```c
/*
Name of the Student : Priya V
Department : EIE
Year :3rd year
Title: Electricity Billing System
*/

#include <stdio.h>
#include <ctype.h>
#include <string.h>
#include <stdlib.h>

#define SIZE 100
#define MAX 100
#define cls clrscr

struct bills
{
    char code[5];
    char name[35];
    int present;
    int previous;
    float bill;
}bills_var[SIZE];

void save(void),load(void),list(void),bo(int x1,int y1,int x2,int y2);
void lin(int x1,int y1,int x2);
void lin2(int x1,int y1,int x2);
void ver(int x1,int y1,int y2);
void bo2(int x1,int y1,int x2,int y2);
int ctr,x=7,y=9;

main()
{
    char name1[10][35],ans;
    char name11[35],code11[5];
    char code1[10][5];
    float bill1,grandtot=0;
    int present1,previous1;
    int rec,kwh;


    float gen,dist,vat,vdist,voth,oth,uni;

    register int i=0;
    int choice=0,num=0,s=0,test,guard=0;
    int j,k;
    char sik[10];
    char pass[5],user[6];
/* start of the splash*/
    clrscr();
    textcolor(9);
    gotoxy(30,7);printf("Electricity Billing System");
    bo(10,5,75,23);
    lin(10,18,75);
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gotoxy(38,18);printf(" LOADING ");
lin(10,9,75);
for (j=1;j<=3;j++)
{
    if(j==1)
    {gotoxy(32,21);printf("Checking files...");}
    if(j==2)
    {gotoxy(32,21);printf("Checking folders...");}
    if(j==3)
    {gotoxy(32,21);printf("Loading System...");}
    for (k=12;k<74;k++)
    {
        gotoxy(k,20);printf("o");
    }
    for (k=12;k<74;k++)
    {
        gotoxy(k,20);putch(219);
        delay(9000);
    }

}
/*end of the splash*/
/*start of user name & password*/
    do
    {
        cls();
        gotoxy(30,7);printf("Electricity Billing System");
        bo(20,5,65,23);
        lin(20,9,65);
        bo(30,13,55,16);
        gotoxy(32,14);printf("User name: _____");
        gotoxy(32,15);printf("Password: _____");
        lin(20,19,65);
        gotoxy(35,19);printf(" Notification ");
        gotoxy(42,14);gets(user);
        gotoxy(42,15);gets(pass);
        gotoxy(42,15);printf("*****");
        if(strcmp(user,"123")!=0 && strcmp(pass,"123")!=0)
        {gotoxy(22,21);printf("The user name and password did not match!");getch();}
    }while(strcmp(user,"123")!=0 && strcmp(pass,"123")!=0);
    gotoxy(35,20);printf("Loading to Menu...");
    for (k=22;k<64;k++)
    {
        gotoxy(k,21);printf("o");
    }
    for (k=22;k<64;k++)
    {
        gotoxy(k,21);putch(219);
        delay(5000);
    }
/*end of user name & password*/
    ctr=1;
    load();
    guard=ctr;
    do
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{
    clrscr();
    test=0;
    textcolor(9);
    bo(25,3,55,5);
    bo(20,6,60,24);
    bo(38,9,58,17);
    gotoxy(27,4);printf("Electricity Billing System");
    gotoxy(34,6);
    printf(" MAIN MENU ");
    gotoxy(22,8);
    printf("[1] Add");
    gotoxy(22,10);
    printf("[2] Edit  ");
    gotoxy(22,12);
    printf("[3] Delete");
    gotoxy(22,14);
    printf("[4] View One");
    gotoxy(22,16);
    printf("[5] View All");
    gotoxy(22,18);printf("[6] Exit ");
    lin(20,20,60);
    gotoxy(22,22);
    printf("Choose an option(1,2,3,4,5,6): ");
    scanf("%d",&choice);
    switch(choice)
    {
    case 1:
    {
        num=i;
        guard++;
        clrscr();
        bo(25,3,55,5);
        bo(18,6,62,24);
        bo2(20,7,60,23);
        lin2(20,19,60);
        gotoxy(26,4);printf("Electricity Billing System");
        gotoxy(22,7);printf(" Add Record ");

        gotoxy(23,9);printf("Code:");
        gotoxy(23,11);printf("Customer's Name:");
        gotoxy(23,13);printf("Present Reading:");
        gotoxy(23,15);printf("Previous Reading:");
        gotoxy(37,19);printf(" NOTE ");
        gotoxy(25,21);printf("Use underscore for spaces...");
        gotoxy(29,9);scanf("%s",&code11);
        strcpy(code1[i],code11);
        strcpy(bills_var[i].code,code1[i]);

        gotoxy(40,11); scanf("%s",&name11);
        strcpy(name1[i],name11);
        strcpy(bills_var[i].name,name1[i]);

        gotoxy(40,13);scanf("%d",&present1);
        bills_var[i].present=present1;
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        gotoxy(41,15);scanf("%d",&previous1);
        bills_var[i].previous=previous1;

        gotoxy(25,21);printf("Press any key to continue...");
        getch();
        /* formula for the billing system */
        kwh=present1-previous1;
        gen=6.4545*kwh;
        dist=(1.857*kwh)+5;
        vat=0.5198*kwh;
        oth=-0.4441*kwh;
        vdist=dist*.12;
        voth=oth*.12;
        uni=0.0398*kwh;
        bill1=gen+dist+vat+oth+vdist+voth+uni;

        bills_var[i].bill=bill1;
        i=i+1;
        break;
}
case 2:
{
    test=0;
    clrscr();
    bo(25,3,55,5);     /*box 4 system name*/
    bo(5,6,75,24);     /*2 lined box*/
    bo2(7,7,73,23);    /*1 lined box*/
    lin2(7,21,73);
    bo2(32,7,46,9); /*box 4 code*/
    ver(39,9,21);
    gotoxy(34,8);printf("CODE: ");
    gotoxy(26,4);printf("Electricty Billing System");
    gotoxy(33,6);printf(" Edit Record ");
    gotoxy(15,7);printf(" CURRENT ");
    gotoxy(55,7);printf(" UPDATED ");
    gotoxy(25,5);gotoxy(40,8);scanf("%s",&sik);
    gotoxy(18,22);printf("NOTE: You may use underscore for spacing...");
    for(s=0;s<=num||s<=ctr;s++)
    {
        if(!strcmp(bills_var[s].code,sik))
        {
        test=1;

        gotoxy(9,11);
        printf("Customer's Name: ");puts(bills_var[s].name);
        gotoxy(9,13);
        printf("Present Reading:%d",bills_var[s].present);
        gotoxy(9,15);
        printf("Previous Reading:%d",bills_var[s].previous);
        gotoxy(9,17);
        printf("Total Bill:%.2f",bills_var[s].bill);
        getch();

        gotoxy(41,11); printf("Customer's Name: ");
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        gotoxy(41,13); printf("Present Reading: ");
        gotoxy(41,15); printf("Previous Reading: ");
        gotoxy(41,17); printf("Total Bill: ");

        gotoxy(58,11);scanf("%s",&name1[s]);
        strcpy(bills_var[s].name,name1[s]);

        gotoxy(58,13);scanf("%d",&present1);
        bills_var[s].present=present1;

        gotoxy(59,15);scanf("%d",&previous1);
        bills_var[s].previous=previous1;

        /* formula for the billing system */
        kwh=present1-previous1;
        gen=6.4545*kwh;
        dist=(1.857*kwh)+5;
        vat=0.5198*kwh;
        oth=-0.4441*kwh;
        vdist=dist*.12;
        voth=oth*.12;
        uni=0.0398*kwh;
        bill1=gen+dist+vat+oth+vdist+voth+uni;

        bills_var[s].bill=bill1;

        gotoxy(41,17); printf("Total Bill: %.2f",bills_var[s].bill);
        getch();
        break;
        }
    }
    if(test!=1)
    {
        gotoxy(18,22);printf("NOTE: The customer code %s is not in the list ...",sik);
        getch();
    }
    break;
}
case 3:
{
    clrscr();
        bo(25,3,55,5);
    bo(18,6,62,24);
    bo2(20,7,60,23);
    lin2(20,19,60);
    gotoxy(26,4);printf("Electricity Billing System");
    gotoxy(22,7);printf(" Delete Record ");
    gotoxy(23,21);printf("Enter Customer's Code: ");
    scanf("%s",&sik);
    for(s=0;s<=i||s<=ctr;s++)
    {
        if(!strcmp(bills_var[s].code,sik))
        {
        test=1;
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        gotoxy(23,9);
        printf("Customer's Name: ");puts(bills_var[s].name);
        gotoxy(23,11);
        printf("Present Reading: %d",bills_var[s].present);
        gotoxy(23,13);
        printf("Previous Reading: %d",bills_var[s].previous);
        gotoxy(23,15);
        printf("Total Bill: %.2f",bills_var[s].bill);
        gotoxy(23,21);
        printf("Delete this record?(y/n): ");
        scanf("%s",&ans);

        if(ans=='n')
        {
             break;
        }
        if(ans=='y')
        {
           for(s=0;s<=num||s<=ctr;s++)
           {
              if(!strcmp(bills_var[s].code,sik))
              {
                 test=1;

                 bills_var[s].code[0]='\0';
                 bills_var[s].name[0]='\0';
                 bills_var[s].present='\0';
                 bills_var[s].previous='\0';
                 bills_var[s].bill='\0';
                 guard=guard-1;
              }
           }

           gotoxy(23,21);
           printf("NOTE: Deleted!!!!                    ");

           getch();
           break;
        }
        }
     }
     if(test !=1&& ans=='y');
     {
        gotoxy(21,21);printf("The customer code %s is not in the list.",sik);
        getch();
     }
break;
}
case 4:
{
     test=0;
     clrscr();
          bo(25,3,55,5);
     bo(18,6,62,24);
     bo2(20,7,60,23);
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lin2(20,19,60);
gotoxy(26,4);printf("Electricity Billing System");
gotoxy(22,7);printf(" View Record ");
gotoxy(23,21);printf("Customer Code: ");
scanf("%s",&sik);

for (s=0;s<=num || s<=ctr;s++)
{
    if(!strcmp(bills_var[s].code,sik))
    {
    test =1;
    bo2(34,8,47,10);
    gotoxy(36,9);printf("CODE: %s",bills_var[s].code);
    gotoxy(23,11);
    printf("Customer's Name:%s",bills_var[s].name);
    gotoxy(23,13);
    printf("Present Reading:%d",bills_var[s].present);
    gotoxy(23,15);
    printf("Previous Reading:%d",bills_var[s].previous);
    gotoxy(23,17);
    printf("Total Bill:%.2f",bills_var[s].bill);
    gotoxy(33,19);
    printf(" Notification ");
    gotoxy(23,21);
    printf("Press any key to continue...");
    getch();
    break;
    }
}
if(test !=1)
{
    printf("\nThe customer code %s is not in the list.",sik);
    getch();
}
break;
}
case 5:
{
    grandtot =0;
    if(guard!=0)
    {
        y=9;
        clrscr();
        bo(25,1,55,3);
        bo(2,4,78,24);
        bo2(4,5,77,23);
        gotoxy(26,2);printf("Electricity Billing System");
        gotoxy(7,5);printf(" View Records ");
        gotoxy(7,7);
        printf("Code");
        gotoxy(15,7);
        printf("Name");
        gotoxy(35,7);
        printf("Present ");
        gotoxy(48,7);
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            printf("Previous");
            gotoxy(64,7);
            printf("Total Bill");
            for(i=0;i<=num||i<=ctr;i++)
            {
            if(bills_var[i].code[0]!='\0')
            {
                gotoxy(x,y);
                printf("%s",bills_var[i].code);
                gotoxy(x+8,y);
                printf("%s",bills_var[i].name);
                gotoxy(x+28,y);
                printf("%d",bills_var[i].present);
                gotoxy(x+41,y);
                printf("%d",bills_var[i].previous);
                gotoxy(x+57,y);
                printf("%.2f",bills_var[i].bill);
                y=y+1;

                /*compute grand total amount */
                grandtot=grandtot+bills_var[i].bill;
            }
            }
            /*display grand total amount */
            gotoxy(55,20);
            printf("Grand Total:%.2f",grandtot);
            getch();
            break;
        }
        else
        {
            clrscr();
            gotoxy(25,5);
            printf("No record in the Structure!");
            gotoxy(25,7);
            printf("press any key....");
            getch();
            break;
        }
    }
    case 6:
    {
        save();
            cls();
    gotoxy(31,7);printf("Electricity Billing System");
    bo(20,5,65,23);
    lin(20,9,65);
    bo(30,13,55,16);

gotoxy(38,14);
printf("Created By");
gotoxy(32,15);
printf("Mr. Jake   R. Pomperada");

gotoxy(35,20);printf("EXITING SYSTEM");
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      for (k=22;k<64;k++)
      {
          gotoxy(k,21);printf("o");
      }
      for (k=22;k<64;k++)
      {
          gotoxy(k,21);putch(219);
          delay(500000);
      }
          break;
      }
      default :
      {
          clrscr();
          gotoxy(25,5);
          printf("Invalid Entry!");
          getche();
          break;
      }
      }
  }while(choice!=6);
}
void list (void)
{
    register int t;

    for (t =0; t <SIZE; t ++)
    {
        *bills_var[t].code ='\0';
    }
}
void load(void)
{
    FILE *fp;

    register int i;

    if((fp=fopen("bill.dat","rb"))==NULL)
    {
        printf("Cannot Open File\n");
        getche();
        return;
    }

    list();

    for (i=0;i<SIZE;i++)
    {
        if(fread(&bills_var[i],sizeof(struct bills),1,fp)!=1)
        {
            if(feof(fp))
            {
        fclose(fp);
        return;
            }
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            printf("File read error\n");
        }
        ctr=ctr+1;
    }
}
void save(void)
{
    FILE *fp;

    register int i;

    if((fp=fopen("bill.dat","wb"))==NULL)
    {
        printf("cannot open file\n");
        getche();
        return;
    }
    for (i=0;i<SIZE;i++)
    {
        if(*bills_var[i].code)
        {
            if(fwrite(&bills_var[i],sizeof(struct bills),1,fp)!=1)
            {
        printf("file write error\n");
        getche();
            }
        }
    }
    fclose(fp);
}
void bo(int x1, int y1, int x2, int y2)
{
        int x;
        gotoxy(x1,y1);putch(201);gotoxy(x2,y1);putch(187);
        gotoxy(x1,y2);putch(200);gotoxy(x2,y2);putch(188);
        for (x=x1+1;x<x2;x++) {gotoxy(x,y1);putch(205);gotoxy(x,y2);putch(205);}
        for (x=y1+1;x<y2;x++) {gotoxy(x1,x);putch(186);gotoxy(x2,x);putch(186);}
/*
   196 Ä
   217 Ù
   218 Ú
   191 ¿
   192 À
   179 ³
*/
}
void bo2(int x1, int y1, int x2, int y2)
{
    int x;
    gotoxy(x1,y1);putch(218);gotoxy(x2,y1);putch(191);
    gotoxy(x1,y2);putch(192);gotoxy(x2,y2);putch(217);
    for (x=x1+1;x<x2;x++) {gotoxy(x,y1);putch(196);gotoxy(x,y2);putch(196);}
    for (x=y1+1;x<y2;x++) {gotoxy(x1,x);putch(179);gotoxy(x2,x);putch(179);}
}
void lin(int x1,int y1,int x2)
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{
    int k;
    got oxy(x1,y1);put ch(204);got oxy(x2,y1);put ch(185);
    for (k=x1+1;k<x2;k++) {got oxy(k,y1);put ch(205);}
}
void lin2(int x1, int y1, int x2)
{
    int k;
    /*
        180 ´
        195 Ã
    */
    got oxy(x1,y1);put ch(195);got oxy(x2,y1);put ch(180);
    for (k=x1+1;k<x2;k++) {got oxy(k,y1);put ch(196);}
}
void ver(int x1, int y1, int y2)
{
    int k;
    /*
      194 Â
      179 ³
      193 Á
    */
    got oxy(x1,y1);put ch(194);got oxy(x1,y2);put ch(193);
    for (k=y1+1;k<y2;k++) {got oxy(x1,k);put ch(179);}
}
/* End of Code */
```