Green University of Bangladesh
Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering
Semester: (Spring, 2022), B.Sc. in CSE (Day)

Course Title: Data Structure Lab
Course Code: CSE 106 Section: DD

Lab Project Name: Online Electric Meter System

Student Details

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Submission Date : 29/12/2022
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[For Teachers use only: Don't Write Anything inside this box]

Lab Project Status

Marks: …… **Signature: .....**

Comments: ..... **Date: .....**

Chapter 1

Introduction

1.1 Introduction

It is compared to the worst perspective in city life. As an overpopulated country, our demand is higher than supply capacity. As a result, we must face it in a day-to-day life. Unethical use of electricity, wrong connection and wastage is another reason. For this solving problem I proposed a project which name is online Electric System and I think the project will remain the problem. The purpose of this System Analysis and Design document is to build an Online Electric Meter System Site to help people and Electric Company for saving their time and minimize their hard work and user also can extra facilities. The project is developed by Data structure and C programing Language. It is a middle-class Language which were developed in 1972 by Dennis Ritchie at Bell Laboratories

1.2 Design Goals

- **User can see their past bill history, unit cost history**
- **Admin can save their time and cost.**
- **Do not waste Electricity**

Chapter 2

Implementation of the Project

Program Interface:

When the Electric Meter project is executed, it works by following the steps described below:

1. **The project display and we have 2 parts**
   - **Admin penal**
   - **User penal**

2. **For each penal we must be entered a password.**

3. **The admin penal:**
   1. **Add user bill**
   2. **Add meter and Disconnect meter**
   3. **Exis**

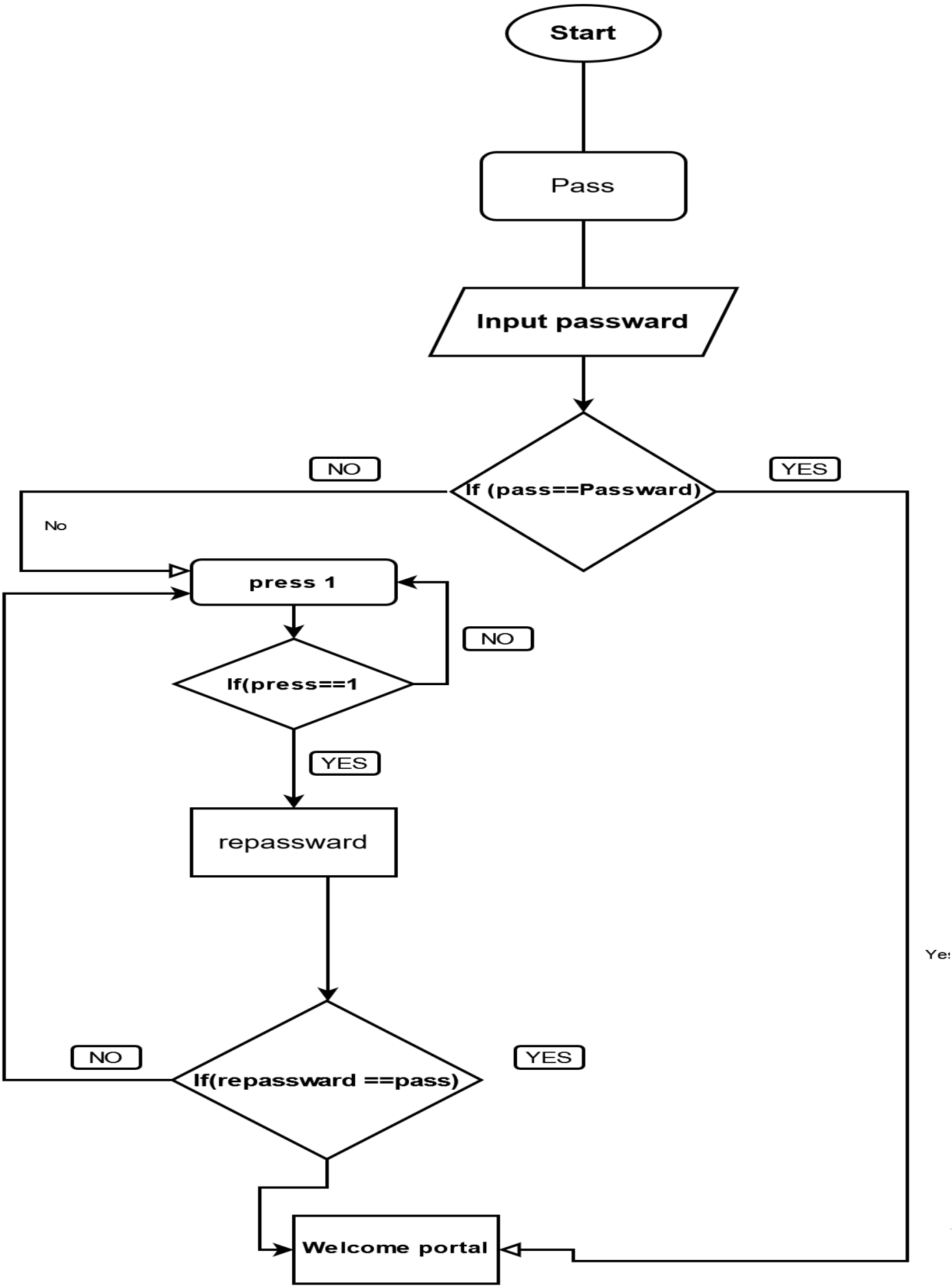
4. **The user penal**
   1. **Add user**
   2. **See bill history**
   3. **See highest bill**
   4. **Exis**

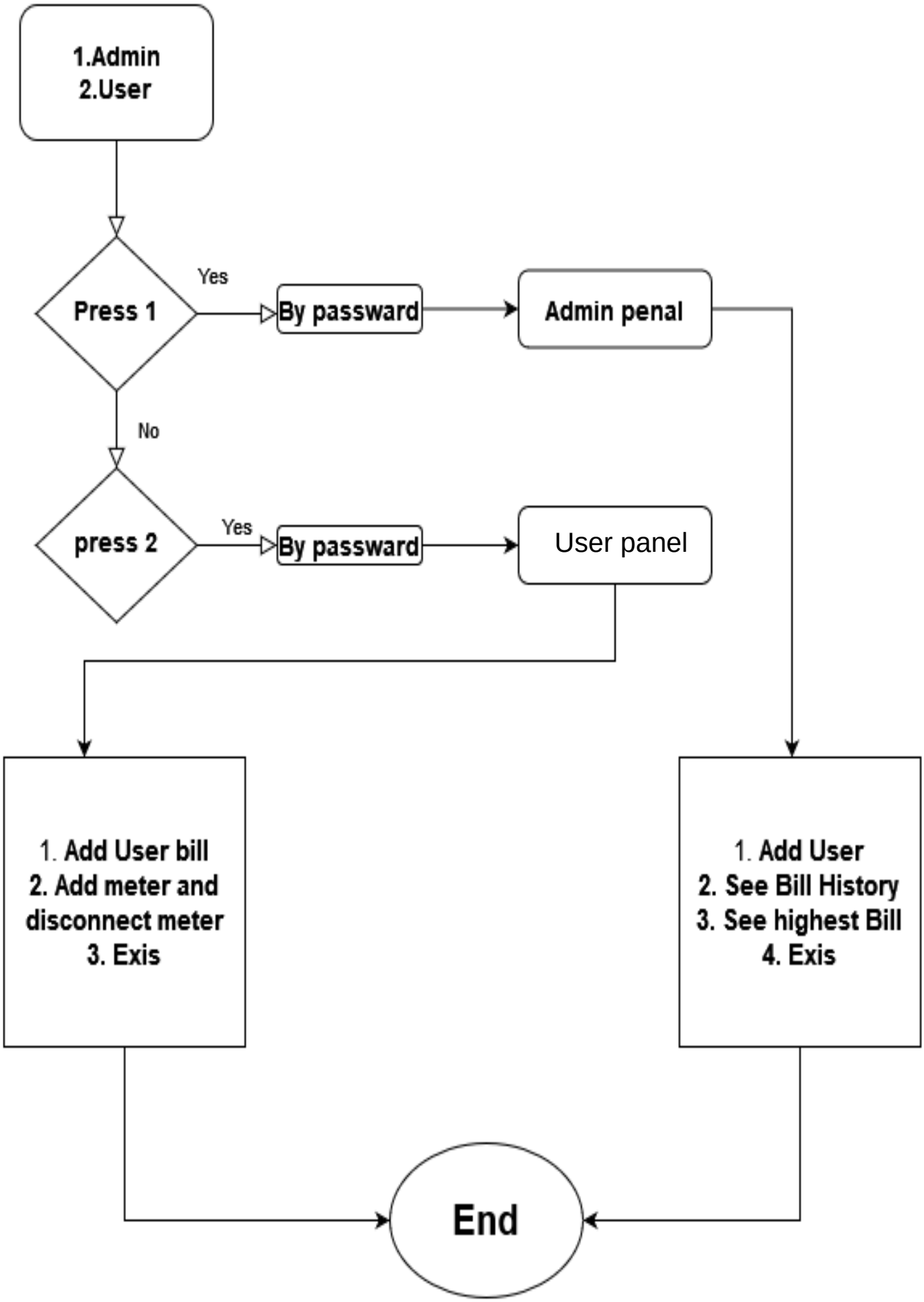
Program Execution:

The C source code of this project is very simple I used many users defined functions. They are listed below along with the tasks they perform

- **void Add_meter() – to input and store in file meter number, name, date**
- **void add_bill()- to input and store in file meter number , amount, date**
- **void exit() – to go main menu**
- **void Add_meter_delete_meter() – for display meter and Disconnect meter**
- **void Highest Bill() – for display Highest bill**
- **void see bill_history- for display bill history**
- **void repassward()- for input re-password**
- **void repit ()-when inter wrong password its input wrong pass and prss 1**

Flow chart:


Start
Pass
Input passward
If (pass==Passward)
NO
YES
No
press 1
NO
If(press==1
YES
repassward
NO
If(repassward ==pass)
YES
Welcome portal


1.Admin
2.User
Press 1
Yes
By passward
Admin penal
No
press 2
Yes
By passward
User panel
1. Add User bill
2. Add meter and disconnect meter
3. Exis
1. Add User
2. See Bill History
3. See highest Bill
4. Exis
End

Algorithm:

Step1: start.

Step2: Go to home menu

Step3: Write: 1. Admin penal 2. User penal

Step4: if(press ==1)

Write: Enter password

Step5: If (strcomp (pass , demopass) == 0)

Go to Admin penal

Write: 1. Add bill

2. Add meter and Disconnect meter

3. Exis

Step6: choice 1 and add bill and press 1 go to step 5

Step7: choice 2 and add meter and press 1 go to step 5

Step8: choice 3 and go to step 3

Step9: If(press==2)

Write: Enter Password

Step10: If (strcomp (pass , demopass) == 0)

Go to User penal

Write: 1. Add user

2. See bill history

3. See highest Bill

4. Exis

Step11: choice 1 and add a user and press 1 go to step 10

Step12: choice 2 and see bill history and press 1 go to step 10

Step13: choice 3 and see highest bill and press 1 go to step 10

Step14: choice 4 and go to step 3

Step 15: End

Chapter 3

Performance Evaluation

Source code

```
#include<stdio.h>

int i,j,k=0,count=0;
float bill[100];
int main_exit;
struct {
    char name[60];
    long int meter_No;
    float amount;
    int day,month,year;
    }add,fee;
struct meter {
  int key;
  struct meter *left, *right;
};


struct meter *newmeter(int item) {
  struct meter *temp = (struct meter *)malloc(sizeof(struct meter));
  temp->key = item;
  temp->left = temp->right = NULL;
  return temp;
}


void inorder(struct meter *rootmeter) {
  if (rootmeter != NULL) {

    inorder(rootmeter->left);


    printf("%d --> ", rootmeter->key);


    inorder(rootmeter->right);
  }


}
```

```
struct meter *insert(struct meter *meter, int key) {

  if (meter == NULL)
    return newmeter(key);


  if (key < meter->key)
    meter->left = insert(meter->left, key);
  else
    meter->right = insert(meter->right, key);

  return meter;
}


struct meter *minValuemeter(struct meter *meter) {
  struct meter *current = meter;


  while (current && current->left != NULL)
    current = current->left;

  return current;
}


struct meter *deletemeter(struct meter *rootmeter, int key) {

  if (rootmeter == NULL)
    return rootmeter;


  if (key < rootmeter->key)
    rootmeter->left = deletemeter(rootmeter->left, key);
  else if (key > rootmeter->key)
    rootmeter->right = deletemeter(rootmeter->right, key);

  else {

    if (rootmeter->left == NULL) {
      struct meter *temp = rootmeter->right;
      free(rootmeter);
      return temp;
    } else if (rootmeter->right == NULL) {
      struct meter *temp = rootmeter->left;
      free(rootmeter);
      return temp;
    }
    struct meter *temp = minValuemeter(rootmeter->right);
    rootmeter->key = temp->key;
    rootmeter->right = deletemeter(rootmeter->right, temp->key);
  }
  return rootmeter;
}
```

```
void Add_meter_Delete_meter() {
  struct meter *rootmeter = NULL;

  int ins;
  again:
  printf("For Adding a meter:");
  scanf("%d",&ins);
  printf("\nAfter Add meter: \n");
  rootmeter = insert(rootmeter, ins);
  inorder(rootmeter);
  int select;
  printf("\n\n 1. Add another meter\n\n 2. Disconnect meter ");
  printf("\n press 1 or 2 :");
  scanf("%d",&select);
  if(select==1)
     goto again;
  int value;
  printf("\n Disconnect a meter: ");
  scanf("%d",&value);
  printf("\nAfter deleting %d\n",value);

  rootmeter = deletemeter(rootmeter, value);
  printf("Inorder traversal: ");
  inorder(rootmeter);
}
void hight_bill()
{
    float hig;
    for(int h=0;h<k;h++)
    {
        hig=bill[0];
       if(bill[k]>hig)
       {
         hig=bill[k];
       }
    }
    printf("\n\n\t\tHight Bill : %0.2f",hig);
}
void Add_user()
{
    FILE *user;
    user=fopen("user f admin record.text","a+");
    account_no:
    system("cls");
    printf("\n\n\t\t\t\xB2\xB2\xB2\ ADD User  \xB2\xB2\xB2\xB2");

    printf("\n\n\n\t\t Meter ID number:");
    scanf("%ld",&add.meter_No);
    printf("\n\t\t User name:");
    scanf("%s",&add.name);
    printf("\n\t\t Today's date(mm/dd/yyyy):");
    scanf("%d/%d/%d",&add.month,&add.day,&add.year);


       fprintf(user,"%ld    %s    %d/%d/%d \n",add.meter_No,add.name,add.month,add.day,add.year);
```

```
   fclose(user);
   printf("\nAccount created successfully!");
   goinvalid:
   printf("\n\n\n\t\t press 1 and go to the main menu:");
   scanf("%d",&main_exit);
   system("cls");
   if (main_exit==1)
      menu2();
   else
      {
         printf("\nInvalid!\a");
         goto goinvalid;
      }
}
void Add_bill()

{
   count++;
   FILE *user;

   user=fopen("user record.text","a+");
   //account_no:
   system("cls");
   printf("\n\n\t\t\t\xB2\xB2\xB2  Bill pay  \xB2\xB2\xB2\xB2");

   printf("\n\n\n\t\t Meter ID number:");
   scanf("%ld",&fee.meter_No);
   printf("\n\t\t Amount:");

   scanf("%f",&fee.amount);
   bill[k]=fee.amount;
   k++;
   printf("\n\t\t Today's date(mm/dd/yyyy):");
   scanf("%d/%d/%d",&fee.month,&fee.day,&fee.year);


      fprintf(user,"%ld    %0.2f       %d/%d/%d
\n",fee.meter_No,fee.amount,fee.month,fee.day,fee.year);


   fclose(user);
   printf("\n\t\t successfully Added!!");
   invalid:
   printf("\n\n\n\t\t press 1 and go to the main menu:");
   scanf("%d",&main_exit);
   system("cls");
   if (main_exit==1)
      menu1();
   else
      {
         printf("\nInvalid!\n");
         goto invalid;
      }
}
```

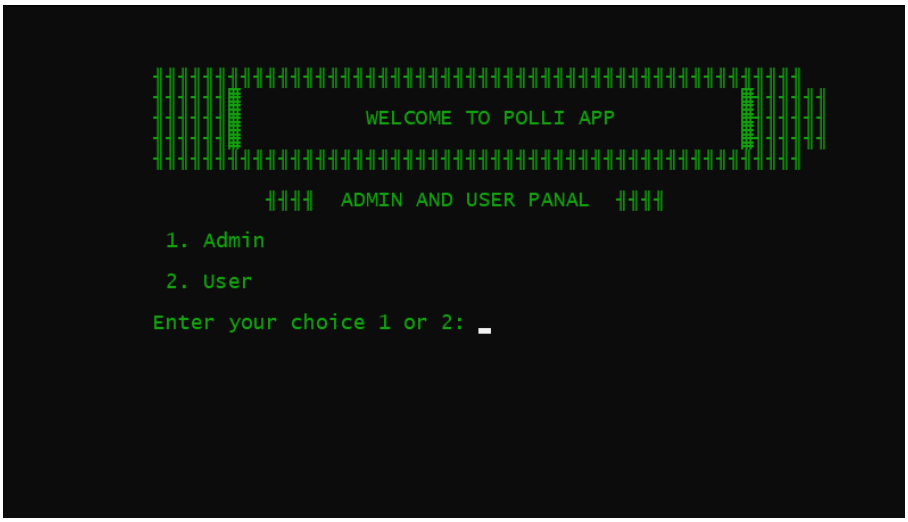
```
void view_list()
{
   printf("%d",count);
   FILE *user;
   user=fopen("user record.text","r");
  system("cls");
   printf("\nMeter ID    \tAmount\t\t\tDate\n");
  for(int i=0;i<count;i++)
   {
       while(fscanf(user,"%ld    %0.2f       %d/%d/%d
",&fee.meter_No,&fee.amount,&fee.month,&fee.day,&fee.year)!=feof(user))
      {
         printf("\n%ld     \t%0.2f    \t\t%d/%d/%d \n",fee.meter_No,fee.amount,fee.month,fee.day,fee.year);

         if(count-1==i)
          break;
      }
   }
   fclose(user);
   toinvalid:
    printf("\n\nPress 1 and go to the main menu:");
      scanf("%d",&main_exit);
      system("cls");
      if (main_exit==1)
         menu2();
      else
      {
         printf("\nInvalid!\a");
         goto toinvalid;
      }
}
void menu1()
{
   int select;
   system("color 2");

printf("\n\n\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\x
B6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\x
B6\xB6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB2                              \xB2\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB2         WELCOME TO ADMIN PANEL
\xB2\xB6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB2                              \xB2\xB6\xB6\xB6\xB6\xB6\xB6");

printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\
xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\
xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\n\t\t\t\t \xB6\xB6\xB6\xB6  Admin menu  \xB6\xB6\xB6\xB6\n\n\t\t 1. Add user bill\n\t\t 2. Add
meter and Disconnect meter\n\t\t 3. Exit");
   printf("\n\n\t\tEnter your choice 1,2 or 3: ");
   scanf("%d",&select);
   system("cls");
   switch(select)
   {
      case 1:Add_bill();
      break;
      case 2:Add_meter_Delete_meter();
      break;
      case 3:main();
   }
}
```

```
void menu2()
{
   int select;
   system("color 2");

printf("\n\n\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB2                                    \xB2\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB2         WELCOME TO USER PANEL                    \xB2\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB2                                    \xB2\xB6\xB6\xB6\xB6\xB6\xB6");

printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\n\t\t\t\t \xB6\xB6\xB6\xB6  User Menu  \xB6\xB6\xB6\xB6\n\n\t\t 1. Add User \n\t\t 2. See bill history\n\t\t 3. See hight Bill\n\t\t 4. Exit");
   printf("\n\n\t\tEnter your choice 1,2,3 or 4: ");
  scanf("%d",&select);
   system("cls");
   switch(select)
   {
      case 1:Add_user();
      break;
      case 2:view_list();
      break;
      case 3:hight_bill();
      break;
      case 4:main();
   }
}
void repassward()
{
   char  passward[10],demopass[]="Pass25@$";
   int n,i,pass;
   printf("\n\t\tPlease login by Current Passward: ");
   scanf("%s",&passward);
   pass=strcmp(passward,demopass);
   if(pass==0)
    printf("\n\t\tSuccessfully login !!");
      system("cls");
      main();
    }
   else
   {
     printf("\n\t\tWorng Passward !!!");
     printf("\n\t\tPlease press 1 and Input current passward : ");
      scanf("%d",&n);
      if (n==1)
      {
         system("cls");
         repassward();
      }
      else
      {
         system("cls");
         repit();
      }
   }
}
```

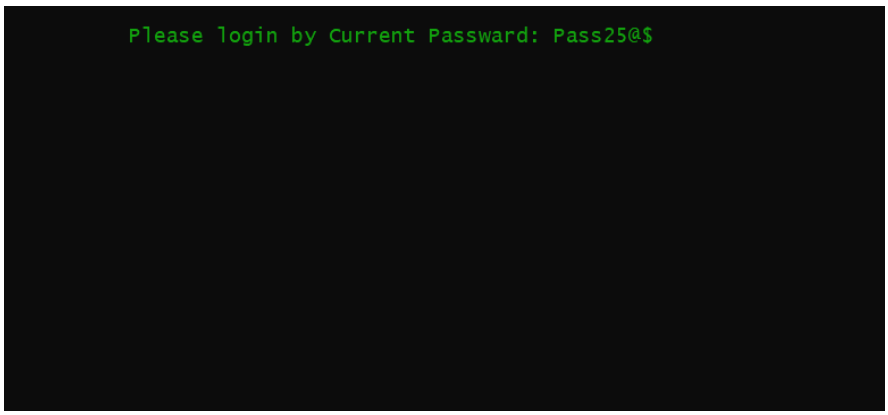
```
void repit()
{
   int n;
   printf("\n\t\tPlease press 1: ");
   scanf("%d",&n);
   if (n==1)
   {
      system("cls");
      repassward();
   }
   else
   {
      printf("\n\t\tPlease press 1 and Input current passward : ");
      scanf("%d",&n);
      if (n==1)
      {
         system("cls");
         repassward();
      }
      else
      {
         system("cls");
         repit();
      }
   }
}
void demo1()
{
   char  passward[10],demopass[]="Pass25@$";
   int n,i,pass;
   printf("\n\t\tPlease login by Current Passward: ");
   scanf("%s",&passward);
   pass=strcmp(passward,demopass);
   if(pass==0)
   {
     printf("\n\t\tLoading ");
      for(i=0; i<6; i++)
      {
         printf(".");
      }
     printf("\n\t\tSuccessfully login !!");
      system("cls");
      menu1();
    }
   else
   {
      printf("\n\t\tWorng Passward !!!");
      printf("\n\t\tPlease press 1 and Input current passward : ");
      scanf("%d",&n);
      if (n==1)
      {
         system("cls");
         repassward();
      }
      else
      {
         system("cls");
         repit();
      }
   }
}
```

```
void demo2()
{
   char  passward[10],demopass[]="Pass25@$";
   int n,i,pass;
   printf("\n\t\tPlease login by Current Passward: ");
   scanf("%s",&passward);
   pass=strcmp(passward,demopass);
   if(pass==0)
   {
    printf("\n\t\tLoading ");
      for(i=0; i<6; i++)
      { printf(".");
      }
     printf("\n\t\tSuccessfully login !!");
      system("cls");
      menu2();
       }
   else
   {
      printf("\n\t\tWorng Passward !!!");
      printf("\n\t\tPlease press 1 and Input current passward : ");
      scanf("%d",&n);
      if (n==1)
      {
         system("cls");
         repassward();
      }
      else
      {
         system("cls");
         repit();
      }
   }
}
int main()
{
   int select;
   system("color 2");

printf("\n\n\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB
6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\
xB6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB2                              \xB2\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB2        WELCOME TO POLLI APP
\xB2\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB2                              \xB2\xB6\xB6\xB6\xB6\xB6\xB6");

printf("\n\t\t\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\x
B6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB6\xB
6\xB6\xB6\xB6\xB6\xB6\xB6");
   printf("\n\n\t\t\t \xB6\xB6\xB6\xB6  ADMIN AND USER PANAL  \xB6\xB6\xB6\xB6\n\n\t\t 1. Admin\n\n\t\t
2. User");
 printf("\n\n\t\tEnter your choice 1 or 2: ");
   scanf("%d",&select);
   system("cls");
   switch(select)
   {
      case 1:demo1();
      break;
      case 2:demo2();
    }
getch();
}
```

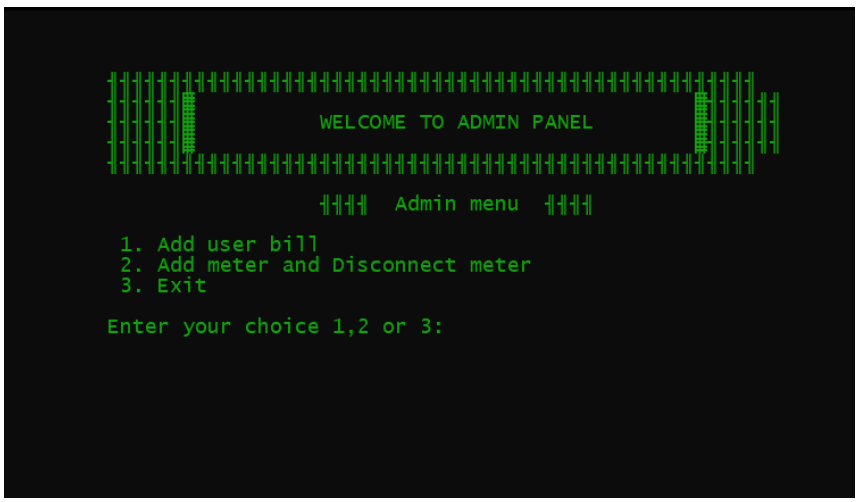
Results and Discussion



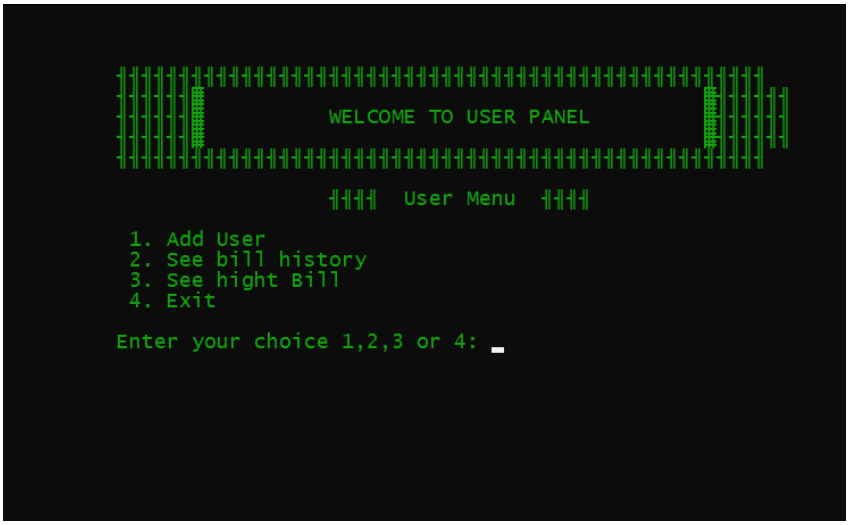
First, we see the Display and choice 1 or 2



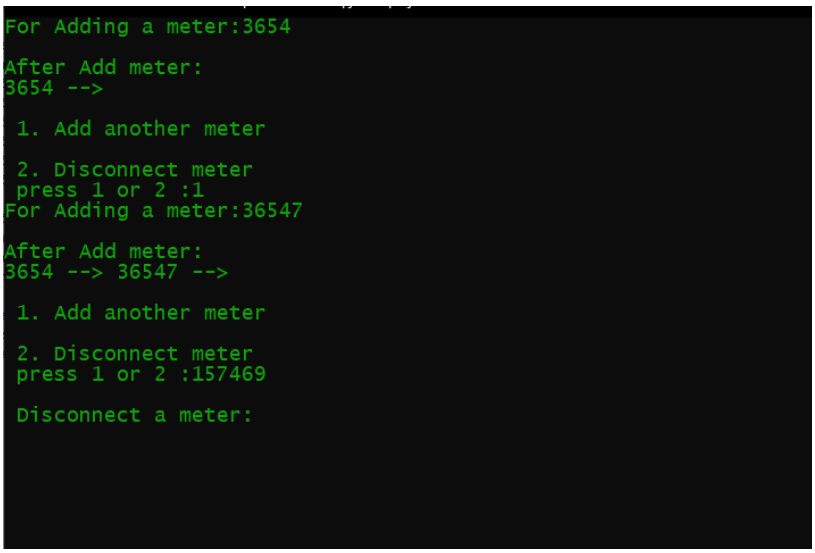
Then we must logging two-way admin or user



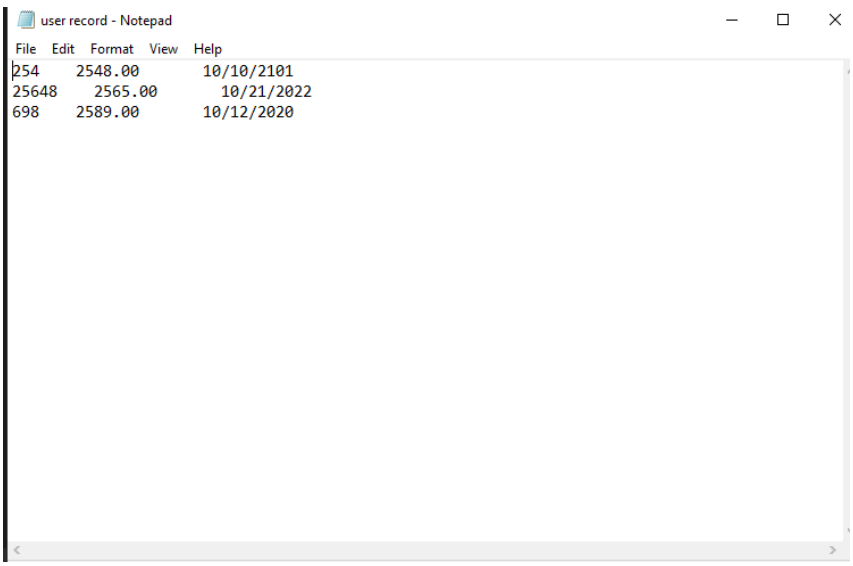
If we choice 1 then we get the display



If we choice 2 then we get, then we get the display



If we choice admin and choice 2 then we see Addition and deletion tree



We can also see data in file

Chapter 4

Scope of Future Work

The Application will be able to perform the following operations:

1. **In future This application will be big project for Electric system.**
2. **By this apps people can paid their bill without any fee**
3. **User can see their past bill history just one app**
4. **User will be able to pay bill, see their past payments**

References

- **Bangla coding tutorial -YouTube channel**
- **Javapoint.com-website**
- **Programized.com- website**
- **Pythontutorial.com- website**

Conclusion

In conclusion, we hope that most people who are using the prepaid electricity meter will be satisfied with the using system as they will be more alert and well informed of their electric usage. thus, encourage them to be more preserved in their energy as well as financial practices. They would also encourage other people to adopt the prepaid electric meter into their homes as it may prevent outstanding debts to the government.