CODE:

```cpp
#include <SPI.h>
#include <MFRC522.h>
#include <OnewireKeypad.h>
#include <Servo.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 16, 2);

Servo servo;
int servoPos = 0;

#define sensorPin1 A2
#define sensorPin2 A3
#define buzzerPin 5

int senVal1 = 0;
int senVal2 = 0;

#define RST_PIN 9
#define SS_PIN 10

int card1Balance = 2000;
int card2Balance = 400;

#define num 7
char Data[num];
byte data_count = 0;

String num1, num2, card, card2;
int a, b;
char Key;

bool recharge = true;

MFRC522 mfrc522(SS_PIN, RST_PIN);

int state = 0;

char KEYS[] = {
```

```cpp
  '1', '2', '3', 'A',
  '4', '5', '6', 'B',
  '7', '8', '9', 'C',
  '*', '0', '#', 'D'
};


OnewireKeypad <Print, 16 > KP2(Serial, KEYS, 4, 4, A0, 4700, 1000);

void setup () {
 lcd.init();
  lcd.backlight();
  Serial.begin(9600);
  servo.attach(6);
  servo.write(90);

  pinMode(sensorPin1, INPUT);
  pinMode(sensorPin2, INPUT);
  pinMode(buzzerPin, OUTPUT);

  KP2.SetKeypadVoltage(5.0);

  SPI.begin();
  mfrc522.PCD_Init();

  lcd.setCursor(0, 0);
  lcd.print("Bicycle Renting");
  lcd.setCursor(0, 1);
  lcd.print("Sharing System");
  delay(3000);
  lcd.clear();
}
void loop()
{

  if (recharge == 0)
  {
    reCharge();
  }
```

```arduino
    else
    {
      lcd.setCursor(0, 0);
      lcd.print("   Welcome!!!");
      sensorRead();
      rfid();
      KeyPad();
      if (senVal1 == 0)
      {
        servoDown();
        lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("Card detected");
        delay(1000);
        lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("Put your card to");
        lcd.setCursor(0, 1);
        lcd.print("the reader......");
        delay(2000);
        lcd.clear();

      }
      else if (senVal2 == 0 && state == 1)
      {
        servoUp();
        lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("Have a safe");
        lcd.setCursor(0, 1);
        lcd.print("journey");
        delay(1000);
        lcd.clear();
        state = 0;
      }
    }
}

void servoDown()
{
```

```
  servo.attach(6);
  for (servoPos = 90; servoPos <= 180; servoPos += 1)
  {
    servo.write(servoPos);
    delay(5);
  }
}

void servoUp()
{
  servo.attach(6);
  for (servoPos = 180; servoPos >= 90; servoPos -= 1)
  {
    servo.write(servoPos);
    delay(5);
  }
}

void sensorRead()
{
  senVal1 = digitalRead(sensorPin1);
  senVal2 = digitalRead(sensorPin2);
}

void rfid()
{
  if ( ! mfrc522.PICC_IsNewCardPresent())
  {
    return;
  }
  if ( ! mfrc522.PICC_ReadCardSerial())
  {
    return;
  }

  String content = "";
  for (byte i = 0; i < mfrc522.uid.size; i++)
  {
    content.concat(String(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " "));
    content.concat(String(mfrc522.uid.uidByte[i], HEX));
```

```
  }
content.toUpperCase();
 if (content.substring(1) == "D3 A9 FD 14")
{
 if (card1Balance >= 500)
 {
  lcdPrint();
  card1Balance = card1Balance - 500;
  lcd.setCursor(9, 1);
  lcd.print(card1Balance);
  delay(2000);
  lcd.clear();
  state = 1;
 }
 else
 {
  card = content.substring(1);
  LcdPrint();
  lcd.setCursor(9, 1);
  lcd.print(card1Balance);
  lcd.print(" Tk");
  delay(2000);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Please Recharge");
  delay(1000);
  lcd.clear();
  state = 0;
 }
}
else if (content.substring(1) == "F4 C2 37 BB")
{
 if (card2Balance >= 500)
 {
  lcdPrint();
  card2Balance = card2Balance - 500;
  lcd.setCursor(9, 1);
  lcd.print(card2Balance);
  delay(2000);
  lcd.clear();
```

```
     state = 1;
    }
    else
    {
      card = content.substring(1);
      LcdPrint();
      lcd.setCursor(9, 1);
      lcd.print(card2Balance);
      lcd.print(" Tk");
      delay(2000);
      lcd.clear();
      lcd.setCursor(0, 0);
      lcd.print("Please Recharge");
      lcd.clear();
      delay(1000);
      state = 0;
    }
  }
  else  {
    digitalWrite(buzzerPin, HIGH);
    lcd.setCursor(0, 0);
    lcd.print("Invalid card");
    lcd.setCursor(0, 1);
    lcd.print("Access denied");
    delay(1500);
    lcd.clear();
    digitalWrite(buzzerPin, LOW);
  }
}

void KeyPad()
{
  byte KState = KP2.Key_State();

  if (KState == PRESSED)
  {
    Key = KP2.Getkey();
    if (Key)
    {
      if (Key == 'A')
```

```
        {
          lcd.clear();
          lcd.setCursor(0, 0);
          lcd.print("Recharging Mode.");
          lcd.setCursor(0, 1);
          lcd.print("................");
          delay(1500);
          lcd.clear();
          recharge = 0;
        }
      }
    }
}

void clearData()
{
  while (data_count != 0)
  {
    Data[data_count--] = 0;
  }
  return;
}

void reCharge()
{

  lcd.setCursor(0, 0);
  lcd.print ("Enter the amount");

  byte KState = KP2.Key_State();

  if (KState == PRESSED)
  {
    Key = KP2.Getkey();
    if (Key)
    {
      if (Key == 'D')
      {
        if (card == "D3 A9 FD 14")
        {
```

```
          num1 = Data;
          card1Balance = num1.toInt() + card1Balance;
          lcd.clear();
          lcd.setCursor(0, 0);
          lcd.print("Your current");
          lcd.setCursor(0, 1);
          lcd.print("balance: ");
          lcd.setCursor(9, 1);
          lcd.print (card1Balance);
          lcd.print(" Tk");
          delay(3000);
          clearData();
          lcd.clear();
          recharge = 1;
        }
        else if (card == "F4 C2 37 BB")
        {
          num2 = Data;
          card2Balance = num2.toInt() + card2Balance;
          lcd.clear();
          lcd.setCursor(0, 0);
          lcd.print("Your current");
          lcd.setCursor(0, 1);
          lcd.print("balance: ");
          lcd.setCursor(9, 1);
          lcd.print (card2Balance);
          lcd.print(" Tk");
          delay(3000);
          clearData();
          lcd.clear();
          recharge = 1;
        }
      }
      else
      {
        Data[data_count] = Key;
        lcd.setCursor(data_count, 1);
        lcd.print(Data[data_count]);
        data_count++;
      }
```

```
    }
   }
}
void lcdPrint()
{
  digitalWrite(buzzerPin, HIGH);
  delay(200);
  digitalWrite(buzzerPin, LOW);
  delay(100);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("  Successfully");
  lcd.setCursor(0, 1);
  lcd.print(" paid your bill");
  delay(1500);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Your Remaining");
  lcd.setCursor(0, 1);
  lcd.print("balance: ");
}

void LcdPrint()
{
  digitalWrite(buzzerPin, HIGH);
  delay(200);
  digitalWrite(buzzerPin, LOW);
  delay(100);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("  Your balance");
  lcd.setCursor(0, 1);
  lcd.print(" is insufficent");
  delay(1500);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Your Account ");
  lcd.setCursor(0, 1);
  lcd.print("balance: ");
```

}