The Art of Electronics, second edition” Cambridge University Press, 1989.

[3] B.L.Theraja and A.K.

text book of Electrical Engineering ", S.chand.New Delhi, 2005.

ABENDEX A

The code:

```
$regfile = "m16def.dat"
$crystal = 8000000
Config Lcd = 16 * 2
Config Lcdpin = Pin , Db4 = Portb.4 , Db5 = Portb.5 , Db6 = Portb.6 , Db7 =
Portb.7 , E = Portb.2 , Rs = Portb.0
Config Pinb.1 = Input
Config Portd = Output
Config Kbd = Porta , Debounce = 20
Dim X As Byte
Dim Xx As Byte
Dim Xxx As Byte
Dim Xxxx As Byte
Dim A As Byte
Dim C As Byte
Dim Key As Byte
Dim Ii As Word
Dim I As Word
Dim T As Word
T = 10
Do
Bb:
Cls
 Locate 1 , 1
Lcd "Enter Password"
Key = Getkbd ()
```

```
A = Lookup (key , Eee)
If A < 16 Then
X = A
 Locate 2 , 1
Lcd X
Elseif A >= 16 Then
Goto Bb
End If
Waitms 100
Bbb:
Key = Getkbd()
A = Lookup(key , Eee)
If A < 16 Then
  Xx = A
 Locate 2 , 2
Lcd Xx
Elseif A >= 16 Then
Goto Bbb
End If
Waitms 100
Bbbb:
Key = Getkbd()
A = Lookup(key , Eee)
If A < 16 Then
  Xxx = A
Locate 2 , 3
Lcd Xxx
Elseif A >= 16 Then
Goto Bbbb
```

```
End If
Waitms 100
Bbbbb:
Key = Getkbd()
A = Lookup(key , Eee)
If A < 16 Then
  Xxxx = A
Locate 2 , 4
Lcd Xxxx
Elseif A >= 16 Then
Goto Bbbb
End If
Waitms 100
 Gosub M
 Loop
 M:
 Do
 If X = 1 And Xx = 2 And Xxx = 3 And Xxxx = 4 Then
 Gosub Mr
    Gosub S1
 End If
   If X = 1 And Xx = 2 And Xxx = 3 And Xxxx = 5 Then
     Gosub Mr
  Gosub Mmr
   Gosub Sw1
 End If
 If X = 1 And Xx = 2 And Xxx = 3 And Xxxx = 6 Then
 Gosub Mr
 For I = 1 To 2
```

```
 Gosub Mmr
 Next I
  Gosub Sw3
End If
 If X = 1 And Xx = 2 And Xxx = 3 And Xxxx = 7 Then
  Gosub Mr
 Gosub Mmr
  Gosub Sw4
End If
 If X = 4 And Xx = 3 And Xxx = 2 And Xxxx = 1 Then
 Gosub Mr
   Gosub S1
End If
  If X = 5 And Xx = 3 And Xxx = 2 And Xxxx = 1 Then
    Gosub Mr
Gosub Mml
   Gosub Sw1
End If
 If X = 6 And Xx = 3 And Xxx = 2 And Xxxx = 1 Then
   Gosub Mr
 Gosub Mml
  Gosub Mml
   Gosub Sw3
End If
 If X = 7 And Xx = 3 And Xxx = 2 And Xxxx = 1 Then
   Gosub Mr
  Gosub Mml
  Gosub Mml
  Gosub Mml
```

```
    Gosub Sw4
 End If
Waitms 30
Loop
Return
S1:
Do
If Pinb.1 = 0 Then
Gosub Ml
Gosub Bb
End If
Loop
Return
Sw1:
Do
If Pinb.1 = 0 Then
  Gosub Mmr
  Gosub Ml
  Gosub Bb
  End If
  Loop
Return
Sw3:
Do
If Pinb.1 = 0 Then
For I = 1 To 2
  Gosub Mmr
  Next I
  Gosub Ml
```

```
  Gosub Bb
End If
  Loop
Return
Sw4:
Do
If Pinb.1 = 0 Then
For I = 1 To 3
  Gosub Mmr
  Next I
  Gosub Ml
  Gosub Bb
  End If
  Loop
Return
Ml:
For I = 1 To 3
Portd.0 = 1
Portd.1 = 0
Portd.2 = 0
Portd.3 = 0
Waitms T
Portd.0 = 0
Portd.1 = 1
Portd.2 = 0
Portd.3 = 0
Waitms T
Portd.0 = 0
Portd.1 = 0Portd.2 = 1
```

ABENDEX B

Continue Code:

```
Portd.3 = 0
Waitms T
Portd.0 = 0
Portd.1 = 0
Portd.2 = 0
Portd.3 = 1
Waitms T
Next I
Return
Mr:
For I = 1 To 3
Portd.0 = 0
Portd.1 = 0
Portd.2 = 0
Portd.3 = 1
Waitms T
Portd.0 = 0
Portd.1 = 0
Portd.2 = 1
Portd.3 = 0
Waitms T
Portd.0 = 0
Portd.1 = 1
Portd.2 = 0
Portd.3 = 0
Waitms T
Portd.0 = 1
```

```
Portd.1 = 0
Portd.2 = 0
Portd.3 = 0
Waitms T
Next I
Return
Mml:
For Ii = 1 To 3
Portd.7 = 1
Portd.6 = 0
Portd.5 = 0
Portd.4 = 0
Waitms T
Portd.7 = 0
Portd.6 = 1
Portd.5 = 0
Portd.4 = 0
Waitms T
Portd.7 = 0
Portd.6 = 0
Portd.5 = 1
Portd.4 = 0
Waitms T
Portd.7 = 0
Portd.6 = 0
Portd.5 = 0
Portd.4 = 1
Waitms T
Next Ii
```

```
Return
Mmr:
For Ii = 1 To 3
Portd.7 = 0
Portd.6 = 0
Portd.5 = 0
Portd.4 = 1
Waitms T
Portd.7 = 0
Portd.6 = 0
Portd.5 = 1
Portd.4 = 0
Waitms T
Portd.7 = 0
Portd.6 = 1
Portd.5 = 0
Portd.4 = 0
Waitms T
Portd.7 = 1
Portd.6 = 0
Portd.5 = 0
Portd.4 = 0
Waitms T
Next Ii
Return
Eee:
Data 14 , 13 , 12 , 10 , 3 , 6 , 9 , 11 , 2 , 5 , 8 , 0 , 1 , 4 , 7 , 15
```