ST. ANTHONY'S SR. SEC. SCHOOL
GOVERDHAN VILAS
UDAIPUR

विद्या ददाति विनयम्

A

COMPUTER SCIENCE (C++)

PROJECT ON

"SMART-PHONES"

MADE BY

LAVISH SWARNKAR

XII-SCIENCE (C)

ROLL NO.-

SUBMITTED TO
CBSE

GUIDED BY
MR. SUNIL SIR

ACKNOWLEDGEMENT

The successful completion of any task would be incomplete without mentioning the names of those persons who helped to make it possible. I take this opportunity to express my gratitude in few words and respect to all those who helped me in the completion of this project.

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I would also like to thank my friends and family for encouraging me during the course of this project.

Last, but not the least, I would like to thank CBSE for giving us the opportunity to undertake this project.

LAVISH-SWARNKAR

PROJECT OVERVIEW

- **INTRODUCTION**
- **FLOW-CHART**
- **CONTENTS**
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  - C++ Data types used
  - Structures made (Imp. only)
  - Classes made (Imp. only)
  - Content Of All Files made
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INTRODUCTION

This project is all about Smart Phones, their history, features and the features of some popular Smart Phones. Also, a feature of filtering Smart Phones according to our demand is also made available.

To make all this possible the features of C++ like File handling, Functions, etc. are availed. Many user defined Header files, text files are used for appropriate use.

For displaying images and text at different places, text files named with file extension (.dat) are used. For Large sized Texts, a file named (ab.dat) is used which is coded with 5 X 5 size of each English Alphabet to make work much easy. Functions for animation are solely made by me are used to make this project attractive.

Same work is done for displaying images too.

Features are provided at their best to enhance the beauty of this project.

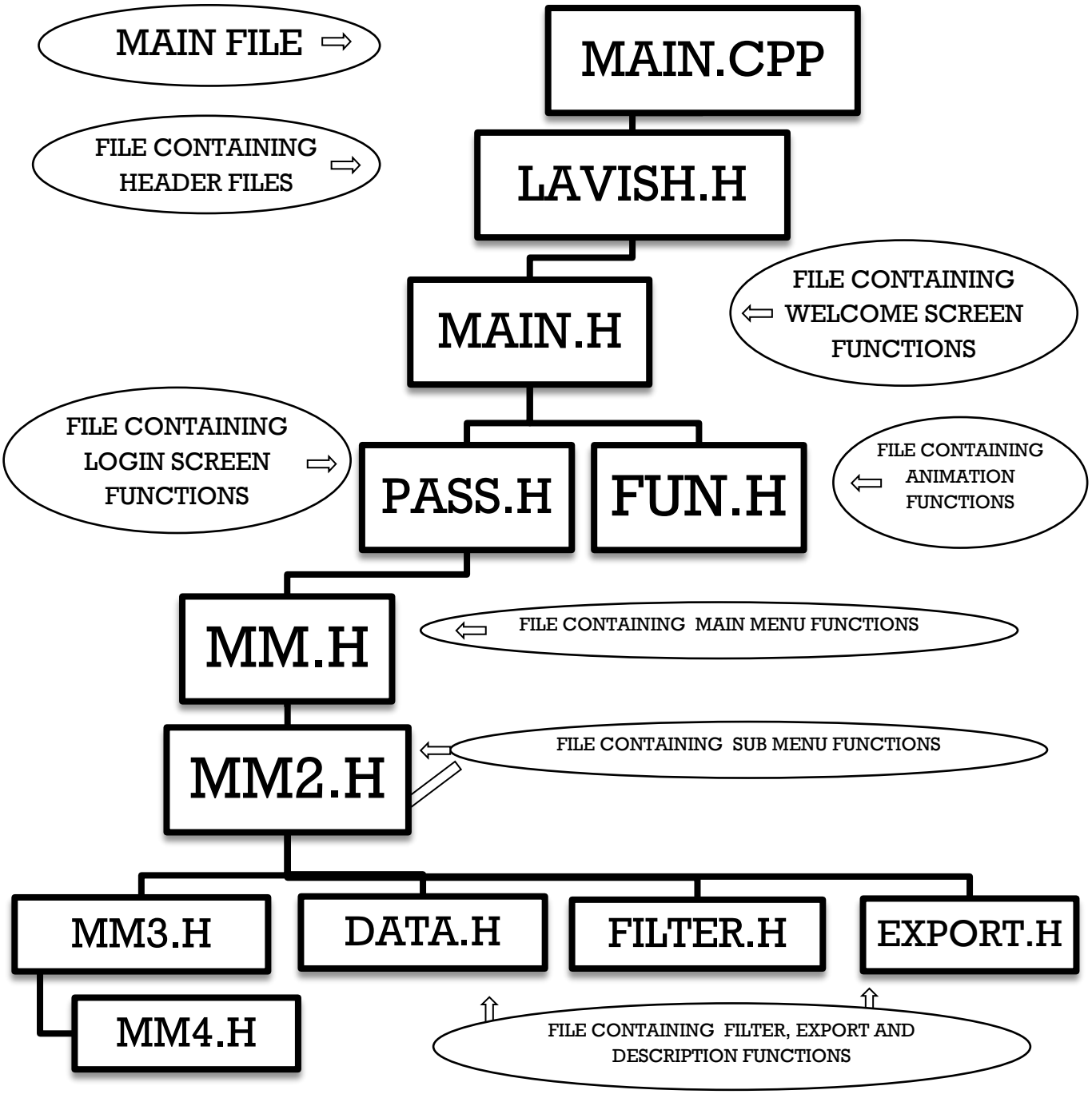
A application with (.exe) file extension is made which can be directly used in Windows PCs to avail the features.

A security is also maintained by providing a login screen for allowing only registered users in. You can make your own account for further use.

Using DOS-BOX is recommended to be used for best resolution and working else application file itself can be used.

FLOW - CHART

INHERITANCE OF FILES



LAVISH-SWARNKAR

CONTENTS

C++ HEADER FILES USED:

- iostream.h
- conio.h
- dos.h
- stdlib.h
- stdio.h
- fstream.h
- string.h
- ctype.h

C++ DATA TYPES USED:

- INTEGER (int)
- INTEGER ARRAY (int[])
- CHARACTER (char)
- CHARACTER STRING (char[])
- UNSIGNED LONG INTEGER (unsigned long)
- FLOATING INTEGER (float)

STRUCTURES MADE:

- MI (MOBILE INFO)
  - CHARACTER STRINGS OF LENGTH 40
    cname, mobnm, pro, os, sensors
  - INTEGERS
    year, battery, weight, net
  - INTEGER ARRAYS
    price[5], dim[3], cam[2], mem[2]
  - FLOATING INTEGER
    osver

CLASSES MADE:

- ID (ACCOUNT FOR LOGIN)
  - CHARACTER STRINGS OF LENGTH 12
    un, pass
  - CHARACTER STRING OF LENGTH 30
    email
  - CHARACTER STRINGS OF LENGTH 20
    mono, hintq, hinta
  - Appropriate functions to give and take values assigned to each variable

CONTENTS OF ALL FILES MADE:

1. MAIN.CPP

```
#include"header\lavish.h"
void main()
{     welcome();
      overview();
      guideline();
      login();
}
```

2. LAVISH.H

```
#include<iostream.h>
#include<conio.h>
#include<dos.h>
#include<process.h>
#include<stdio.h>
#include<fstream.h>
#include<string.h>
#include"header\main.h"
```

3. MAIN.H

```
#include"header\fun.h"
#include"header\pass.h"
void welcome()
{
        clrscr();

        int i,j,k,n;
        char s[80];
        delay(1500);
        textmode(C80);

        halfb(1,1,80,24,1,30);
        halfb(1,3,80,24,10,30);
        halfb(1,5,80,24,9,30);

        ifstream fin("data\\text\\ls.dat");

        for(i=0;i<=23;i++)
        {       gotoxy(34,1);

                if(i>0&&i<11)    gotoxy(34,i);
                if(i>=11&&i<17)  gotoxy(22,i);
                if(i>=17&&i<=23) gotoxy(16,i);

                fin.getline(s,60,'p');

                for(j=0;s[j]!=NULL;j++)
                {       if(s[j]=='l'||s[j]=='s')
                                s[j]='Û';
                }
                textcolor(10); textbackground(1);
                cprintf(s);

                delay(30);
        }
        fin.close();
        delay(700);
        downb(6);

        lcon("presents",18,7,3,6);
        lcon("a",9,14,3,6);
        lcon("guide",23,14,3,6);
        lcon("on",61,14,3,6);
```

```
	delay(700);
	upb(4);

	lcon("smart",26,7,0,12);
	lcon("phones",23,14,0,12);
	delay(700);
	downb(4);

	fin.open("data\\text\\bp.dat");
	for(i=0;i<20;i++)
	{	fin.getline(s,80,'p');
		for(j=0;s[j]!=NULL;j++)
		{	if(s[j]=='l')
				s[j]='Û';
			if(s[j]=='k')
				s[j]=char(223);
			if(s[j]=='o')
				s[j]=char(220);
		}
		textcolor(14);
		gotoxy(28,3);
		if(i>1)	gotoxy(28,2+i);
		cprintf(s);
		delay(30);
	}
	delay(700);
	upb(3);
}
void overview()
{
	int i,j,n;
	char s[80],s2[81];

	hbox(2,1,80,24,"Û",1,14);
	hbox(3,2,79,23,":",1,3);
	lcon("overview",18,5,0,3);
	hbox(11,18,65,11,"Û",1,14);

	ifstream fin("data\\text\\ov.dat");

	for(i=0;i<6;i++)
	{
		fin>>n;
		fin.getline(s,80,'*');
```

```
                for(j=0;j<n;j++)
                        s2[j]=' ';

                int k=j;

                for(j=0;s[j]!=NULL;j++)
                        s2[k+j]=s[j];

                s2[k+j]=NULL;

                textcolor(0);
                textbackground(3);

                gotoxy(4,14+i);
                cprintf(s2);
                delay(40);
        }
        delay(700);
        fin.close();
        downb(2);
}
void guideline()
{       int i,j,n;
        char s[80];

        hbox(2,1,80,24,"Û",10,14);
        hbox(3,2,79,23,":",10,2);
        lcon("guideline",15,5,0,10);
        hbox(11,15,67,11,"Û",0,14);

        ifstream fin("data\\text\\gl.dat");
        for(i=0;i<6;i++)
        {       char s2[81];
                fin>>n;
                fin.getline(s,80,'*');
                for(j=0;j<n;j++)
                        s2[j]=' ';

                int k=j;

                for(j=0;s[j]!=NULL;j++)
                                s2[k+j]=s[j];
                s2[k+j]=NULL;
```

```
                textcolor(0); textbackground(2);

                gotoxy(11,14+i);
                cprintf(s2);
                delay(30);

        }
        fin.close();
        delay(700);
}

login()
{       clrscr();
        char k='0', s1[50]=">> NEW USER? CREATE A NEW ACCOUNT NOW!";
        char  s2[30]=">> EXISTING USER? LOGIN NOW!";
        char s3[30]=">> CHANGE PASSWORD";
        char s4[30]=">> FORGOT PASSWORD? RENEW IT!";
        char s5[80]="(ARROW KEYS / W,A,S,D)-SELECTION  || 'C'-CONFIRMATION  || 'M'-
ADMINISTRATOR";

        int ch=1,f=0;
        for(int i=0;i<=14;i++)
        {       textbackground(i);
                clrscr();
                delay(40);
        }
        textbackground(1);
        clrscr();

        textcolor(1);

        hbox(2,1,80,24,"Û",15,1);
        lcon("login",26,4,15,1);
        hbox(10,26,55,10,"Û",7,7);
        fbox(12,18,62,22,"Û",0,7);
        hbox(12,18,62,22,"Û",15,2);
        textcolor(15); textbackground(0);
        gotoxy(22,14); cprintf(s1);
        textcolor(15); textbackground(1);
        gotoxy(22,16); cprintf(s2);
        gotoxy(22,18); cprintf(s3);
        gotoxy(22,20); cprintf(s4);

        textcolor(15); textbackground(1);
        gotoxy(3,23); cprintf(s5);
        gotoxy(70,4); cprintf("'E'-EXIT");
```

```
        while(1)
        {       k=getch();
                if((k=='2'||k=='4'||k=='w'||k=='a'|| k=='W'||k=='A' ||k==72||k==75
)&&ch!=1)
                        ch-=1;

                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D' ||k==80||k==77 )
&&ch!=4)
                        ch+=1;

                else if(k=='c'||k=='C'||k==13)
                {       fbox(12,3,78,23,"Û",1,1);
                        hbox(10,26,55,10,"Û",7,1);
                        textcolor(0); textbackground(6);
                        switch(ch)
                        {       case 1: newp();     break;
                                case 2: loginsub();  break;
                                case 3: cp();       break;
                                case 4: fp();       break;
                        }
                        f=1;
                }

                else if(k=='e'||k=='E')
                        exite();
                else if(k=='m'||k=='M')
                        { admin(); f=1; }
                if(f)
                {       hbox(10,26,55,10,"Û",7,1,0);
                        fbox(12,4,76,23,"Û",1,1,0);
                        fbox(12,18,62,22,"Û",0,7,0);
                        hbox(12,18,62,22,"Û",15,2,0);
                        textcolor(15); textbackground(0);
                        gotoxy(22,14); cprintf(s1);
                        textcolor(0); textbackground(7);
                        gotoxy(22,16); cprintf(s2);
                        gotoxy(22,18); cprintf(s3);
                        gotoxy(22,20); cprintf(s4);
                        textcolor(15); textbackground(1);
                        gotoxy(3,23); cprintf(s5);
                        gotoxy(70,4); cprintf("'E'-EXIT");
                        gotoxy(70,5); cprintf("       ");
                        f=0;
                }

                switch(ch)
                {       case 1: textcolor(15); textbackground(0);
                                gotoxy(22,14); cprintf(s1);
```

```
                    textcolor(15); textbackground(1);
                    gotoxy(22,16); cprintf(s2);
                    gotoxy(22,18); cprintf(s3);
                    gotoxy(22,20); cprintf(s4); break;
                case 2: textcolor(15); textbackground(1);
                    gotoxy(22,14); cprintf(s1);
                    textcolor(15); textbackground(0);
                    gotoxy(22,16); cprintf(s2);
                    textcolor(15); textbackground(1);
                    gotoxy(22,18); cprintf(s3);
                    gotoxy(22,20); cprintf(s4); break;
                case 3: textcolor(15); textbackground(1);
                    gotoxy(22,14); cprintf(s1);
                    gotoxy(22,16); cprintf(s2);
                    textcolor(15); textbackground(0);
                    gotoxy(22,18); cprintf(s3);
                    textcolor(15); textbackground(1);
                    gotoxy(22,20); cprintf(s4); break;
                case 4: textcolor(15); textbackground(1);
                    gotoxy(22,14); cprintf(s1);
                    gotoxy(22,16); cprintf(s2);
                    gotoxy(22,18); cprintf(s3);
                    textcolor(15); textbackground(0);
                    gotoxy(22,20); cprintf(s4); break;
            }
    }
}
```

```
void halfb(int t, int l, int r, int b, int c, int d=5)
{       int i,j,k;
        textcolor(c);
        for(i=r/2,k=(r/2)+1;i>=l;i--,k++)
        {       for(j=t;j<b+1;j++)
                {       gotoxy(i,j); cprintf("Û");
                        if(k==80&&j==25)
                        { gotoxy(k,j); cprintf("Û\b"); }
                        else
                        { gotoxy(k,j); cprintf("Û");   }
                }
                delay(d);
        }
}

downb(int c)
{       int i,j;
        textcolor(c);
        for(i=24;i>=1;i--)
        {       for(j=1;j<81;j++)
                {  gotoxy(j,i); cprintf("Û"); }
                delay(2);
        }
        return 0;
}
upb(int c)
{       int i,j;
        textcolor(c);
        for(i=1;i<25;i++)
        {     for(j=1;j<=80;j++)
                {       gotoxy(j,i); cprintf("Û");
                }
                delay(2);
        }
        return 0;
}
void hbox(int t=2,int l=1,int r=80,int b=24,char p[]="" , int c=7, int bg=0,int d=5)
{       int i,j,tb=b,tr=r,rr,bb;
        textcolor(c);
        textbackground(bg);
        if((r-l)%2==0) rr=((r-l)/2)+1;
        else rr=((r-l)/2)+1;
        if((b-t)%2==0) bb=((b-t)/2)+1;
```

```
        else bb=((b-t)/2)+1;
        for(i=1 ; i<=rr ; i++)
        {       gotoxy(i+l-1,t); cprintf(p);
                gotoxy(tr,t); cprintf(p);
                gotoxy(i+l-1,b); cprintf(p);
                gotoxy(tr,b); cprintf(p);
                if(i<=bb)
                {       gotoxy(l,i+t-1); cprintf(p);
                        gotoxy(l,tb); cprintf(p);
                        gotoxy(r,i+t-1); cprintf(p);
                        gotoxy(r,tb); cprintf(p);
                }
                tb--;
                tr--;
                delay(d);
        }
}

void fbox (int t=2,int l=1,int r=80,int b=24,char p[]="" , int c=7, int bg=0, int d=5)
{       int tt;
        if((b-t)<(r-l))
                tt=((b-t)/2)+1;
        else
                tt=((r-l)/2)+1;
        for(int i=0 ; i<=tt ; i++)
                hbox(t+i,l+i,r-i,b-i,p,c,bg,d);
}

void lcon(char s[],int x, int y,int c ,int bg)
{       int i,j,k,n;
        textcolor(c);
        textbackground(bg);
        char ch,s2[100];
        for(i=0 ; s[i]!=NULL ; i++)
        {       ifstream fin("data\\text\\ab.dat");
                while(!fin.eof())
                {       fin.get(ch);
                        if(ch==s[i])
                                break;
                }

                for(j=0 ; j<5 ; j++)
```

```
                {       fin.getline(s2,6,'+');
                        for(k=0 ; s2[k]!=NULL ;k++)
                                if(s2[k]=='*')
                                        s2[k]='Û';
                        gotoxy(x,y+j);
                        cprintf(s2);
                        delay(5);
                }
                x+=6;
                fin.close();
        }
}
void mosaic(int c)
{       textcolor(c);
        int x,y;
        ifstream fin("data\\text\\random.dat");
        for(int i=0 ; i<=10000 ; i++)
        {   fin>>x;  fin>>y;
                gotoxy(x,y);
                cprintf("Û");
        }
        fin.close();

        textbackground(c);
        clrscr();
}
```

5. PASS.H

```
#include"header\mm.h"
class id
{   char un[12],pass[12],email[30],mono[20],hintq[20],hinta[20];
public:
     giveun(char s[])
     {strcpy(un,s);
     return 0;
     }
     givepass(char s[])
     {strcpy(pass,s);
     return 0;
     }
     giveemail(char s[])
     {strcpy(email,s);
     return 0;
     }
     givemono(char s[])
     {strcpy(mono,s);
     return 0;
     }
     givehintq(char s[])
     {strcpy(hintq,s);
     return 0;
     }
     givehinta(char s[])
     {strcpy(hinta,s);
     return 0;
     }
     char* getun()
     {return un ;}
      char* getpass()
     {return pass ;}
      char* getemail()
     {return email ;}
      char* getmono()
     {return mono ;}
      char* gethintq()
     {return hintq ;}
      char* gethinta()
     {return hinta ;}
};
int acchk(char s[])
{         id i1;
```

```
        int i=1;
        ifstream fin("data\\text\\id.dat",ios::binary);
        while(!fin.eof())
        {       fin.read( (char *)&i1,sizeof(i1) );
                if(strcmp(s,i1.getun())==0)
                {       fin.close();
                        return i;
                }
        }
        fin.close();
        i=0;
        return i;
}
void input(id &i1)
{  char s[50];
        gotoxy(9,18);
        cprintf("ENTER USERNAME:                ");
        gotoxy(26,18); gets(s); i1.giveun(s);
        fbox(17,8,70,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER PASSWORD:                ");
        gotoxy(25,18); gets(s); i1.givepass(s);
        fbox(16,8,70,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER EMAIL ID:                        ");
        gotoxy(25,18);  gets(s); i1.giveemail(s);
        fbox(16,8,70,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER MOBILE NO:               ");
        gotoxy(26,18);  gets(s); i1.givemono(s);
        fbox(16,8,70,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER HINT QUESTION:                   ");
        gotoxy(30,18);  gets(s); i1.givehintq(s);
        fbox(16,8,70,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER HINT QUESTION'S ANSWER:                  ");
```

```
        gotoxy(39,18);  gets(s); i1.givehinta(s);
}
void print(id i1)
{
        textcolor(15); textbackground(1);
        gotoxy(9,20);
        cprintf("USERNAME: "); cprintf(i1.getun()); getch();
        fbox(20,8,72,21,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,20);
        cprintf("PASSWORD: "); cprintf(i1.getpass()); getch();
        fbox(20,8,72,21,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,20);
        cprintf("EMAIL ID: "); cprintf(i1.getemail()); getch();
        fbox(20,8,72,21,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,20);
        cprintf("MOBILE NO: "); cprintf(i1.getmono()); getch();
        fbox(20,8,72,21,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,20);
        cprintf("HINT QUESTION: "); cprintf(i1.gethintq()); getch();
        fbox(20,8,72,21,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,20);
        cprintf("HINT QUESTION'S ANSWER: "); cprintf(i1.gethinta());
}

void pall()
{       hbox(12,26,55,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1); textcolor(15);
        textbackground(1);
        gotoxy(31,13); cprintf(">> PRINT ALL DATA <<");
        id i1;
        char s[20],p[20]="admin";
        int i=1,l=0,k=0;
        gotoxy(25,16);
        cprintf("> ENTER ADMINISTRATOR PASSWORD:                  ");
        gotoxy(57,16);  gets(s);
        if(strcmp(s,p)!=0)
        {       gotoxy(20,19);
```

```
                cprintf("ACCESS DENIED! ENTER ANY KEY TO RETURN BACK");
                getch(); return;
        }
        else
        {       gotoxy(25,17);
                cprintf("# FORMAT : USERNAME,PASSWORD");
                gotoxy(9,18); cprintf("                                ");
                gotoxy(9,18);
                ifstream fin("data\\text\\id.dat",ios::binary);
                while(!fin.eof())
                {       fin.read( (char *)&i1,sizeof(i1) );
                        if(fin.eof())  break;
                        cout<<" "<<i<<".) ";
                        cprintf(" ");
                        cprintf(i1.getun());
                        cprintf(" , ");
                        cprintf(i1.getpass());
                        i++;
                        l+=strlen(i1.getun());
                        l+=strlen(i1.getpass());
                        l+=10;
                        if(l>(61+(k*61))) {gotoxy(9,19+k); k++;}
                }
                fin.close();
        }
        getch(); return;
}

void delall()
{       hbox(12,26,55,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1);
        textcolor(15); textbackground(1);
        gotoxy(30,13); cprintf(">> DELETE ALL DATA <<");
        id i1;
        char s[20],p[20]="admin";
        gotoxy(25,16);
        cprintf("> ENTER ADMINISTRATOR PASSWORD:                ");
        gotoxy(57,16);      gets(s);
        if(strcmp(s,p)!=0)
        {       gotoxy(20,19);
                cprintf("ACCESS DENIED! ENTER ANY KEY TO RETURN BACK");
                getch(); return;
```

```
        }
        else
        {       ofstream fout("data\\text\\id.dat",ios::binary);
                fout.close();
                gotoxy(15,19);
                cprintf("ALL DATA CLEARED ! ENTER ANY KEY TO KEY TO RETURN
BACK");
        }
        getch(); return;
}

void admin()
{       char s1[50]= "> PRINT ALL THE ACCOUNTS DATA" ;
        char s2[50]= "> DELETE ALL THE ACCOUNTS DATA" ;
        char k='0';
        int ch=1,f=0;
        fbox(12,3,78,23,"Û",1,0);
        textcolor(0); textbackground(14);
        hbox(12,29,51,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1);
        gotoxy(31,13); cprintf(">> ADMINISTRATOR <<");
        textcolor(15); textbackground(1);
        gotoxy(20,16); cprintf(s1);
        textcolor(0); textbackground(7);
        gotoxy(20,18); cprintf(s2);
        textcolor(15); textbackground(1);
        gotoxy(70,4); cprintf("'E'-EXIT");
        gotoxy(70,5); cprintf("'B'-BACK");
        while(1)
        {       k=getch();
                if((k=='2'||k=='4'||k=='w'||k=='a'|| k=='W'||k=='A'
||k==72||k==75 )&&ch!=1)
                        ch-=1;

                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D'
||k==80||k==77) &&ch!=2)
                        ch+=1;

                else if(k=='c'||k=='C'||k==13)
                {       fbox(12,3,78,23,"Û",1,0,0);
                        hbox(12,26,55,14,"*",15,1);
                        textcolor(15); textbackground(1);
```

```
                        switch(ch)
                        {       case 1:         pall();  f=0; break;
                                case 2:         delall();  f=0; break;
                        }
                }

                else if(k=='e'||k=='E')
                        exite();

                else if(k=='b'||k=='B')
                        return;
    if(f)
    {
                fbox(12,3,78,23,"Û",1,0,0);
                hbox(12,29,51,14,"*",15,1,0);
                hbox(14,7,74,22,"*",15,1,0);
                gotoxy(31,13); cprintf(">> ADMINISTRATOR <<");
                textcolor(15); textbackground(1);
                gotoxy(20,16); cprintf(s1);
                textcolor(0); textbackground(7);
                gotoxy(20,18); cprintf(s2);
                textcolor(15); textbackground(1);
                gotoxy(70,4); cprintf("'E'-EXIT");
                gotoxy(70,5); cprintf("'B'-BACK");
                }
                switch(ch)
                {       case 1: textcolor(15); textbackground(1);
                                gotoxy(20,16); cprintf(s1);
                                textcolor(0); textbackground(7);
                                gotoxy(20,18); cprintf(s2); break;
                        case 2: textcolor(0); textbackground(7);
                                gotoxy(20,16); cprintf(s1);
                                textcolor(15); textbackground(1);
                                gotoxy(20,18); cprintf(s2); break;
                }
        }
}

void newp()
{       hbox(12,26,55,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1); textcolor(15);
        textbackground(1);
```

```
        gotoxy(29,13); cprintf(">> CREATE NEW ACCOUNT <<");
        ofstream fout("data\\text\\id.dat",ios::app|ios::binary);
        if(!fout)  cprintf("ERROR");
        id i1;
        input(i1);

        if(acchk(i1.getun())!=0)
        {       gotoxy(17,19);
                cprintf("AN ID WITH SAME USERNAME ALREADY EXISTS.. TRY
AGAIN..");
        }
        else
        {       fout.write((char *)&i1,sizeof(i1));
                gotoxy(17,19); cprintf("CONGRATS! YOU ARE NOW A REGISTERED
USER");
                fout.close();

        }
        getch(); return;
}

void loginsub()
{       hbox(12,25,56,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1);
        textcolor(15);          textbackground(1);
        gotoxy(27,13); cprintf(">> LOGIN TO  YOUR ACCOUNT <<");
        id i1,i2;
        fbox(16,8,72,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18); cprintf("ENTER YOUR USERNAME:                    ");
        gotoxy(30,18); gets(i1.getun());
        fbox(16,8,72,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18); cprintf("ENTER YOUR PASSWORD:                     ");
        gotoxy(30,18);
        gets(i1.getpass());
        ifstream fin("data\\text\\id.dat",ios::binary);
        if(!fin)  cout<<"ERROR";
        while(!fin.eof())
        {     fin.read( (char *)&i2,sizeof(i2) );
                if(fin.eof())  break;
                if((strcmp(i1.getun(),i2.getun())==0)&&
```

```
(strcmp(i1.getpass(),i2.getpass())==0))
                {       fin.close();
                        gotoxy(9,20);
                        cprintf("LOGIN SUCCESSFULL");
                        delay(1000);
                        mainmenu();
                }
        }
        gotoxy(9,20);
        cprintf("WRONG PASSWORSD/(&)USERNAME! TRY AGAIN..");
        getch(); return;
}

void cp()
{       hbox(12,26,55,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1);
        textcolor(15);          textbackground(1);
        fbox(16,8,72,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(28,13);
        cprintf(">> CHANGE YOUR PASSWORD <<");
        id i1,i2;
        int j;
        char s[30],s2[20];
        fbox(16,8,72,19,"Û",1,0,0);
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER YOUR USERNAME:                   ");
        gotoxy(30,18);
        gets(s); i1.giveun(s);
        if(acchk(i1.getun())==0)
        {       gotoxy(9,19);
                cprintf("USERNAME DOES NOT EXISTS! TRY AGAIN..");
        }
        else
        {       fbox(16,8,72,19,"Û",1,0,0);
                textcolor(15); textbackground(1);
                gotoxy(9,18);
                cprintf("ENTER YOUR OLD PASSWORD:                       ");
                gotoxy(34,18);      gets(s); i1.givepass(s);
                fbox(16,8,72,19,"Û",1,0,0);
                textcolor(15); textbackground(1);
                gotoxy(9,18);
```

```
                cprintf("ENTER YOUR NEW PASSWORD:                  ");
                gotoxy(34,18);        gets(s2);

                fstream file("data\\text\\id.dat",ios::in|ios::out|ios::binary);

                while(!file.eof())
                {       file.read( (char *)&i2,sizeof(i2) );
                        if(strcmp(i2.getpass(),i1.getpass())==0)
                        {       strcpy(i2.getpass(),s2);
                                int p=-sizeof(i1);
                                file.seekg(p,ios::cur);
                                file.write( (char *)&i2,sizeof(i2) );
                                fbox(16,8,72,19,"Û",1,0,0);
                                textcolor(15); textbackground(1);
                                gotoxy(9,18);
                                cprintf("PASSWORD CHANGED SUCCESSFULLY! ");
                                gotoxy(9,19);
                                textcolor(15); textbackground(1);
                                cprintf("NOW, YOUR DETAILS ARE AS FOLLOWS
PROCEED BY PRESSING ANY KEY: ");
                                getch();
                                print(i2);
                                getch(); return;
                        }
                        else
                        {       gotoxy(9,19);
                                cprintf("DETAILS ENTERED BY YOU ARE WRONG
RETURN BACK BY PRESSING ANY KEY ");
                        }
                }

        }
        getch(); return;
}
void fp()
{       hbox(12,26,55,14,"*",15,1);
        hbox(14,7,74,22,"*",15,1);
        textcolor(15);        textbackground(1);
        gotoxy(29,13); cprintf(">> RESET YOUR PASSWORD <<");
        id i1,i2;
        char s[20];
        fbox(16,8,70,19,"Û",1,0,0);
```

```
        textcolor(15); textbackground(1);
        gotoxy(9,18);
        cprintf("ENTER YOUR USERNAME: ");
        gets(s); i1.giveun(s);

        if(acchk(i1.getun())==0)
        {       fbox(16,8,70,19,"Û",1,0,0);
                textcolor(15); textbackground(1);
                gotoxy(9,19);
                cprintf("USERNAME DOES NOT EXISTS! TRY AGAIN..");
        }
        else
        {       fstream file("data\\text\\id.dat",ios::in|ios::out|ios::binary);
                while(!file.eof())
                {       if(file.eof()) break;
                        file.read( (char *)&i2,sizeof(i2) );
                        if(strcmp(i2.getun(),i1.getun())==0)
                        {       fbox(16,8,72,19,"Û",1,0,0);
                                textcolor(15); textbackground(1);
                                gotoxy(9,18);
                                cprintf("ANSWER YOUR GIVEN HINT QUESTION: ");
                                cprintf(i2.gethintq()); cprintf("? ");
                                gotoxy(9,19);   cprintf("                              ");
                                gotoxy(9,19);   gets(s); i1.givehinta(s);

                                if(strcmp(i1.gethinta(),i2.gethinta())==0)
                                {       gotoxy(9,19);   cprintf("                              ");
                                 gotoxy(9,19); cprintf("ENTER NEW PASSWORD: ");
                                        gets(i2.getpass());
                                        int p=-sizeof(i1);
                                        file.seekg(p,ios::cur);
                                        file.write( (char *)&i2,sizeof(i2) );
                                        fbox(16,8,72,19,"Û",1,0,0);
                                        textcolor(15); textbackground(1);
                                        gotoxy(9,18);
                                        cprintf("PASSWORD RESET SUCCESSFULLY! ");
                                        gotoxy(9,19);
                                        textcolor(15); textbackground(1);
                                        cprintf("NOW, YOUR DETAILS ARE AS FOLLOWS
PROCEED BY PRESSING ANY KEY: ");
                                        getch();  print(i2);
                                        file.close();
                                        getch(); return;
                                }
```

```
else
        {       fstream file("data\\text\\id.dat",ios::in|ios::out|ios::binary);
                while(!file.eof())
                {       if(file.eof()) break;
                        file.read( (char *)&i2,sizeof(i2) );
                        if(strcmp(i2.getun(),i1.getun())==0)
                        {       fbox(16,8,72,19,"Û",1,0,0);
                                textcolor(15); textbackground(1);
                                gotoxy(9,18);
                                cprintf("ANSWER YOUR GIVEN HINT QUESTION: ");
                                cprintf(i2.gethintq()); cprintf("? ");
                                gotoxy(9,19);   cprintf("                          ");
                                gotoxy(9,19);   gets(s); i1.givehinta(s);

                                if(strcmp(i1.gethinta(),i2.gethinta())==0)
                                {       gotoxy(9,19);   cprintf("                          ");
                                 gotoxy(9,19); cprintf("ENTER NEW PASSWORD: ");
                                        gets(i2.getpass());
                                        int p=-sizeof(i1);
                                        file.seekg(p,ios::cur);
                                        file.write( (char *)&i2,sizeof(i2) );
                                        fbox(16,8,72,19,"Û",1,0,0);
                                        textcolor(15); textbackground(1);
                                        gotoxy(9,18);
                                        cprintf("PASSWORD RESET SUCCESSFULLY! ");
                                        gotoxy(9,19);
                                        textcolor(15); textbackground(1);
                                        cprintf("NOW, YOUR DETAILS ARE AS FOLLOWS
PROCEED BY PRESSING ANY KEY: ");
                                        getch();  print(i2);
                                        file.close();
                                        getch(); return;
                                }
                                else
                                {       gotoxy(9,19);
                                        cprintf("DETAILS ENTERED BY YOU ARE WRONG
RETURN BACK BY PRESSING ANY KEY ");
                                }
                        }
                }
        }
        getch(); return;

}
```

6. MM.H

```
#include"header\mm2.h"
void mainmenu()
{       int i,j,ch=1;
        char s[20],k='0';
        mosaic(1);
        hbox(2,2,79,24,"Û",10,1);
        lcon("welcome",4,4,14,1);
        lcon("to",47,4,10,1);
        lcon("the",60,4,14,1);
        lcon("wonderful",15,11,10,1);
        lcon("world",14,18,14,1);
        lcon("of",58,18,10,1);
        delay(300);
        mosaic(2);
        hbox(2,2,79,24,"Û",1,10);
        lcon("smart",26,7,1,10);
        lcon("phones",23,14,1,10);

        ifstream fin("data\\images\\sp.im");
        for(i=0;i<20;i++)
        {       fin.getline(s,80,'p');
                for(j=0;s[j]!=NULL;j++)
                {       if(s[j]=='l')
                                s[j]='Û';
                        if(s[j]=='k')
                                s[j]=char(223);
                        if(s[j]=='u')
                                s[j]=char(222);
                        if(s[j]=='o')
                                s[j]=char(220);
                }
                textcolor(11);
                gotoxy(6,8);
                if(i>1) gotoxy(6,7+i);
                cprintf(s);
                delay(30);
        }
        fin.close();
        fin.open("data\\images\\pro.im");
        for(i=0;i<20;i++)
        {       fin.getline(s,80,'p');
                for(j=0;s[j]!=NULL;j++)
                {       if(s[j]=='l')
```

```
                        s[j]='Û';
                if(s[j]=='k')
                        s[j]=char(223);
                if(s[j]=='u')
                        s[j]=char(222);
        }
        textcolor(11);
        gotoxy(60,4);
        if(i>1) gotoxy(60,3+i);
        cprintf(s);
        delay(30);
}
fin.close();
fin.open("data\\images\\bat.im");
for(i=0;i<20;i++)
{       fin.getline(s,80,'p');
        for(j=0;s[j]!=NULL;j++)
        {       if(s[j]=='Z')
                        s[j]='Û';
                if(s[j]=='K')
                        s[j]=char(223);
                if(s[j]=='N')
                        s[j]=char(222);
                if(s[j]=='l')
                        s[j]='Û';
                if(s[j]=='k')
                        s[j]=char(223);
                if(s[j]=='u')
                        s[j]=char(222);
        }
        textcolor(11);
        gotoxy(60,14);
        if(i>1) gotoxy(60,13+i);
        cprintf(s);
        delay(30);
}
fin.close();
int f=0;
delay(300);
mosaic(1);
hbox(2,2,79,24,"Û",14,1);
fbox(3,3,78,10,"Û",6,1);
```

```
        hbox(2,2,79,10,"Û",14,1);
        lcon("main",15,4,10,6);
        lcon("menu",44,4,10,6);
        fbox(11,3,43,23,"Û",3,1);
        fbox(11,44,78,23,"Û",2,1);
        textcolor(1); textbackground(3);
        gotoxy(4,12); cprintf("Û SMART PHONES BRIEF INFORMATION");
        textcolor(11); textbackground(1);
        gotoxy(4,12); cprintf("Û");
        textcolor(1); textbackground(3);
        gotoxy(4,14); cprintf("Û SOME POPULAR SMART PHONES DESCRIPTION");
        gotoxy(4,16); cprintf("Û SMART PHONES FILTERING ");
        gotoxy(4,18); cprintf("Û ADD / MODIFY / EXPORT DATA ");
        gotoxy(4,20); cprintf("Û STATUS");
        gotoxy(4,22); cprintf("Û AMAZE ME");
        textbackground(2);
        gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
        gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
        gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
        gotoxy(45,17); cprintf(">> 'E'- EXIT");
        gotoxy(45,19); cprintf(">> 'L'-HELP | 'B'-ABOUT");
        while(1)
        {       k=getch();
                if((k=='2'||k=='4'||k=='w'||k=='a'||
k=='W'||k=='A'||k==72||k==75 )&&ch!=1)
                        ch-=1;

                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D'
||k==80||k==77 ) &&ch!=6)
                        ch+=1;

                else if(k=='c'||k=='C'||k==13)
                {       textcolor(1); textbackground(3);
                        switch(ch)
                        {       case 1: info();   break;
                                case 2: desc();   break;
                                case 3: filter(); break;
                                case 4:         add();    break;
                                case 5: sta();    break;
                                case 6: ama();   break;

                        }
```

```
                f=1;}
                 else if(k=='e'||k=='E')
                          exite();

                 else if(k=='l'||k=='L')
                 {       help(); f=1;  }

                 else if(k=='b'||k=='B')
                 {       about();f=1;  }

                 if(f)
                 {       hbox(2,2,79,24,"Û",14,1,0);
                         fbox(3,3,78,10,"Û",6,1,0);
                         hbox(2,2,79,10,"Û",14,1,0);
                         lcon("main",15,4,10,6);
                         lcon("menu",44,4,10,6);
                         fbox(11,3,43,23,"Û",3,1,0);
                         fbox(11,44,78,23,"Û",2,1,0);
                         textcolor(1); textbackground(3);
                         gotoxy(4,12); cprintf("Û SMART PHONES BRIEF
INFORMATION");
                         textcolor(11); textbackground(1);
                         gotoxy(4,12); cprintf("Û");
                         textcolor(1); textbackground(3);
                         gotoxy(4,14); cprintf("Û SOME POPULAR SMART PHONES
DESCRIPTION");
                         gotoxy(4,16); cprintf("Û SMART PHONES FILTERING ");
                         gotoxy(4,18); cprintf("Û ADD / MODIFY /EXPORT DATA ");
                         gotoxy(4,20); cprintf("Û STATUS");
                         gotoxy(4,22); cprintf("Û AMAZE ME");
                         textbackground(2);
                         gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
                         gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
                         gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
                         gotoxy(45,17); cprintf(">> 'E'- EXIT");
                         gotoxy(45,19); cprintf(">> 'L'-HELP | 'B'-ABOUT");
                         f=0;
                 }
                 switch(ch)
                 {       case 1: for(i=0;i<=5;i++)
                                 {       gotoxy(4,12+(2*i));
                                         if(i==0) textcolor(11);
                                         else    textcolor(1);
                                         cprintf("Û");  } break;
```

```
case 2: for(i=0;i<=5;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==1) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
                case 3: for(i=0;i<=5;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==2) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
                case 4: for(i=0;i<=5;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==3) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
                case 5: for(i=0;i<=5;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==4) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
                case 6: for(i=0;i<=5;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==5) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
        }
```

7. MM2.H

```
#include"header\mm3.h"
#include"header\data.h"
#include"header\filter.h"
#include"header\export.h"
void help()
{       int i,j,n;
        char s[80];
        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("help",29,4,10,6);
        ifstream fin("data\\text\\help.dat");
        for(i=0;i<6;i++)
        {       char s2[81];
                fin>>n;
                fin.getline(s,80,'*');

                for(j=0;j<n;j++)
                        s2[j]=' ';

                int k=j;

                for(j=0;s[j]!=NULL;j++)
                        s2[k+j]=s[j];
                s2[k+j]=NULL;

                textcolor(14);
                textbackground(14);

                gotoxy(8,14+i);
                cprintf(s2);
                delay(40);
        }
        fin.close();
        getch();
        return;
}

void about()
{       int i,j,n;
        char s[80];
        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("about",26,4,10,6);
```

```
        ifstream fin("data\\text\\about.dat");
        for(i=0;i<6;i++)
        {       char s2[81];
                fin>>n;
                fin.getline(s,80,'*');

                for(j=0;j<n;j++)
                        s2[j]=' ';

                int k=j;

                for(j=0;s[j]!=NULL;j++)
                        s2[k+j]=s[j];

                s2[k+j]=NULL;
                textcolor(14); textbackground(14);

                gotoxy(7,14+i);
                cprintf(s2);
                delay(40);
        }
        getch();
        return;
}

void info()
{       char k='0';
        int ch=1,f=0;
        hbox(2,2,79,24,"Û",14,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("information",9,4,10,6);
        fbox(11,3,43,23,"Û",3,1);
        fbox(11,44,78,23,"Û",2,1);
        textcolor(1); textbackground(3);
        gotoxy(4,12); cprintf("Û HISTORY OF SMART PHONES");
        textcolor(11); textbackground(1);
        gotoxy(4,12); cprintf("Û");
        textcolor(1); textbackground(3);
        gotoxy(4,14); cprintf("Û FEATURES OF SMART PHONES");
        gotoxy(4,22); cprintf("'B'-BACK");
        textbackground(2);
```

```
        gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
        gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
        gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
        gotoxy(45,17); cprintf(">> 'E'- EXIT");

        while(1)
        {       k=getch();
                if((k=='2'||k=='4'||k=='w'||k=='a'|| k=='W'||k=='A'
||k=='A'||k==72||k==75 )&&ch!=1)
                        ch-=1;

                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D'
||k=='A'||k==80||k==77 )&&ch!=2)
                        ch+=1;

                else if(k=='c'||k=='C'||k==13)
                {       fbox(3,3,78,23,"Û",6,7);
                        textcolor(1); textbackground(3);
                        switch(ch)
                        {       case 1: history();  f=1;break;
                                case 2: features(); f=1;break;
                        }

                }

                else if(k=='e'||k=='E')
                        exite();

                else if(k=='b'||k=='B')
                        return;
                if(f)
                {       hbox(2,2,79,24,"Û",14,1,0);
                        fbox(3,3,78,10,"Û",6,1,0);
                        hbox(2,2,79,10,"Û",14,1,0);
                        lcon("information",9,4,10,6);
                        fbox(11,3,43,23,"Û",3,1,0);
                        fbox(11,44,78,23,"Û",2,1,0);
                        textcolor(1); textbackground(3);
                        gotoxy(4,12); cprintf("Û HISTORY OF SMART PHONES");
                        textcolor(11); textbackground(1);
                        gotoxy(4,12); cprintf("Û");
                        textcolor(1); textbackground(3);
```

```
                gotoxy(4,14); cprintf("Û FEATURES OF SMARTPHONES");
                gotoxy(4,22); cprintf("'B'-BACK");
                textbackground(2);
                gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
                gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
                gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
                gotoxy(45,17); cprintf(">> 'E'- EXIT");
                f=0;
        }
        int i;
        switch(ch)
        {       case 1: for(i=0;i<2;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==0)  textcolor(11);
                                else     textcolor(1);
                                cprintf("Û");
                        } break;
                case 2: for(i=0;i<2;i++)
                        {       gotoxy(4,12+(2*i));
                                if(i==1)  textcolor(11);
                                else     textcolor(1);
                                cprintf("Û");
                        } break;
        }
    }
}

void desc()
{       int ch=1,g=0;
        char k='0';
        fbox(2,2,79,24,"Û",7,1);
        hbox(2,2,79,24,"Û",15,0);
        lcon("description",8,4,0,15);
        fbox(11,3,78,23,"Û",0,1,0);
        ptext("data\\text\\dguide.dat",15,8,12,0,0);
        getch();
        fbox(2,2,79,24,"Û",7,1,0);
        hbox(2,2,79,24,"Û",15,0,0);
        lcon("brands",23,4,0,15);
        fbox(11,3,78,20,"Û",0,1,0);
        fbox(21,3,78,23,"Û",7,1,0);
        textcolor(15); textbackground(0);
```

```
        gotoxy(5,12);
        cprintf("Û APPLE       Û MICROMAX ");
        textcolor(2); textbackground(0);
        gotoxy(5,12); cprintf("Û");
        textcolor(15); textbackground(0);
        gotoxy(5,13);
        cprintf("Û ASUS        Û MICROSOFT ");
        gotoxy(5,14);
        cprintf("Û BLACKBERRY   Û ONE PLUS ");
        gotoxy(5,15);
        cprintf("Û GIONEE      Û OPPO ");
        gotoxy(5,16);
        cprintf("Û HTC         Û SAMSUNG ");
        gotoxy(5,17);
        cprintf("Û Le ECO      Û SONY ");
        gotoxy(5,18);
        cprintf("Û LENOVO      Û XIAOMI ");
        gotoxy(5,19);
        cprintf("Û LG          Û OTHER ");
        textcolor(0); textbackground(15);
        gotoxy(20,22); cprintf("'B'-BACK || 'E'-EXIT || 'C'-CONFIRMATION");
        while(1)
        {       k=getch();
                if((k=='2'||k=='4'||k=='w'||k=='a'|| k=='W'||k=='A'
||k==72||k==75 )&&ch!=1)
                        ch-=1;
                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D'
||k==80||k==77) &&ch!=16)
                        ch+=1;

                else if(k=='c'||k=='C'||k==13)
                {       textcolor(1); textbackground(3);
                        switch(ch)
                        {       case 1: read("APPLE");  break;
                                case 2: read("ASUS");   break;
                                case 3: read("BLACKBERRY");  break;
                                case 4: read("GIONEE");  break;
                                case 5: read("HTC");  break;
                                case 6: read("Le ECO");  break;
                                case 7: read("LENOVO");  break;
                                case 8: read("LG");  break;
                                case 9: read("MICROMAX");  break;
```

```
                        case 10: read("MICROSOFT");  break;
                        case 11: read("ONEPLUS");  break;
                        case 12: read("OPPO");  break;
                        case 13: read("SAMSUNG");  break;
                        case 14: read("SONY");  break;
                        case 15: read("XIAOMI");  break;
                        case 16: read("OTHER");  break;
                }
                g=1;
        }
        else if(k=='e'||k=='E')
                exite();

        else if(k=='b'||k=='B')
                return;
        if(g)
        {       fbox(2,2,79,24,"Û",7,1,0);
                hbox(2,2,79,24,"Û",15,0,0);
                lcon("brands",23,4,0,15);
                fbox(11,3,78,20,"Û",0,1,0);
                fbox(21,3,78,23,"Û",7,1,0);
                textcolor(15); textbackground(0);
                gotoxy(5,12);
                cprintf("Û APPLE       Û MICROMAX ");
                gotoxy(5,13);
                cprintf("Û ASUS        Û MICROSOFT ");
                gotoxy(5,14);
                cprintf("Û BLACKBERRY   Û ONE PLUS ");
                gotoxy(5,15);
                cprintf("Û GIONEE      Û OPPO ");
                gotoxy(5,16);
                cprintf("Û HTC         Û SAMSUNG ");
                gotoxy(5,17);
                cprintf("Û Le ECO      Û SONY ");
                gotoxy(5,18);
                cprintf("Û LENOVO      Û XIAOMI ");
                gotoxy(5,19);
                cprintf("Û LG          Û OTHER ");
                textcolor(0); textbackground(15);
                gotoxy(20,22); cprintf("'B'-BACK || 'E'-EXIT || 'C'-
CONFIRMATION"); g=0;
        }
```

```
int i;
switch(ch)
{     case 1: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==0) textcolor(2);
                        else    textcolor(15);
                        cprintf("Û");
                } break;
        case 2: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==1) textcolor(2);
                        else    textcolor(15);
                        cprintf("Û");
                } break;
        case 3: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==2) textcolor(2);
                        else    textcolor(15);
                        cprintf("Û");
                } break;
        case 4: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==3) textcolor(2);
                        else    textcolor(15);
                        cprintf("Û");
                } break;
        case 5: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==4) textcolor(2);
                        else    textcolor(15);
                        cprintf("Û");
                } break;
        case 6: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==5) textcolor(2);
                        else    textcolor(15);
                        cprintf("Û");
                } break;
        case 7: for(i=0;i<=7;i++)
                {       gotoxy(5,12+(i));
                        if(i==6) textcolor(2);
                        else    textcolor(15);
```

```
                cprintf("Û");
        } break;
case 8: for(i=0;i<=7;i++)
        {       gotoxy(20,12+(i));
                textcolor(15);
                cprintf("Û");
        }
        for(i=0;i<=7;i++)
        {       gotoxy(5,12+(i));
                if(i==7) textcolor(2);
                else    textcolor(15);
                cprintf("Û");
        } break;
case 9: for(i=0;i<=7;i++)
        {       gotoxy(5,12+(i));
                textcolor(15);
                cprintf("Û");
        }
        for(i=0;i<=7;i++)
        {       gotoxy(20,12+(i));
                if(i==0) textcolor(2);
                else    textcolor(15);
                cprintf("Û");
        } break;
case 10:for(i=0;i<=7;i++)
        {       gotoxy(20,12+(i));
                if(i==1) textcolor(2);
                else    textcolor(15);
                cprintf("Û");
        } break;
case 11:for(i=0;i<=7;i++)
        {       gotoxy(20,12+(i));
                if(i==2) textcolor(2);
                else    textcolor(15);
                cprintf("Û");
        } break;
case 12:for(i=0;i<=7;i++)
        {       gotoxy(20,12+(i));
                if(i==3) textcolor(2);
                else    textcolor(15);
                cprintf("Û");
        } break;
```

```
                        case 13:for(i=0;i<=7;i++)
                                {       gotoxy(20,12+(i));
                                        if(i==4) textcolor(2);
                                        else    textcolor(15);
                                        cprintf("Û");
                                } break;
                        case 14:for(i=0;i<=7;i++)
                                {       gotoxy(20,12+(i));
                                        if(i==5) textcolor(2);
                                        else    textcolor(15);
                                        cprintf("Û");
                                } break;
                        case 15:for(i=0;i<=7;i++)
                                {       gotoxy(20,12+(i));
                                        if(i==6) textcolor(2);
                                        else    textcolor(15);
                                        cprintf("Û");
                                } break;
                        case 16:for(i=0;i<=7;i++)
                                {       gotoxy(20,12+(i));
                                        if(i==7) textcolor(2);
                                        else    textcolor(15);
                                        cprintf("Û");
                                } break;
                }
        }
}

void add()
{       fbox(3,3,78,23,"Û",6,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("modification",5,4,10,6);
        int f=0;
        fbox(11,3,43,23,"Û",3,1);
        fbox(11,44,78,23,"Û",2,1);
        textcolor(1); textbackground(3);
        gotoxy(4,12); cprintf("Û ADD DATA");
        textcolor(11); textbackground(1);
        gotoxy(4,12); cprintf("Û");
        textcolor(1); textbackground(3);
        gotoxy(4,14); cprintf("Û MODIFY DATA");
```

```
        gotoxy(4,16); cprintf("Û EXPORT DATA");
        gotoxy(4,22); cprintf("'B'-BACK");
        textbackground(2);
        gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
        gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
        gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
        gotoxy(45,17); cprintf(">> 'E'- EXIT");
        char k='0';
        int ch=1;
        while(1)
        {       k=getch();

                if((k=='2'||k=='4'||k=='w'||k=='a'||
k=='W'||k=='A'||k==72||k==75)&&ch!=1)
                        ch-=1;

                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D'
||k==80||k==77) &&ch!=3)
                        ch+=1;

                else if(k=='c'||k=='C'||k==13)
                {       fbox(3,3,78,23,"Û",6,1);
                        textcolor(1); textbackground(3);
                        switch(ch)
                        {       case 1: addrec(); f=1; break;
                                case 2: modrec(); f=1; break;
                                case 3: exprec(); f=1; break;
                        }

                }

                else if(k=='e'||k=='E')
                        exite();

                else if(k=='b'||k=='B')
                        return;

                if(f)
                {       hbox(2,2,79,24,"Û",14,1,0);
                        fbox(3,3,78,10,"Û",6,1,0);
                        hbox(2,2,79,10,"Û",14,1,0);
                        lcon("modification",5,4,10,6);
```

```
                fbox(11,3,43,23,"Û",3,1,0);
                fbox(11,44,78,23,"Û",2,1,0);
                textcolor(1); textbackground(3);
                gotoxy(4,12); cprintf("Û ADD DATA");
                textcolor(11); textbackground(1);
                gotoxy(4,12); cprintf("Û");
                textcolor(1); textbackground(3);
                gotoxy(4,14); cprintf("Û MODIFY DATA");
                gotoxy(4,16); cprintf("Û EXPORT DATA");
                gotoxy(4,22); cprintf("'B'-BACK");
                textbackground(2);
                gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
                gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
                gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
                gotoxy(45,17); cprintf(">> 'E'- EXIT");
                f=0;
        }
        int i;
        switch(ch)
        {       case 1: for(i=0;i<=4;i+=2)
                        {       gotoxy(4,12+(i));
                                if(i==0) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
                case 2: for(i=0;i<=4;i+=2)
                        {       gotoxy(4,12+(i));
                                if(i==2) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
                case 3: for(i=0;i<=4;i+=2)
                        {       gotoxy(4,12+(i));
                                if(i==4) textcolor(11);
                                else    textcolor(1);
                                cprintf("Û");
                        } break;
        }
    }
}

void filter()
```

```
{       fbox(3,3,78,23,"Û",6,1,0);
        fbox(3,3,78,10,"Û",6,1,0);
        hbox(2,2,79,10,"Û",14,1,0);
        lcon("filteration",8,4,10,6);
        hbox(2,2,79,24,"Û",14,1,0);
        ptext("data\\text\\fguide.dat",14,7,12);
        getch(); fbox(12,3,78,23,"Û",6,1,0);
        while(1)
        {       fbox(3,3,78,23,"Û",6,1,0);
                fbox(3,3,78,10,"Û",6,1,0);
                hbox(2,2,79,10,"Û",14,1,0);
                lcon("filteration",8,4,10,6);
                hbox(2,2,79,24,"Û",14,1,0);
                fbox(12,3,78,23,"Û",6,1,0);
                int fno=1,mno=0,a[150],*p;
                char s[7];
                fbox(11,3,43,23,"Û",3,1,0);
                fbox(11,44,78,23,"Û",2,1,0);
                textcolor(1); textbackground(3);
                gotoxy(4,12); cprintf("1 FILTER BY COMPANY NAME");
                textcolor(11); textbackground(1);
                gotoxy(4,13); cprintf("Û");
                textcolor(1); textbackground(3);
                gotoxy(4,13); cprintf("2 FILTER BY PROCESSOR");
                gotoxy(4,14); cprintf("3 FILTER BY OPERATING SYSTEM");
                gotoxy(4,15); cprintf("4 FILTER BY CAMERA");
                gotoxy(4,16); cprintf("5 FILTER BY MEMORY");
                gotoxy(4,17); cprintf("6 FILTER BY PRICE");
                gotoxy(4,18); cprintf("7 FILTER BY NETWORK");
                gotoxy(4,19); cprintf("8 FILTER BY BATTERY");
                gotoxy(4,20); cprintf("9 FILTER BY YEAR");
                gotoxy(4,21); cprintf("> ENTER FILTERATION SEQUENCE:          ");
                textbackground(2);
                gotoxy(45,12); cprintf(">> WRITE FILTERATION SEQUENCE ");
                gotoxy(45,13); cprintf("   FOR FILTERING IN THAT ");
                gotoxy(45,14); cprintf("   ORDER");
                gotoxy(45,15); cprintf(">> 'E'- EXIT");
                gotoxy(45,17); cprintf(">> 'B'- BACK");
                gotoxy(45,18); cprintf(">> 0 - FINGERPRINT SCANNER");
                gotoxy(34,21);  gets(s);

                if(s[0]=='e'||s[0]=='E')
```

```
                exite();

        else if(s[0]=='b'||s[0]=='B')
                return;

        a[0]=10;

        int i,j;
        for(i=0;s[i]!=NULL;i++,fno++)
        {       switch(s[i])
                {       case '0':  p=fbysens(a); break;
                        case '1':  p=fbycnm(a); break;
                        case '2':  p=fbypro(a); break;
                        case '3':  p=fbyos(a); break;
                        case '4':  p=fbycam(a); break;
                        case '5':  p=fbymem(a); break;
                        case '6':  p=fbypr(a); break;
                        case '7':  p=fbynet(a); break;
                        case '8':  p=fbybat(a); break;
                        case '9':  p=fbyyear(a); break;
                        default :  fbox(22,3,78,23,"Û",7,0,0);
                                textcolor(0); textbackground(15);
                                gotoxy(4,22); cprintf("NO MOBILES FOUND.
PRESS ANY KEY TO RETURN");
                                getch(); return;
                }

                for(j=0;*(p+j)!=10;j++)
                a[j]=*(p+j);
                a[j]=10;
                mno=j;
                if(fno>=1&&mno==0)
                {       fbox(22,3,78,23,"Û",7,0,0);
                        textcolor(0); textbackground(15);
                        gotoxy(4,22); cprintf("NO MOBILES FOUND. PRESS ANY
KEY TO RETURN");
                        getch(); return;
                }

        }
        readno(a);
    }
```

```
}

void sta()
{       mi m;
        int i,n=5;
        ifstream fin("data\\text\\mobinfo.dat",ios::binary);
        fin.seekg(0,ios::end);
        i=fin.tellg();
        fin.close();
        n=i/sizeof(m);
        fbox(3,3,78,23,"Û",6,1,0);
        fbox(3,3,78,10,"Û",6,1,0);
        hbox(2,2,79,10,"Û",14,1,0);
        lcon("status",23,4,10,6);
        if(n==0)
        {       textcolor(0); textbackground(6);
                gotoxy(7,15); cprintf("THIS PROGRAM IS HAS NO SMART PHONES
DESCRIPTION");
        }
        else
        {       textcolor(0); textbackground(6);
                gotoxy(7,15);cprintf("THIS PROGRAM IS MAINTAINED BY A TOTAL
OF     "); gotoxy(48,15); cout<<n;
                cprintf(" SMART PHONE'S DECRIPTION");
                getch();
                return;
        }
}

void ama()
{       fbox(3,3,78,23,"Û",6,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("amaze",19,4,10,6);
        lcon("me",51,4,10,6);
        mi m;
        ptext("data\\text\\ama.dat",14,9,16);
        getch();
        ptext("data\\text\\ama2.dat",14,4,12);
        char k=getch();
        if(k=='B'||k=='b') return;
        fbox(12,3,78,23,"Û",6,1);
```

```
ptext("data\\text\\ama3.dat",14,4,12);
        getch();
        return;
}
```

```
#include"header\mm4.h"
void history()
{
        hbox(2,2,79,24,"Û",14,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("history",20,4,10,6);
        ptext("data\\text\\m.dat",15);
        int ch=1;
        char k='0';
        while(1)
        {       k=getch();

                if((k=='2'||k=='4'||k=='w'||k=='a'|| k=='W'||k=='A'||
k==72||k==75 )&&ch!=1)
                        ch-=1;

                else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D'
||k==80||k==77 ) &&ch!=9)
                        ch+=1;

                else if(k=='e'||k=='E')
                        exite();

                else if(k=='b'||k=='B')
                        return;

                switch(ch)
                {       case 1: ptext("data\\text\\m1.dat"); break;
                        case 2: ptext("data\\text\\m2.dat"); break;
                        case 3: ptext("data\\text\\m3.dat"); break;
                        case 4: ptext("data\\text\\m4.dat"); break;
                        case 5: ptext("data\\text\\m5.dat"); break;
                        case 6: ptext("data\\text\\m6.dat"); break;
```

```
                        case 7: ptext("data\\text\\m7.dat"); break;
                        case 8: ptext("data\\text\\m8.dat"); break;
                        case 9: ptext("data\\text\\m9.dat"); break;
                }
        }
}

void features()
{       int ch=1,f=0,i;
        char k='0';

        hbox(2,2,79,24,"Û",14,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("features",17,4,10,6);
        fbox(11,3,43,23,"Û",3,1);
        fbox(11,44,78,23,"Û",2,1);
        textcolor(1); textbackground(3);
        gotoxy(4,12); cprintf("Û PROCESSOR");
        textcolor(11); textbackground(1);
        gotoxy(4,12); cprintf("Û");
        textcolor(1); textbackground(3);
        gotoxy(4,13); cprintf("Û OPERATING SYSTEM");
        gotoxy(4,14); cprintf("Û MEMORY");
        gotoxy(4,15); cprintf("Û BATTERY");
        gotoxy(4,16); cprintf("Û CAMERA");
        gotoxy(4,17); cprintf("Û DISPLAY");
        gotoxy(4,18); cprintf("Û BODY");
        gotoxy(4,19); cprintf("Û NETWORK");
        gotoxy(4,20); cprintf("Û SENSORS");
        gotoxy(4,22); cprintf("'B'-BACK");
        textbackground(2);
        gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
        gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
        gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
        gotoxy(45,17); cprintf(">> 'E'- EXIT");
        while(1)
        {       k=getch();
                if((k=='2'||k=='4'||k=='w'||k=='a'|| k=='W'||k=='A'  ||
k==72||k==75 )&&ch!=1)
                        ch-=1;
```

```
		else if((k=='5'||k=='6'||k=='s'||k=='d' || k=='S'||k=='D' ||
k==80||k==77 ) &&ch!=9)
			ch+=1;

		else if(k=='c'||k=='C'||k==13)
		{	fbox(3,3,78,23,"Û",6,1);
			textcolor(1); textbackground(3);
			switch(ch)
			{	case 1: pro();  break;
				case 2: os();   break;
				case 3: mem();  break;
				case 4: bat();  break;
				case 5: cam();  break;
				case 6: disp();  break;
				case 7: body();  break;
				case 8: net();          break;
				case 9: sens();  break;
			}
			f=1;
		}
		else if(k=='e'||k=='E')
			exite();

		else if(k=='b'||k=='B')
			return;

		if(f)
		{	hbox(2,2,79,24,"Û",14,1,0);
			fbox(3,3,78,10,"Û",6,1,0);
			hbox(2,2,79,10,"Û",14,1,0);
			lcon("features",17,4,10,6);
			fbox(11,3,43,23,"Û",3,1,0);
			fbox(11,44,78,23,"Û",2,1,0);
			textcolor(1); textbackground(3);
			gotoxy(4,12); cprintf("Û PROCESSOR");
			textcolor(11); textbackground(1);
			gotoxy(4,12); cprintf("Û");
			textcolor(1); textbackground(3);
			gotoxy(4,13); cprintf("Û OPERATING SYSTEM");
			gotoxy(4,14); cprintf("Û MEMORY");
			gotoxy(4,15); cprintf("Û BATTERY");
			gotoxy(4,16); cprintf("Û CAMERA");
			gotoxy(4,17); cprintf("Û DISPLAY");
```

```
        gotoxy(4,18); cprintf("Û BODY");
        gotoxy(4,19); cprintf("Û NETWORK");
        gotoxy(4,20); cprintf("Û SENSORS");
        gotoxy(4,22); cprintf("'B'-BACK");
        textbackground(2);
        gotoxy(45,12); cprintf(">> USE ARROW KEYS OR");
        gotoxy(45,13); cprintf("   W/A/S/D FOR SELECTION");
        gotoxy(45,15); cprintf(">> 'C'-CONFIRMATION");
        gotoxy(45,17); cprintf(">> 'E'- EXIT");
        f=0;
}

switch(ch)
{       case 1: for(i=0;i<=8;i++)
                {       gotoxy(4,12+(i));
                        if(i==0) textcolor(11);
                        else    textcolor(1);
                        cprintf("Û");
                } break;
        case 2: for(i=0;i<=8;i++)
                {       gotoxy(4,12+(i));
                        if(i==1) textcolor(11);
                        else    textcolor(1);
                        cprintf("Û");
                } break;
        case 3: for(i=0;i<=8;i++)
                {       gotoxy(4,12+(i));
                        if(i==2) textcolor(11);
                        else    textcolor(1);
                        cprintf("Û");
                } break;
        case 4: for(i=0;i<=8;i++)
                {       gotoxy(4,12+(i));
                        if(i==3) textcolor(11);
                        else    textcolor(1);
                        cprintf("Û");
                } break;
        case 5: for(i=0;i<=8;i++)
                {       gotoxy(4,12+(i));
                        if(i==4) textcolor(11);
                        else    textcolor(1);
                        cprintf("Û");
```

```
} break;
                        case 6: for(i=0;i<=8;i++)
                                {       gotoxy(4,12+(i));
                                        if(i==5) textcolor(11);
                                        else    textcolor(1);
                                        cprintf("Û");
                                } break;
                        case 7: for(i=0;i<=8;i++)
                                {       gotoxy(4,12+(i));
                                        if(i==6) textcolor(11);
                                        else    textcolor(1);
                                        cprintf("Û");
                                } break;
                        case 8: for(i=0;i<=8;i++)
                                {       gotoxy(4,12+(i));
                                        if(i==7) textcolor(11);
                                        else    textcolor(1);
                                        cprintf("Û");
                                } break;
                        case 9: for(i=0;i<=8;i++)
                                {       gotoxy(4,12+(i));
                                        if(i==8) textcolor(11);
                                        else    textcolor(1);
                                        cprintf("Û");
                                } break;
                }
        }
}
```

9. MM4.H

```
void pimage(char st[],int c=15,int x=35,int y=12)
{       int i,j;
        char s[80];
        ifstream fin(st);
        for(i=0;i<20;i++)
        {       fin.getline(s,80,'p');
                for(j=0;s[j]!=NULL;j++)
                {       if(s[j]=='l')
                                s[j]='Û';
                        if(s[j]=='k')
                                s[j]=char(223);
                        if(s[j]=='u')
                                s[j]=char(222);
                }
                textcolor(c);
                gotoxy(x,y);
                if(i>1) gotoxy(x,y-1+i);
                cprintf(s);
                delay(20);
        }
        delay(700);
        fin.close();
}

void ptext(char st[],int c=14,int x=7,int y=12,int tb=14,int t=6)
{       fbox(12,7,78,23,"Û",t,1,0);
        int i,n,j;
char s[80];
        ifstream fin(st);
        for(i=0;i<12;i++)
        {       char s2[81];
                fin>>n;
                fin.getline(s,80,'p');
                for(j=0;j<n;j++)
                        s2[j]=' ';

                int k=j;

                for(j=0;s[j]!=NULL;j++)
                                s2[k+j]=s[j];

                s2[k+j]=NULL;
```

```
                for(j=0;s[j]!=NULL;j++)
                {       if(s2[j]=='l')
                                s2[j]='Û';
                        if(s2[j]=='k')
                                s2[j]=char(223);
                        if(s2[j]=='o')
                                s2[j]=char(220);
                }
                textcolor(c);
                textbackground(tb);
                gotoxy(x,y+i);
                cprintf(s2);
                delay(20);
        }
        fin.close();
}

void pro()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("processor",15,4,10,6);
        pimage("data\\images\\pro.im",15,33);
        ptext("data\\text\\pro.dat",14,5);
        getch();
        return;
}
void os()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("os",35,4,10,6);
        pimage("data\\images\\os.im",10,30);
        ptext("data\\text\\os.dat",14,5);
        getch();
        return;
}
void bat()
{
```

```
        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("battery",20,4,10,6);
        pimage("data\\images\\bat.im");
        ptext("data\\text\\bat.dat",14,9);
        getch();
        return;
}
void cam()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("camera",23,4,10,6);
        pimage("data\\images\\cam.im",15,32,13);
        ptext("data\\text\\cam.dat",14,8);
        getch();
        return;
}
void disp()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("display",20,4,10,6);
        ptext("data\\text\\disp.dat");
        getch();
        return;
}
void body()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("body",29,4,10,6);
        ptext("data\\text\\body.dat",14,9);
        getch();
        return;
}
void net()
{
```

```
fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("network",20,4,10,6);
        pimage("data\\images\\net.im",15,25,14);
        ptext("data\\text\\net.dat");
        getch();
        return;
}
void sens()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("sensors",20,4,10,6);
        ptext("data\\text\\sens.dat",14);
        getch();
        return;
}
void mem()
{

        fbox(3,3,78,23,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("memory",23,4,10,6);
        pimage("data\\images\\mem.im");
        ptext("data\\text\\mem.dat",14,6);
        getch();
        return;
}
void exite()
{       textbackground(1);
        clrscr();

        char s[10],s2[10],s3[10];
        strcpy(s,"do");
        strcpy(s2,"you");
        strcpy(s3,"know");
        int i=strlen(s)+strlen(s2)+strlen(s3)+19;
        hbox(2,2,79,24,"Û",15,0);
        i=(80-i)/2;
        lcon(s,i/2,4,15,1);
        lcon(s2,i/2+15,4,15,1);
        lcon(s3,i/2+36,4,15,1);
```

```
ptext("data\\text\\dyk.dat",15,6,12,1,1);
        getch(); exit(1);
}
```

```
struct mi
{       char cname[40],mobnm[40],pro[40],os[40],sensors[40];
        int year,battery,price[5],dim[3],weight,cam[2],mem[2],net;
        float osver;
};
void input(mi &m)
{       int i;
        textcolor(15); textbackground(14);
        gotoxy(12,12);
        cprintf("Enter Company's Name:          ");
        gotoxy(34,12); gets(m.cname);
        gotoxy(12,13);
        cprintf("Enter Mobile's Name:                   ");
        gotoxy(33,13); gets(m.mobnm);
        gotoxy(12,14);
        gotoxy(12,13);
        cprintf("Enter Mobile's Year:                   ");
        gotoxy(33,13); cin>>m.year;
        gotoxy(12,14);
        cprintf("Enter Processor's Name:                        ");
        gotoxy(36,14); gets(m.pro);
        gotoxy(12,15);
        cprintf("Enter Operating System's Name:                         ");
        gotoxy(43,15); gets(m.os);
        gotoxy(12,15); cprintf("Enter Operating System's Version:               ");
        gotoxy(45,15); cin>>m.osver;
        gotoxy(12,16);
        cprintf("Enter Weight(in grams):            ");
        gotoxy(36,16); cin>>m.weight;
        gotoxy(12,17);
        cprintf("Enter Size in order (L,B,H) (in mm):       ");
        gotoxy(49,17);cin>>m.dim[0];
        gotoxy(12,17);
        cprintf("Enter Size in order (L,B,H):               ");
        gotoxy(41,17);cin>>m.dim[1];
        gotoxy(12,17);
```

```
cprintf("Enter Size in order (L,B,H):                ");
gotoxy(41,17);cin>>m.dim[2];
gotoxy(12,18);
unsigned long p,p2,p3,p4;
cprintf("Enter Price in order (A,E,SD,MI/FK) :          ");
gotoxy(50,18); cin>>p;
gotoxy(12,18);
cprintf("Enter Price in order (A,E,SD,MI/FK):                ");
gotoxy(50,18); cin>>p2;
gotoxy(12,18);
cprintf("Enter Price in order (A,E,SD,MI/FK):                 ");
gotoxy(50,18); cin>>p3;
gotoxy(12,18);
cprintf("Enter Price in order (A,E,SD,MI/FK):                ");
gotoxy(50,18); cin>>p4;
p/=1000; p2/=1000;
p3/=1000; p4/=1000;
m.price[0]=p;
m.price[1]=p2;
m.price[2]=p3;
m.price[3]=p4;
m.price[4]=(m.price[0]+m.price[1]+m.price[2]+m.price[3])/4;
gotoxy(12,19);
cprintf("Enter Camera in order (Rear,Front) (Leave 0, if not available):  ");
gotoxy(75,19); cin>>m.cam[0];
gotoxy(12,19);
cprintf("Enter Camera in order (Rear,Front) (Leave 0, if not available):  ");
gotoxy(75,19); cin>>m.cam[1];
gotoxy(12,20);
cprintf("Enter Memory in order (ROM,RAM) (In GBs/MBs):      ");
gotoxy(58,20);cin>>m.mem[0];
gotoxy(12,20);
cprintf("Enter Memory in order (ROM,RAM) (In GBs/MBs):      ");
gotoxy(58,20);cin>>m.mem[1];
gotoxy(12,21);
cprintf("Enter Battery Capacity (in mAh):          ");
gotoxy(45,21); cin>>m.battery;
gotoxy(12,22);
cprintf("Enter specific Sensors (if any):                ");
gotoxy(45,22); gets(m.sensors);
gotoxy(12,23);
```

```
        if(strcmp(m.sensors,"Y")==0) strcpy(m.sensors,"FINGERPRINT AND
COMMON");
        if(strcmp(m.sensors,"N")==0) strcpy(m.sensors,"COMMON");
        cprintf("Enter Network Type (Eg.4 for 4G):        ");
        gotoxy(46,23);
        cin>>m.net;
}
void print(mi m)
{       textcolor(15); textbackground(0);
        clrscr();
        hbox(2,2,79,24,"Û",7,1,0);
        int l=strlen(m.mobnm);
        l=(80-l)/2; textcolor(15); textbackground(0);
        gotoxy(l,5); cprintf(m.mobnm);
        gotoxy(32,6); cprintf("BROUGHT TO YOU BY");
        l=strlen(m.cname); l=(72-l)/2;
        gotoxy(l,7); cprintf(m.cname); cprintf(" IN "); cout<<m.year;
        gotoxy(5,9); cprintf(">> PROCESSOR: ");    cprintf(m.pro);
        gotoxy(5,10); cprintf(">> OPERATING SYSTEM: ");    cprintf(m.os); cprintf("
");
        cout<<m.osver;
        if(strcmp(m.os,"ANDROID")==0)
        {       if(m.osver==4) cprintf(" JELLY BEAN / KITKAT");
                else if(m.osver==5) cprintf(" LOLLIPOP");
                else if(m.osver==6) cprintf(" MARSHMALLOW");
                else if(m.osver==7) cprintf(" NOUGHAT");
        }

        gotoxy(5,11); cprintf(">> BODY: ");
        gotoxy(13,12); cprintf(">> SIZE (L,B,H):                ");
        gotoxy(30,12); cout<<m.dim[0]<<", " <<m.dim[1]<<", "<<m.dim[2]<<"
mm";
        gotoxy(13,13); cprintf(">> WEIGHT:                ");
        gotoxy(24,13); cout<<m.weight<<" Grams";
        gotoxy(5,14); cprintf(">> STORAGE: ");
        gotoxy(16,15); cprintf(">> ROM:                ");
        gotoxy(24,15); cout<<m.mem[0]<<" GB";
        gotoxy(16,16); cprintf(">> RAM:                ");
        if(m.mem[1]<0)
        {       m.mem[1]*=-1;
                gotoxy(24,16); cout<<m.mem[1]<<" MB";
        }
```

```
        else
        {       gotoxy(24,16); cout<<m.mem[1]<<" GB"; }
                gotoxy(5,17); cprintf(">> CAMERA: ");
                gotoxy(16,17); cprintf(">> REAR:                ");

                if(m.cam[0]==0)
                { gotoxy(26,17); cout<<"NONE"; }

                else
                { gotoxy(26,17); cout<<m.cam[0]<<" MPs"; }

                gotoxy(16,18); cprintf(">> FRONT:               ");

                if(m.cam[1]==0)
                { gotoxy(27,18); cout<<"NONE OR VGA"; }

                else
                { gotoxy(27,18); cout<<m.cam[1]<<" MPs"; }

                gotoxy(5,19);
                cprintf(">> PRICE (A,E,SD,MI/FK)(0-NA):                 ");
gotoxy(36,19);

                unsigned long p,p2,p3,p4;

                p=m.price[0] ;
                p2=m.price[1] ;
                p3=m.price[2] ;
                p4=m.price[3] ;
                p*=1000 ;
                p2*=1000;
                p3*=1000 ;
                p4*=1000;
                cout<<p<<" , "<<p2<<" , "<<p3<<" , "<<p4<<" Rupees"<<endl;

                gotoxy(5,20);
                cprintf(">> BATTERY:       ");
                gotoxy(17,20);
                cout<<m.battery<<" mAh"<<endl;
                gotoxy(5,21);
                cprintf(">> SPECIFIC SENSORS: ");
                gotoxy(26,21);
```

```
                cprintf(m.sensors);
                gotoxy(5,22);
                cprintf(">> NETWORK:        ");
                gotoxy(17,22);
                cout<<m.net; cprintf(" G");
                getch();
                textbackground(1); clrscr();
}
void read(char s[])
{
 mi m;
  int a[150],i=0,ch=0;
  char nm[150][30], cnm[150][30] ;
  strupr(s);
        ifstream fin("data\\text\\mobinfo.dat",ios::binary);

        while(!fin.eof())
        {       if(fin.eof()) break;
                fin.read( (char*) &m, sizeof(m) );

                if(strcmp(s,"OTHER")==0)
                {       if(strcmp(m.cname,"APPLE")!=0&&
strcmp(m.cname,"ASUS")!=0&& strcmp(m.cname,"BLACKBERRY")!=0&&
strcmp(m.cname,"HTC")!=0&&   strcmp(m.cname,"GIONEE")!=0&&
strcmp(m.cname,"Le ECO")!=0&& strcmp(m.cname,"LENOVO")!=0&&
strcmp(m.cname,"LG")!=0&&  strcmp(m.cname,"MICROMAX")!=0&&
strcmp(m.cname,"MICROSOFT")!=0&& strcmp(m.cname,"ONEPLUS")!=0&&
strcmp(m.cname,"OPPO")!=0&&   strcmp(m.cname,"SAMSUNG")!=0&&
strcmp(m.cname,"SONY")!=0&& strcmp(m.cname,"XIAOMI")!=0)
                        {       a[i]=fin.tellg()-sizeof(m);
                                strcpy(nm[i],m.mobnm);
                                strcpy(cnm[i],m.cname);
                                i++;
                        }
                }

                if(strcmp(s,m.cname)==0)
                {       a[i]=fin.tellg()-sizeof(m);
                        strcpy(nm[i],m.mobnm);
                        i++;
                }
```

```
        }
        fin.close();
        if(strcmp(s,"Le ECO")==0) strcpy(s,"LEECO");
        int t=i;
        a[i]=10;
        s=strlwr(s);
        while(1)
        {       int l=strlen(s);
                l=(80-((l*5)+l-1))/2;
                fbox(2,2,79,24,"Û",7,1,0);
                hbox(2,2,79,24,"Û",15,0,0);
                lcon(s,l,4,0,15);
                fbox(11,3,78,20,"Û",0,1,0);
                fbox(21,3,78,23,"Û",7,1,0);
                if(t==0)
                {       textcolor(15); textbackground(0);
                        gotoxy(5,12); cprintf("SORRY! NO SMART PHONES IN THIS
CATEGORY. PRESS ANY KEY TO RETURN BACK");
                        getch(); return;
                }
                textcolor(15); textbackground(0);
                if(strcmp(s,"other")==0)
                {       for(i=0 ; a[i]!=10 ; i++)
                        {       if(i>7)
                                {       gotoxy(35,4+i);
                                        cprintf("                ");
                                        gotoxy(35,4+i); cout<<i+1;
                                        cprintf(".) "); cprintf(cnm[i]);cprintf(" ");
cprintf(nm[i]);
                                }
                                else
                                {       gotoxy(5,12+i);
                                        cprintf("                ");
                                        gotoxy(5,12+i); cout<<i+1;
                                        cprintf(".) "); cprintf(cnm[i]);cprintf(" ");
cprintf(nm[i]);
                                }
                        }
                }

                else
```

```
                {       for(i=0 ; a[i]!=10 ; i++)
                        {       if(i>7)
                                {       gotoxy(35,4+i);
                                        cprintf("                ");
                                        gotoxy(35,4+i); cout<<i+1;
                                        cprintf(".) "); cprintf(nm[i]);
                                }
                                else
                                {       gotoxy(5,12+i);
                                        cprintf("                ");
                                        gotoxy(5,12+i); cout<<i+1;
                                        cprintf(".) "); cprintf(nm[i]);
                                }
                        }
                }
                textcolor(0); textbackground(15);
                gotoxy(15,22); cprintf(">> ENTER YOUR CHOICE (0 for back):      ");
                gotoxy(51,22); cin>>ch;
                if(ch>=1&&ch<=(i))
                {       fin.open("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[ch-1]);
                        fin.read( (char*) &m, sizeof(m) );
                        print(m); fin.close();
                }
                else if(ch==0) return;
                else
                {       gotoxy(15,22);
                        cprintf("OOPS! WRONG CHOICE ! TRY AGAIN BY PRESSING
ANY KEY.      ");
                        getch();
                }
        }
}

void addrec()
{       fbox(3,3,78,23,"Û",6,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("add",18,4,10,6);
        lcon("data",40,4,10,6);
        mi m;
        ptext("data\\text\\addguide.dat",14,7,14);
```

```
        getch();
        fbox(12,3,78,23,"Û",6,1,0);
        ofstream fout("data\\text\\mobinfo.dat",ios::binary|ios::app);
        input(m);
        fout.write( (char*) &m, sizeof(m) );
        fbox(12,3,78,23,"Û",6,1,0);
        textcolor(14); textbackground(14);
        gotoxy(25,19);
        cprintf("\nMobile Info added successfully");
        fout.close();
        getch();
        return;
}
void modrec()
{       fbox(3,3,78,23,"Û",6,1);
        fbox(3,3,78,10,"Û",6,1);
        hbox(2,2,79,10,"Û",14,1);
        lcon("modify",8,4,10,6);
        lcon("data",50,4,10,6);
        ptext("data\\text\\modguide.dat",14,7,14);
        getch(); fbox(12,3,78,23,"Û",6,1,0);
        fstream file("data\\text\\mobinfo.dat",ios::in|ios::out|ios::binary);
        mi m,m2;
        input(m2);
        while(!file.eof())
        {       file.read( (char*) &m, sizeof(m) );
                if(strcmp(m.mobnm,m2.mobnm)==0)
                {       if(strcmp(m2.cname,".")==0)
                                strcpy(m2.cname,m.cname);
                        if(strcmp(m2.pro,".")==0)
                                strcpy(m2.pro,m.pro);
                        if(strcmp(m2.os,".")==0)
                                strcpy(m2.os,m.os);
                        if(strcmp(m2.sensors,".")==0)
                                strcpy(m2.sensors,m.sensors);
                        if(m2.battery==0)
                                m2.battery=m.battery;
                        if(m2.price[0]==0)
                                m2.price[0]=m.price[0];
                        if(m2.price[1]==0)
                                m2.price[1]=m.price[1];
                        if(m2.price[2]==0)
```

```
                    m2.price[2]=m.price[2];
                if(m2.price[3]==0)
                    m2.price[3]=m.price[3];
                if(m2.price[4]==0)
                    m2.price[4]=m.price[4];
                if(m2.dim[0]==0)
                    m2.dim[0]=m.dim[0];
                if(m2.dim[1]==0)
                    m2.dim[1]=m.dim[1];
                if(m2.dim[2]==0)
                    m2.dim[2]=m.dim[2];
                if(m2.cam[0]==0)
                    m2.cam[0]=m.cam[0];
                if(m2.cam[1]==0)
                    m2.cam[1]=m.cam[1];
                if(m2.mem[0]==0)
                    m2.mem[0]=m.mem[0];
                if(m2.mem[1]==0)
                    m2.mem[1]=m.mem[1];
                if(m2.weight==0)
                    m2.weight=m.weight;
                if(m2.net==0)
                    m2.net=m.net;
                if(m2.osver==0)
                    m2.osver=m.osver;
                if(m2.year==0)
                    m2.year=m.year;
                int l=-sizeof(m);
                file.seekg(l,ios::cur);
                file.write( (char*) &m2, sizeof(m2) );
                fbox(12,3,78,23,"Û",6,1,0);
                textcolor(14); textbackground(14);
                gotoxy(25,19);
                cprintf("\nMobile Info modified successfully...");
                getch();
                file.close();
                return;
            }
        }
        fbox(12,3,78,23,"Û",6,1,0);
        textcolor(14); textbackground(14);
        gotoxy(33,19);
```

```
        cprintf("MOBILE NOT FOUND");
        file.close();
        getch();
        return;
}

void readno(int a[])
{       mi m;
        int i=0,ch;
        char nm[150][30],cnm[150][30];
        for(i=0;a[i]!=10;i++)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                fin.seekg(a[i]);
                fin.read( (char*) &m, sizeof(m) );
                strcpy(nm[i],m.mobnm);
                strcpy(cnm[i],m.cname);
                fin.close();
        }
        while(1)
        {       fbox(2,2,79,24,"Û",7,1,0);
                hbox(2,2,79,24,"Û",15,0,0);
                lcon("filter",23,4,0,15);
                fbox(11,3,78,20,"Û",0,1,0);
                fbox(21,3,78,23,"Û",7,1,0);
                textcolor(15); textbackground(0);
                for(i=0 ; a[i]!=10 ; i++)
                {       if(i>15)
                        {       textcolor(0); textbackground(15);
                                gotoxy(15,22);
                                cprintf("OOPS! SO MANY MOBILES IN FILTERING.
PLEASE APPLY MORE.");
                                getch(); return;
                        }
                if(i>7)
                {       gotoxy(35,4+i);
                        cprintf("                  ");
                        gotoxy(35,4+i); cout<<i+1;
                        cprintf(".) "); cprintf(cnm[i]); cprintf(" "); cprintf(nm[i]);}
                        else
                        {       gotoxy(5,12+i);
                                cprintf("                  ");
                                gotoxy(5,12+i); cout<<i+1;
```

```
cprintf(".) "); cprintf(cnm[i]); cprintf(" "); cprintf(nm[i]);
                        }
                }
                textcolor(0); textbackground(15);
                gotoxy(15,22); cprintf(">> ENTER YOUR CHOICE (0 for back):      ");
gotoxy(51,22); cin>>ch;
                if(ch>=1&&ch<=(i))
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[ch-1]);
                        fin.read( (char*) &m, sizeof(m) );
                        print(m); fin.close();
                }
                else if(ch==0) return;
                else
                {       gotoxy(15,22);
                                cprintf("OOPS! WRONG CHOICE ! TRY AGAIN BY
PRESSING ANY KEY.      ");
                                getch();
                }
        }
}
```

11. FILTER.H

```
int* fbycnm(int a[])
{       mi m;
        int b[15],i=0,ch,j=0;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);cprintf("ENTER COMPANY'S NAME:                    ");
gotoxy(26,22); gets(s);
        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof())
                        break;
                        fin.read( (char*) &m, sizeof(m) );
                        if(strcmp(s,m.cname)==0)
                        {       int l=-sizeof(m);
                                b[i]=fin.tellg()+l;i++;
                        }
                }
                fin.close();
```

```
        }
        else
        {       for(j=0;a[j]!=10;j++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        if(strcmp(s,m.cname)==0)
                        {       b[i]=fin.tellg()-sizeof(m); i++;    }
                        fin.close();
                }
        }
        b[i]=10;
        return b;
}
int* fbypro(int a[])
{       mi m;
        int b[150],i=0,ch;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22); cprintf("ENTER PROCESSOR'S NAME:                    ");
gotoxy(28,22); gets(s);
        int j=0;
        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof()) break;
                        fin.read( (char*) &m, sizeof(m) );
                        if(strcmp(s,m.pro)==0)
                        {  b[j]=fin.tellg()-sizeof(m);  j++;}
                }
                fin.close();
        }
        else
        {       for(i=0;a[i]!=10;i++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        if(strcmp(s,m.pro)==0)
                        {   b[j]=fin.tellg()-sizeof(m);j++; }
                fin.close();
                }
```

```
        }
        b[j]=10;
        return b;
}
int* fbyos(int a[])
{       mi m;
        int b[150],i=0,ch;
        float v; int j;
        char nm[20][20],s[30],k='1';
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);       cprintf("ENTER OPERATING SYSTEM'S NAME:
"); gotoxy(36,22); gets(s);
        gotoxy(4,22);       cprintf("ENTER OPERATING SYSTEM'S VERSION:
"); gotoxy(38,22); cin>>v;
        gotoxy(36,22); gotoxy(4,22);     cprintf("ENTER OS VERSION'S NO. (0 FOR
SAME,1 FOR GREATER AND 2 FOR LESSER):    "); gotoxy(73,22); k=getch();

        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof()) break;
                        fin.read( (char*) &m, sizeof(m) );
                        if(k=='0')
                        {       if(strcmp(s,m.os)==0&&m.osver==v)
                                {       b[i]=fin.tellg()-sizeof(m); i++; }
                        }
                        if(k=='2')
                        {       if(strcmp(s,m.os)==0&&m.osver<=v)
                                {       b[i]=fin.tellg()-sizeof(m); i++; }
                        }
                        if(k=='1')
                        {       if(strcmp(s,m.os)==0&&m.osver>=v)
                                {       b[i]=fin.tellg()-sizeof(m); i++; }
                        }
                }
                fin.close();
        }
        else
        {       i=0;
                for(int j=0;a[j]!=10;j++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
```

```
                        fin.seekg(a[j]);
                        fin.read( (char*) &m, sizeof(m) );
                        if(k=='0')
                        {       if(strcmp(s,m.os)==0&&m.osver==v)
                                {       b[i]=fin.tellg()-sizeof(m); i++; }
                        }
                        if(k=='2')
                        {       if(strcmp(s,m.os)==0&&m.osver<=v)
                                {       b[i]=fin.tellg()-sizeof(m); i++; }
                        }
                        if(k=='1')
                        {       if(strcmp(s,m.os)==0&&m.osver>=v)
                                {       b[i]=fin.tellg()-sizeof(m); i++; }
                        }
                        fin.close();
                }
        }
        b[i]=10;
        return b;
}
int* fbycam(int a[])
{       mi m;
        int b[150],i=0,ch,rl,ru,fl,fu;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);       cprintf("ENTER REAR CAMERA'S LOWER LIMIT:
");  gotoxy(37,22); cin>>rl;
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);
        cprintf("ENTER REAR CAMERA'S UPPER LIMIT:                    ");
gotoxy(37,22); cin>>ru;
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);        cprintf("ENTER FRONT CAMERA'S LOWER LIMIT:
"); gotoxy(38,22);    cin>>fl;
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22); cprintf("ENTER FRONT CAMERA'S UPPER LIMIT:
"); gotoxy(38,22); cin>>fu;
        int j=0;
```

```
        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof()) break;
                        fin.read( (char*) &m, sizeof(m) );
                        if((m.cam[0]>=rl&&m.cam[0]<=ru)&&
(m.cam[1]>=fl&&m.cam[1]<=fu) )
                        {       b[j]=fin.tellg()-sizeof(m);  j++;}
                }
                fin.close();
        }
        else
        {       for(i=0;a[i]!=10;i++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        if((m.cam[0]>=rl&&m.cam[0]<=ru)&&
(m.cam[1]>=fl&&m.cam[1]<=fu) )
                        { b[j]=fin.tellg()-sizeof(m); j++;}
                        fin.close();
                }
        }
        b[j]=10;
        return b;
}
int* fbymem(int a[])
{       mi m;
        int b[150],i=0,ch,rl,ru,fl,fu,j=0;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22); cprintf("ENTER ROM'S LOWER LIMIT:                  ");
gotoxy(29,22); cin>>rl;
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);           cprintf("ENTER ROM'S UPPER LIMIT:                  ");
gotoxy(29,22); cin>>ru;
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);           cprintf("ENTER RAM'S LOWER LIMIT:                   ");
gotoxy(29,22); cin>>fl;
        fbox(22,3,78,23,"Û",7,0,0);
```

```
        textcolor(0); textbackground(15);
        gotoxy(4,22);           cprintf("ENTER RAM'S UPPER LIMIT:                       ");
gotoxy(29,22); cin>>fu;
        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof()) break;
                        fin.read( (char*) &m, sizeof(m) );
                        if((m.mem[0]>=rl&&m.mem[0]<=ru)&&
(m.mem[1]>=fl&&m.mem[1]<=fu) )
                        {       b[j]=fin.tellg()-sizeof(m);  j++;}
                }
                fin.close();
        }
        else
        {       for(i=0;a[i]!=10;i++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        if((m.mem[0]>=rl&&m.mem[0]<=ru)&&
(m.mem[1]>=fl&&m.mem[1]<=fu) )
                        {       b[j]=fin.tellg()-sizeof(m); j++;}
                        fin.close();
                }
        }
        b[j]=10;
        return b;
}
int* fbypr(int a[])
{       mi m;
        int b[150],i=0,ch,j=0,mpr=0,k=0;
        unsigned long rl,ru;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);           cprintf("ENTER PRICE'S LOWER LIMIT:                     ");
gotoxy(31,22); cin>>rl;
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
```

```
        gotoxy(4,22);
        cprintf("ENTER PRICE'S UPPER LIMIT:                    "); gotoxy(31,22);
cin>>ru;
        ru/=1000;
        rl/=1000;
        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof()) break;
                        fin.read( (char*) &m, sizeof(m) );
                        for(j=0;j<4;j++)
                        {       if(m.price[j]!=0)
                                mpr=m.price[j];
                        }
                        if((mpr>=rl&&mpr<=ru) )
                        {  b[k]=fin.tellg()-sizeof(m);  k++;}
                }
                fin.close();
        }
        else
        {       for(i=0;a[i]!=10;i++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        for(j=0;j<4;j++)
                        {       if(m.price[j]!=0)
                                        mpr=m.price[j];
                        }
                        if((mpr>=rl&&mpr<=ru) )
                        {       b[k]=fin.tellg()-sizeof(m); k++;}
                        fin.close();
                }
        }
        b[k]=10;
        return b;
}
int* fbynet(int a[])
{       mi m;
        int b[150],i=0,ch,rl,ru,j=0;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
```

```
	gotoxy(4,22);
	cprintf("ENTER NETWORK'S GENERATION:                    "); gotoxy(32,22);
cin>>rl;
	if(a[0]==10)
	{	ifstream fin("data\\text\\mobinfo.dat",ios::binary);
		while(!fin.eof())
		{	if(fin.eof()) break;
			fin.read( (char*) &m, sizeof(m) );
			if(m.net==rl)
			{	b[j]=fin.tellg()-sizeof(m);  j++;}
		}
		fin.close();
	}
	else
	{	for(i=0;a[i]!=10;i++)
		{	ifstream fin("data\\text\\mobinfo.dat",ios::binary);
			fin.seekg(a[i]);
			fin.read( (char*) &m, sizeof(m) );
			if(m.net==rl)
			{	b[j]=fin.tellg()-sizeof(m); j++;}
			fin.close();
		}
	}
	b[j]=10;
	return b;
}
int* fbybat(int a[])
{	mi m;
	int b[150],i=0,ch,rl,ru,j=0;
	char nm[20][20],s[30];
	fbox(22,3,78,23,"Û",7,0,0);
	textcolor(0); textbackground(15);
	gotoxy(4,22);
	cprintf("ENTER BATTERY'S LOWER CAPACITY:                ");
gotoxy(36,22); cin>>rl;
	gotoxy(4,22); cprintf("ENTER BATTERY'S UPPER CAPACITY:                ");
gotoxy(36,22); cin>>ru;
	if(a[0]==10)
	{	ifstream fin("data\\text\\mobinfo.dat",ios::binary);
		while(!fin.eof())
		{	if(fin.eof()) break;
			fin.read( (char*) &m, sizeof(m) );
```

```
                        if(m.battery>=rl&&m.battery<=ru)
                        {       b[j]=fin.tellg()-sizeof(m);  j++;}
                }
                fin.close();
        }
        else
        {       for(i=0;a[i]!=10;i++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        if(m.battery>=rl&&m.battery<=ru)
                        {       b[j]=fin.tellg()-sizeof(m); j++;}
                        fin.close();
                }
        }
        b[j]=10;
        return b;
}
int* fbyyear(int a[])
{       mi m;
        int b[150],i=0,ch,rl,ru,j=0;
        char nm[20][20],s[30];
        fbox(22,3,78,23,"Û",7,0,0);
        textcolor(0); textbackground(15);
        gotoxy(4,22);
        cprintf("ENTER YEAR OF LAUNCH:                  "); gotoxy(26,22); cin>>rl;
        if(a[0]==10)
        {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                while(!fin.eof())
                {       if(fin.eof()) break;
                        fin.read( (char*) &m, sizeof(m) );
                        if(m.year==rl)
                        {       b[j]=fin.tellg()-sizeof(m);  j++;}
                }
                fin.close();
        }
        else
        {       for(i=0;a[i]!=10;i++)
                {       ifstream fin("data\\text\\mobinfo.dat",ios::binary);
                        fin.seekg(a[i]);
                        fin.read( (char*) &m, sizeof(m) );
                        if(m.year==rl)
```

```
{       b[j]=fin.tellg()-sizeof(m);
                        j++;
                }
                fin.close();
        }
    }
    b[j]=10;
    return b;
}
int* fbysens(int a[])
{   mi m;
    int b[150],i=0,ch,j=0;
    char nm[20][20],s[30];
    fbox(22,3,78,23,"Û",7,0,0);
    textcolor(0); textbackground(15);
    if(a[0]==10)
    {   ifstream fin("data\\text\\mobinfo.dat",ios::binary);
        while(!fin.eof())
        {   if(fin.eof()) break;
            fin.read( (char*) &m, sizeof(m) );
            if(strcmp(m.sensors,"FINGERPRINT AND COMMON")==0)
            {   b[j]=fin.tellg()-sizeof(m);  j++;}
        }
        fin.close();
    }
    else
    {   for(i=0;a[i]!=10;i++)
        {   ifstream fin("data\\text\\mobinfo.dat",ios::binary);
            fin.seekg(a[i]);
            fin.read( (char*) &m, sizeof(m) );
            if(strcmp(m.sensors,"FINGERPRINT AND COMMON")==0)
            {   b[j]=fin.tellg()-sizeof(m); j++;}
            fin.close();
        }
    }
    b[j]=10;
    return b;
}
```

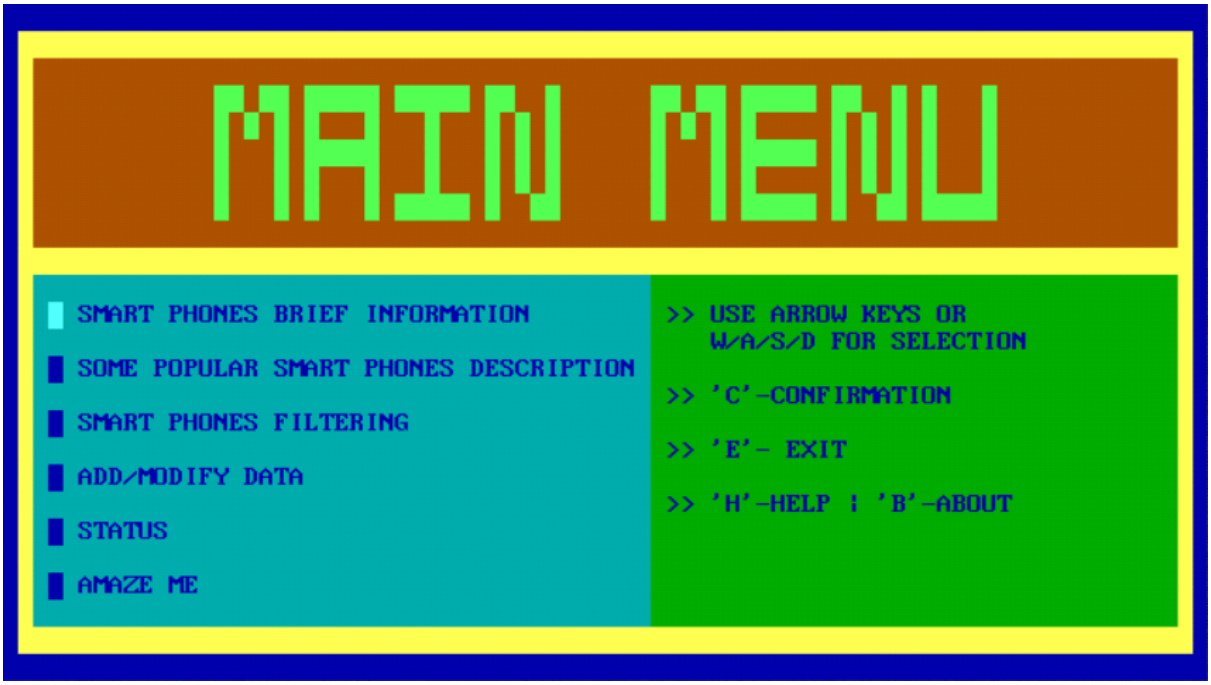
```
void exprec()
{    mi m;
     ofstream fout("data.xls");
     ifstream fin("data\\text\\mobinfo.dat",ios::binary);
   fout<<"COMPANY NAME"<<"\t"<<"MOBILE NAME"<<"\t"<<"PROCESSOR
NAME"<<"\t"<<"OS NAME"<<"\t"<<"OS
VERSION"<<"\t"<<"SENSORS"<<"\t"<<"YEAR OF
LAUNCH"<<"\t"<<"BATTERY"<<"\t"<<"PRICE ON
AMAZON"<<"\t"<<",EBAY"<<"\t"<<",SNAPDEAL"<<"\t"<<",FLIPKART OR MI
SHOP (IN RS )"<<"\t"<<"LENGTH,"<<"\t"<<"BREADTH AND"<<"\t"<<"WIDTH (IN
mm)"<<"\t"<<"WEIGHT (IN GRAMS)"<<"\t"<<"CAMERA
(REAR),"<<"\t"<<"(FRONT) (IN MPs)"<<"\t"<<"MEMORY
(ROM),"<<"\t"<<"(RAM)"<<"\t"<<"NETWORK GENRATION"<<"\t";
   while(!fin.eof())
    { if(fin.eof()) break;
     fin.read( (char*) &m, sizeof(m) );

fout<<"\n"<<m.cname<<"\t"<<m.mobnm<<"\t"<<m.pro<<"\t"<<m.os<<"\t"<<m.
osver<<"\t"<<m.sensors<<"\t"<<m.year<<"\t"<<m.battery<<"\t";
     for(int i=0 ; i<4 ; i++)
    {

      fout<<m.price[i];
      if(m.price[i]>0) fout<<",000";
      fout<<"\t";

    }


fout<<m.dim[0]<<"\t"<<m.dim[1]<<"\t"<<m.dim[2]<<"\t"<<m.weight<<"\t"<<m.
cam[0]<<"\t"<<m.cam[1]<<"\t";
     for(i=0 ; i<2 ; i++)
     {   if(m.mem[i]<0)
        {   m.mem[i]*=-1;
           fout<<m.mem[i]<<" MBs"<<"\t";
        }
            else
               fout<<m.mem[i]<<" GBs"<<"\t";
     }
     fout<<m.net<<" G"<<"\t";
     }
            fin.close(); fout.close();  ptext("data\\text\\expguide.dat",14,9,7);
           getch();
            }
```

SCREENSHOTS:

1.Welcome screens

2.Login screens

3.Main-menu screens



4.Sub-menu screens

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LAVISH-SWARNKAR