# **جامعة الزقازيق**

# **كلية الهندسة**

# **الفرقة الأولى قسم الهندسة الكهربية**

**Research about**

**“Hospital Management System”**

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**Abstract**

With c program language I will make a program (Hospital Management System) which simulate the process in any hospital. In this program the user can enter data of patients such as their name, address, age, gender, service, and their description of their diseases. In this program I will store data in global variables not local to make it easy to use it in all functions. I will use array for some variables such as name, number of patients, room number.

The main functions in the program are:

1. **Add new patient record**: In this function, user can add a new patient record choosing between O.P.D. service and Emergency service. In O.P.D. service, name, address, age, gender, disease description and specialist room number to be referred are available. The information to be given are same in Emergency service.
2. **Edit patient record**: User can search with record number of the patient. All the information corresponding to the respective patient are displayed. These include the ones provided while adding a new patient record. If wrong information about record number or patient full name is provided, the program displays a message saying that no records were available.
3. **List record of patients:** users can list patient records by choosing any one of the two options listed below: 1- Records of Emergency patients 2- Records of O.P.D. patients
4. **Delete patient records**: This function allows user to delete added record of any patient.
5. **Change password**: in this function user can change the password which allow him to enter any function such as delete patient record function.
6. There areother functions in the program I will explain it in introduction.

**Introduction**

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| Function | Input | Output |
| void passwordfunction () | User should enter the password and the program check if the user enter the correct password or not by comparing it with initial password which created in the global place before, and if the password is correct the program go to main menu function | In the screen window appears some sentences like(enter your password to open the program, checking password, you enter the wrong password!:(, press any key to try again:, you enter the wrong password for three times!, ) |

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| Function | Input | Output |
| void mainmenu () | User should enter the number of the options which he choice such as if the user enters number 1 the program goes to Add new patient record function and so. If the user enters wrong number, the program prints in screen error message that told the user that he enters wrong number and allow to hem to enter another number again. | In the screen window appears some sentences like ((1) Add New Patient, (2) Edit Patient Record, (3) List Record of Patients, (4) Delete Patient Record, (5) Change Password, (6) Exit) each sentence have a number before it to make the choice easy to the user |

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| Function | Input | Output |
| void addpatient () | When the user enters number 1 in main menu function the program opens add patient record function. In this function user should enter the patient number if this number was added before the program prints error message and allows to the user to enter another number, choice your service(1)O.P.D OR (2)Emergency, patient name, patient age, patient address, patient gender(F/M, what is description of your disease, your room number, if the user enter number was added before program prints error message and allows to the user to enter another number. | When the add patient record function opens his title appears with a font down it. And some sentences appear one by one such as (enter the patient number:, this patient already in hospital, choice your service(1)O.P.D OR (2)Emergency:, enter patient name:, what is description of your disease:, enter your room number:, All patient data has been add, press any key to return to main menu:, his room not available, ). |

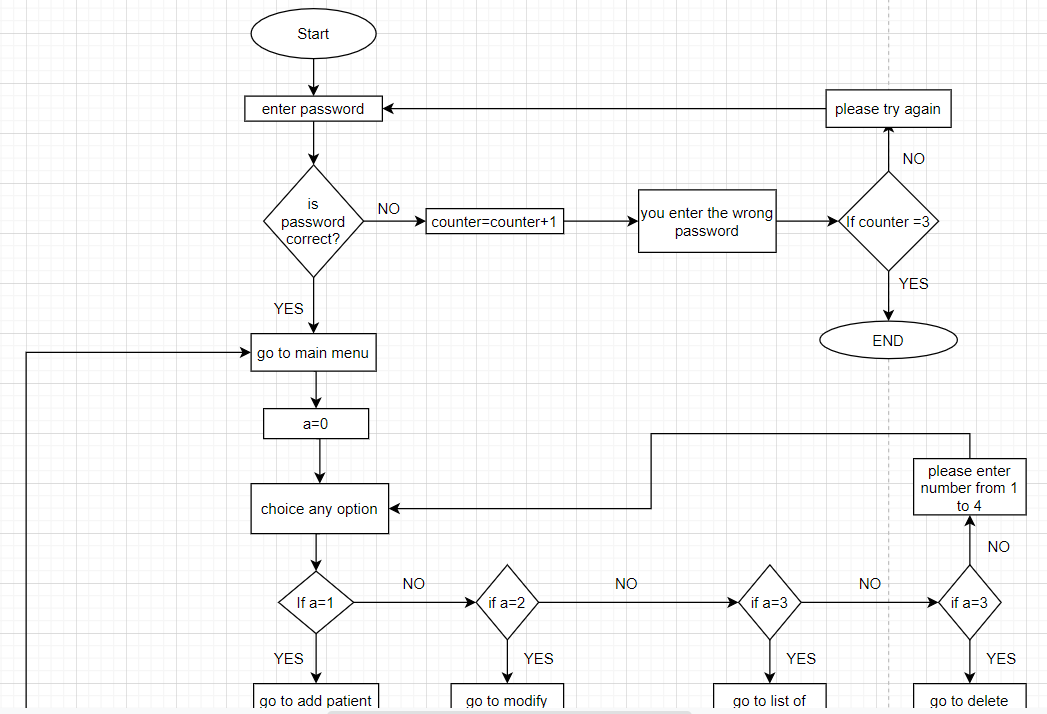
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| Function | Input | Output |
| void Editpatient () | When the user enters number 2 in the main menu function the program opens the edit patient record function. In this function the user should enter the patient number and the program search for it. If it found the program show all data of this patient. Else if it was not fount, error message told the user that this patient not added before and the program allow to him to enter another number. The user enters data of patient which he wants to modify such as name, age, gender, service, and room number. if the user enter number was added before program prints error message and allows to the user to enter another number | When the edit function opens its title appears in the middle if screen with a font down it. Some sentences appear one by one such as(enter patient number, choice your service(1)O.P.D OR (2)Emergency:, All patient data has been modified, press any key to return to main menu:, his patient number did not found, press any key to enter another number, enter patient address:, what is description of your disease). |

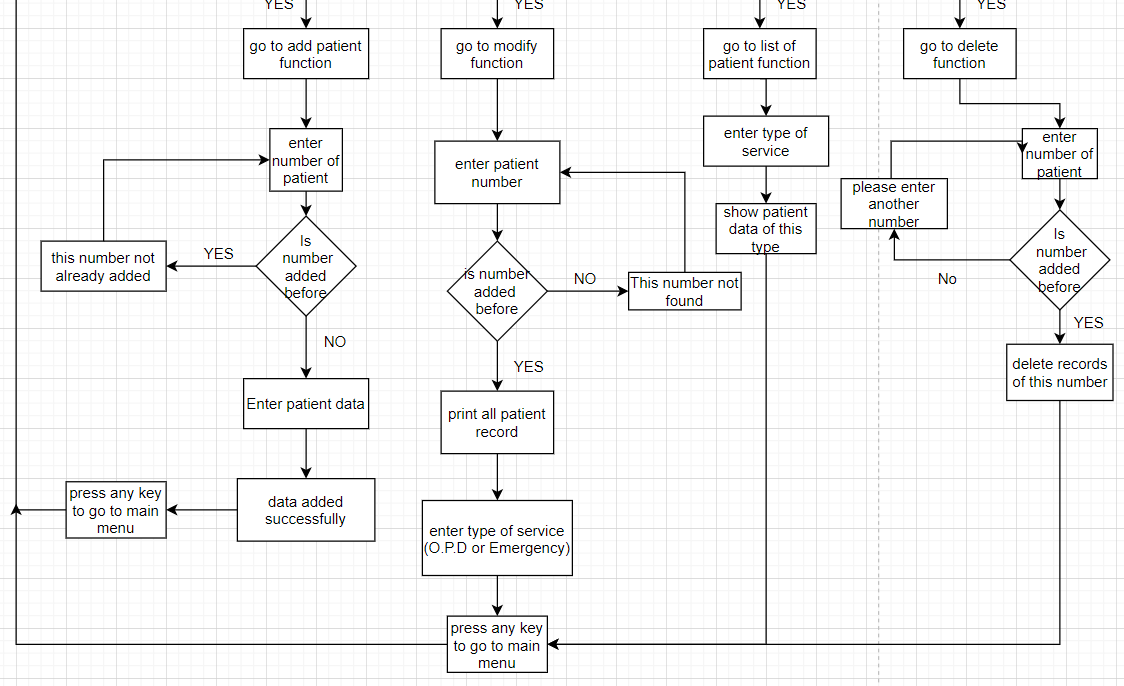
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| Function | Input | Output |
| void listshow () | User should enter the password to open this function. If the password was incorrect the program returns to main menu. Else the list record patient function open and the user should enter the type of service((1) O.P.D. patients OR (2) Emergency patients:) if the user enter number 1 the program print data of all patients which their service is O.P.D. patients. And if the user enters number 2 the program print data of all patients which their service is Emergency patients. | When the list record patient function opens its title appear in the middle of the screen with a font down it. Some sentences appears one by one under each other such as (Show Records of(1) O.P.D. patients OR (2) Emergency patients:, wrong number please enter number from(1 to 2) only:, you enter the wrong password!:(, press any key to return to main menu:). |

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| Function | Input | Output |
| void cleardata () | User should enter the password to open this function. If the password was incorrect the program returns to main menu. Else the delete record patients open. After that user should enter the number of the patient. the program search for it. If it found the program delete record data of this patient. Else if it was not fount, error message told the user that this patient not added before and the program return to main menu. | When the delete record patient function opens its title appear in the middle of the screen with a font down it. Some sentences appear one by one under each other such as(enter the password:, checking password, enter number of patient:, data has been delete successfully, press any key to return to main menu:, his number did not found press any key to go to main menu). |

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| Function | Input | Output |
| void changepass () | User should enter the old password. If the password was incorrect the program returns to main menu. Else if the program teel the user that he should enter the new password to change it. After that, the program returns to main menu. | When the change password function opens its title appear in the middle of the screen with a font down it. Some sentences appear one by one under each other such as (enter the old password: enter the new password: password has been changed successfully). |

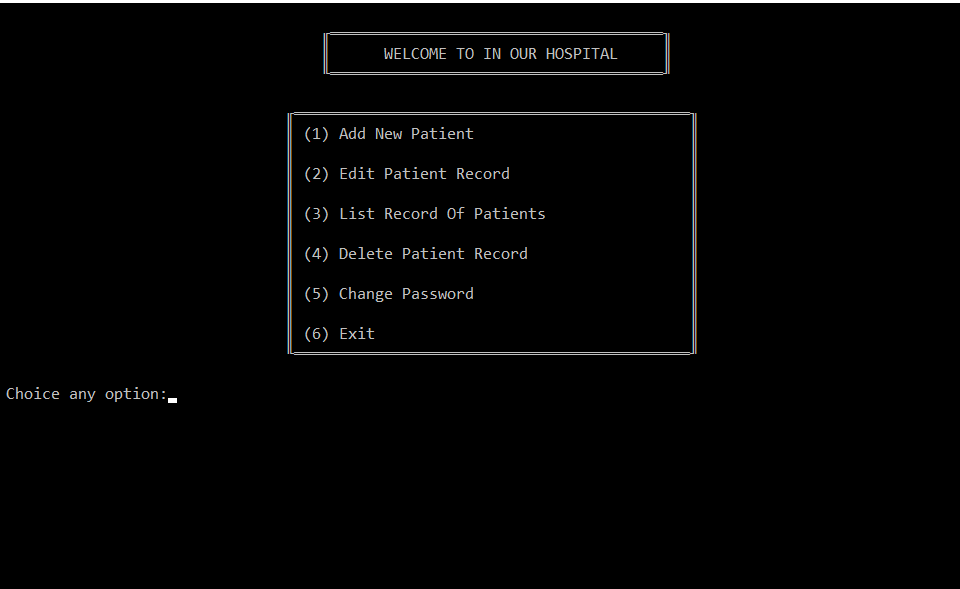
**Flow Chart:**

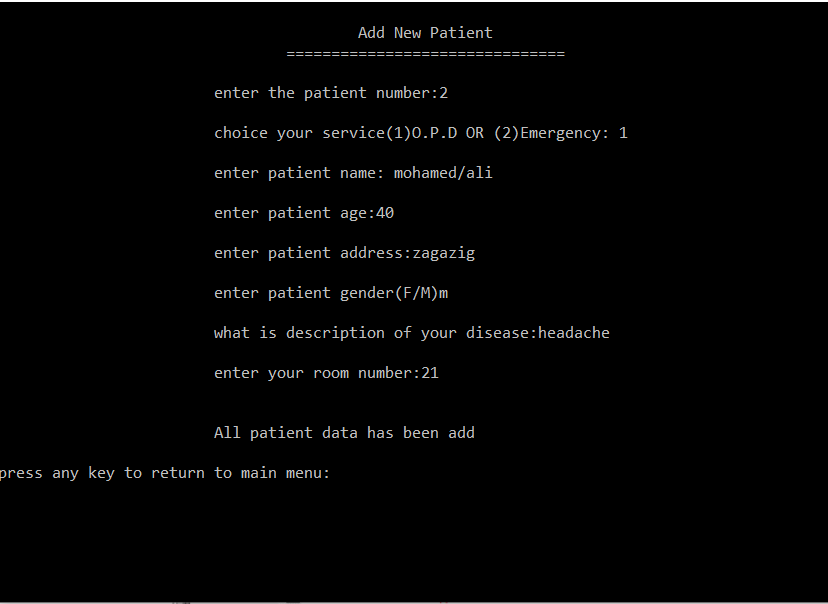
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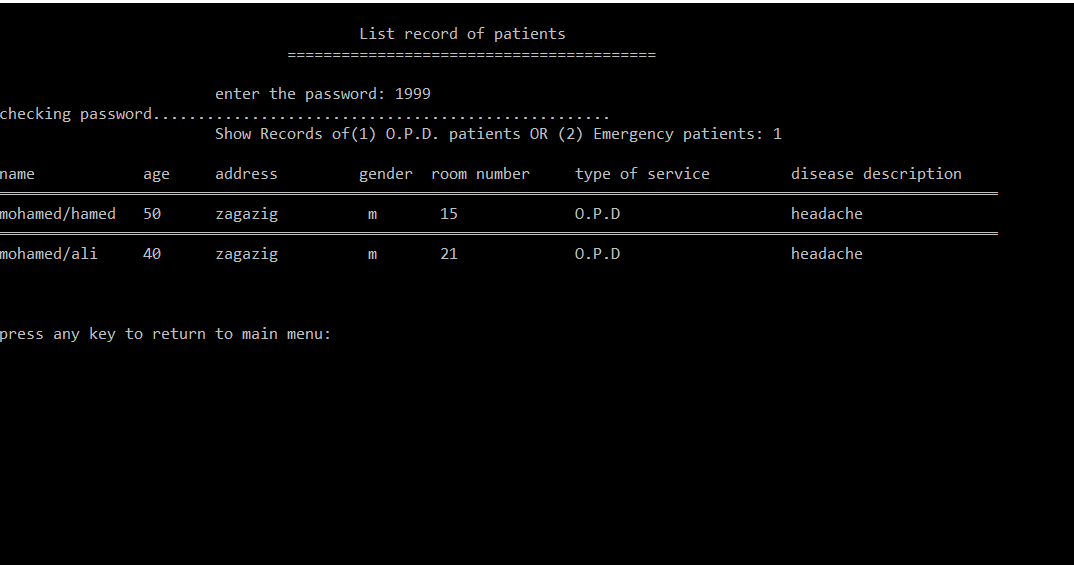
**Results**

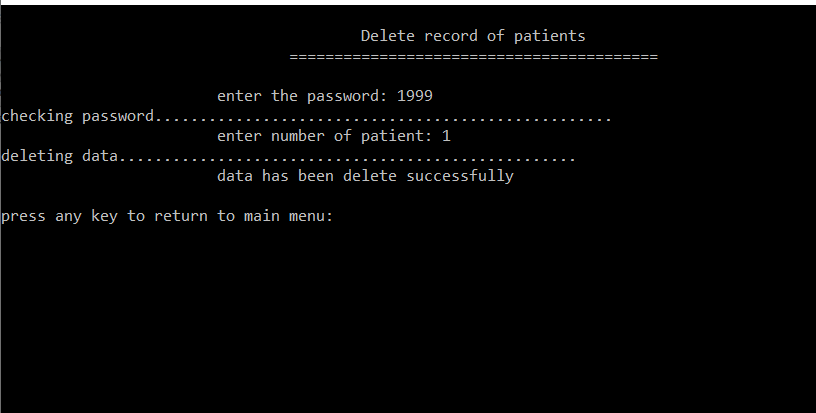
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| The code |
| #include <stdio.h>  #include <stdlib.h>  #include<string.h>  int password=1999,passcounter,ID[2000];age[2000],roomnumber[2000],counter,service[2000];  char name[30][2000],address[30][2000],desdisgrp[100][2000],gender[2][2000];  /\*\*\*\*\*\*\*\*\*\* to add time in the program\*\*\*\*\*\*\*\*\*/  void deltatime(int t){  int t1,t2;  for(t1=0;t1<t;t1++){  t2=t1;  }  }  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*password function\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  void passwordfunction(){  system("CLS");  int p;  printf("\n\t\t\t\t\tenter your password to open the program:");  scanf("%d",&p);  while(passcounter<2)  {  if(p==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("\nchecking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  mainmenu();  }  else {  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("\nchecking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  passcounter++;  printf("\n\n\t\t\t\t\tyou enter the wrong password!:(");  printf("\n\npress any key to try again:");  getch();  passwordfunction();  }  }  if(passcounter==2 & p==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("\nchecking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  mainmenu();  }  system("CLS");  printf("\n\t\t\t\t\tyou enter the wrong password for three times!");  }  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*main menu function\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  void mainmenu(){  system("CLs");  int c=0,x,y;  /\*\*\*\*\*\*\*\*\* for draw the title\*\*\*\*\*\*\*/  for(x=0;x<=2;x++){  printf("\n\t\t\t\t ");  for(y=0;y<=45;y++){  system("COLOR ");  if((x==0 && y==1))printf("\xD6");  if(x==0 && y==41)printf("\xB7");  if(x==0 && y>2 && y<40)printf("\xCD");  if(x==1 && y==0)printf("\xBA WELCOME TO IN OUR HOSPITAL \xBA");  if(x==2 && y==0)printf("\xD3");  if(x==2 && y>2 && y<40)printf("\xCD");  if(x==2 && y==41)printf("\xBD");  }  }  printf("\n");  /\*\*\*\*\*\*\*\*\*\* to draw the body(borders) of the main menu\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  for(x=0;x<=12;x++){  printf("\n\t\t\t\t");  for(y=0;y<=48;y++){  if((x==0 && y==1))printf("\xD6");  if(x==0 && y==48)printf("\xB7");  if(x==0 && y>2 && y<47)printf("\xCD");  if(x==1 && y==0)printf("\xBA (1) Add New Patient\t\t\t \xBA");  if(x==2 && y==0)printf("\xBA\t\t\t\t\t \xBA");  if(x==3 && y==0)printf("\xBA (2) Edit Patient Record\t\t\t\b\b\b\xBA");  if(x==4 && y==0)printf("\xBA\t\t\t\t\t \xBA");  if(x==5 && y==0)printf("\xBA (3) List Record Of Patients\t\t\t\b\b\b\xBA");  if(x==6 && y==0)printf("\xBA\t\t\t\t\t \xBA");  if(x==7 && y==0)printf("\xBA (4) Delete Patient Record\t\t\t\b\b\b\xBA");  if(x==8 && y==0)printf("\xBA\t\t\t\t\t \xBA");  if(x==9 && y==0)printf("\xBA (5) Change Password\t\t\t\t\b\b\b\xBA");  if(x==10 && y==0)printf("\xBA\t\t\t\t\t \xBA");  if(x==11 && y==0)printf("\xBA (6) Exit\t\t\t\t\t\b\b\b\xBA");  if(x==12 && y==0)printf("\xD3");  if(x==12 && y>2 && y<47)printf("\xCD");  if(x==12 && y==48)printf("\xBD");  }  }  printf("\n\n Choice any option:");  scanf("%d",&c);  while(c>6){  printf("\nenter number from 1 to 6 only: ");  scanf("%d",&c);  }  if(c==1)addpatient();  else if(c==2)Editpatient();  else if(c==3)listshow();  else if(c==4)cleardata();  else if(c==5)changepass();  else if(c==6){  system("CLS");  printf("\n\n\t\t\t\t\tThank you for using our program:)\n\n");  exit(0);  }  }  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*function for add new patient\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  void addpatient(){  system("CLS");  int a,s,r,o=1;  printf("\n\t\t\t\t\tAdd New Patient");  printf("\n\t\t\t\t");  for(int i=0; i<=30;i++){  printf("=");  }  printf("\n\n\t\t\tenter the patient number:");  scanf("%d",&a);  /\*\*\*\*\*\* check if the patient ID was entered before or not\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  for(int j=0;j<=counter;j++){  if(a==ID[j]){  printf("\n\t\t\tthis patient already in hospital ");  printf("\npress any key to enter another patient:");  getch();  addpatient();  }  }  /\*\*\*\*\*\*\*\*\*\*enter data of patient\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  ID[counter]=a;  printf("\n\t\t\tchoice your service(1)O.P.D OR (2)Emergency: ");  scanf("%d",&service[counter]);  printf("\n\t\t\tenter patient name: ");  scanf("%s",name[counter]);  printf("\n\t\t\tenter patient age:");  scanf("%d",&age[counter]);  printf("\n\t\t\tenter patient address:");  scanf("%s",address[counter]);  printf("\n\t\t\tenter patient gender(F/M)");  scanf("%s",gender[counter]);  printf("\n\t\t\twhat is description of your disease:");  scanf("%s",desdisgrp[counter]);  /\*\*\*\*\*\*\*\*\*\*\*\*check if the room was available or not\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  while(o<=1){  printf("\n\t\t\tenter your room number:");  scanf("%d",&r);  for(int m=0;m<=counter;m++){  if(r!=roomnumber[m]){  roomnumber[counter]=r;  counter=counter+1;  printf("\n\n\t\t\tAll patient data has been add");  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  }  printf("\t\t\tthis room not available\n");  }  }  /\*\*\*\*\*\*\*\*\*\*\*\*\*function for edit patient data\*\*\*\*\*\*\*\*\*\*\*\*/  void Editpatient(){  system("CLS");  int a,o=1,r;  printf("\n\t\t\t\t\tEdit patient Record");  printf("\n\t\t\t\t");  for(int i=0; i<=30;i++){  printf("=");  }  printf("\n\n\t\t\tenter patient number:");  scanf("%d",&a);  for(int i=0;i<=counter;i++){  if(a==ID[i]){  printf("\npatient data,\n");  printf("\nname\t\tage\taddress\t\tgender\troom number\ttype of service \tdisease description\n");  for(int j=0;j<=110;j++){  printf("\xCD");  }  /\*\*\*\*\*\*\*\*\*\*\*show old data\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  printf("\n%s\t%d\t%s\t\t %s\t %d\t\t",name[i],age[i],address[i],gender[i],roomnumber[i]);  if(service[i]==1)printf("O.P.D\t\t");  else printf("Emergency\t\t");  printf("\t%s",desdisgrp[i]);  printf("\n\nenter new patient data,\n");  /\*\*\*\*\*\*\*\*\*\*enter new data of patient\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  printf("\n\t\t\tchoice your service(1)O.P.D OR (2)Emergency: ");  scanf("%d",&service[i]);  printf("\n\t\t\tenter patient name: ");  scanf("%s",name[i]);  printf("\n\t\t\tenter patient age:");  scanf("%d",&age[i]);  printf("\n\t\t\tenter patient address:");  scanf("%s",address[i]);  printf("\n\t\t\tenter patient gender(F/M:)");  scanf("%s",gender[i]);  printf("\n\t\t\twhat is description of your disease:");  scanf("%s",desdisgrp[i]);  /\*\*\*\*\*\*\*\*\*\*\*\*check if the room was available or not\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  while(o==1){  printf("\n\t\t\tenter your room number");  scanf("%d",&r);  for(int m=0;m<=counter;m++){  if(r!=roomnumber[m]){  roomnumber[i]=r;  printf("\n\n\t\t\tAll patient data has been modified");  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  }  printf("\t\t\tthis room not available\n");  }  }  printf("\n\t\t\tthis patient number did not found");  printf("\n\npress any key to enter another number");  getch();  Editpatient();  }  }  /\*\*\*\*\*\*\*\*\*\*\*show list of patient\*\*\*\*\*\*\*\*\*\*/  void listshow(){  system("CLS");  int l,s;  printf("\n\t\t\t\t\tList record of patients");  printf("\n\t\t\t\t");  for(int i=0; i<=40;i++){  printf("=");  }  printf("\n\n\t\t\tenter the password: ");  scanf("%d",&l);  if(l==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("checking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  /\*\*\*\*\*\*\*\*\*\*\*\*\*show all data of all patients\*\*\*\*\*\*\*\*\*\*/  printf("\n\t\t\tShow Records of(1) O.P.D. patients OR (2) Emergency patients: ");  /\*\*\*\*\*\*\*\*\* check if the number is 1 or 2 only\*\*\*\*\*\*\*\*\*\*\*\*\*/  scanf("%d",&s);  while(s>2){  printf("\n\t\t\twrong number please enter number from(1 to 2) only: ");  scanf("%d",&s);  }  printf("\nname\t\tage\taddress\t\tgender\troom number\ttype of service \tdisease description\n");  for(int i=0;i<=counter;i++){  if(s==service[i]){  for(int j=0;j<=110;j++){  printf("\xCD");  }  printf("\n%s\t%d\t%s\t\t %s\t %d\t\t",name[i],age[i],address[i],gender[i],roomnumber[i]);  if(s==1)printf("O.P.D\t\t");  else printf("Emergency\t\t");  printf("\t%s",desdisgrp[i]);  }  printf("\n");  }  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  /\*\*\*\*\*\*\*\*\*\*\*\*\* if the user enter the wrong password\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  else {  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("checking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  printf("\n\n\t\t\tyou enter the wrong password!:(");  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  }  /\*\*\*\*\*\*\*\*\*\*function for delete patient data\*\*\*\*\*\*\*\*\*\*\*\*\*/  void cleardata(){  system("CLS");  int l,n;  printf("\n\t\t\t\t\tDelete record of patients");  printf("\n\t\t\t\t");  for(int i=0; i<=40;i++){  printf("=");  }  printf("\n\n\t\t\tenter the password: ");  scanf("%d",&l);  if(l==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("checking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  printf("\n\t\t\tenter number of patient: ");  scanf("%d",&n);  for(int i=0;i<=counter;i++){  if(n==ID[i]){  printf("deleting data");  for(int j=0;j<=50;j++){  deltatime(9999999);  printf(".");  }  ID[i]=0;  age[i]=0;  roomnumber[i]=0;  service[i]=0;  printf("\n\t\t\tdata has been delete successfully");  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  }  printf("\n\t\t\tthis number did not found press any key to go to main menu:");  getch();  mainmenu();  }  else {  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("checking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  printf("\n\n\t\t\tyou enter the wrong password!:(");  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  }  /\*\*\*\*\*\*\*\*\*\*\*\*function for change password\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  void changepass(){  system("CLS");  int c;  printf("\n\t\t\t\t\t\bChange password");  printf("\n\t\t\t\t");  for(int i=0; i<=30;i++){  printf("=");  }  printf("\n\n\t\t\tenter the old password: ");  scanf("%d",&c);  if(c==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("checking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  printf("\n\n\t\t\tenter the new password: ");  scanf("%d",&password);  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("changing password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  printf("\n\n\t\t\tpassword has been changed successfully");  printf("\n\npress any key to return to main menu:");  getch();  mainmenu();  }  else {  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("checking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  printf("\n\n\t\t\tyou enter the wrong password!:(");  printf("\n\npress any key to try again:");  getch();  changepass();  }  }  int main()  {  passwordfunction();  return 0;  } |

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**Discussion**

In our program and in the password function, the user inter the password and if it is correct( Equal to the value of the variable defined in the general place which holds the password ( the program moves To the main menu, and if it is not correct, an error message is shown to the user in order to try again, and at this moment another general variable increase +1, and when this variable reaches three (i.e. its value is equal to 3) an error message is shown to the user and the program is exited and I have While() function for this process.

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| system("CLS");  int p;  printf("\n\t\t\t\t\tenter your password to open the program:");  scanf("%d",&p);  while(passcounter<2)  {  if(p==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("\nchecking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  mainmenu();  }  else {  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("\nchecking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  passcounter++;  printf("\n\n\t\t\t\t\tyou enter the wrong password!:(");  printf("\n\npress any key to try again:");  getch();  passwordfunction();  }  }  if(passcounter==2 & p==password){  /\*\*\*\*\*\*\*\*\* to show the loading \*\*\*\*\*\*\*\*\*\*\*/  printf("\nchecking password");  for(int i=0;i<=50;i++){  deltatime(9999999);  printf(".");  }  mainmenu();  }  system("CLS");  printf("\n\t\t\t\t\tyou enter the wrong password for three times!");  } |

**Conclusion**

In our program (Hospital Management System ) we can store much data such as (name, age, room number, type of service, and address of patient) we can use like this program in real life because it save time. In this program we used arrays to store much data. This program and the program like it are a data base program because it can save data.in the end I say that this program run without errors. And it is easy to use.