



Near East University

Faculty of Engineering

Department of Computer Engineering

Hospital Database Management

Graduation Project
COM 400

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Acknowledgement

This is my final project in my Bachelor's degree of Computer Engineering at Near East University. Finalizing my four years of study period, I have chosen my graduation project to be about hospital database management using Microsoft Access.

With the support and supervision of my advisor, I tried to give the best I could to make this work useful and satisfactory.

Presenting my project, I would like to thank everyone who helped in finishing this work. My most thanks are to Mr. Okan Donangil, my supervisor, for giving me his advice and support, and for directing me during my work.

I wish this project will be as useful as I worked on creating it.

Abstract

This project is a database management system, designed for managing data and accounts of a hospital, using Microsoft Access.

I am going to start my report with an introduction about hospitals and their importance in society, then I will talk about the departments of the hospital and the work done at each one of them. After introduction, I will explain the system design of the hospital, and the processes that take place in each step of the work. Then, I will show the system flowchart of the hospital.

After you are aware of the system design, I will start declaring each one of the databases I have done, and the way it is used.

Then, I will draw the screen layouts of each database in the project.

I have showed in this program some common and general processes which take place in hospitals, and I have done their related databases. These may be some of many processes and databases happening in this institution, but I have showed a general work.

Introduction

Hospital is an institution that provides medical care and services to patient people. This institution is very important for society because its principle is to help people to live a more healthy life.

Because of the great importance of hospitals, they have to be organized and managed well enough to provide the best services to people. Management is always necessary for the success of any institution, and at hospitals, management plays a big role for providing the best possible health care to patients. The accounting part is also very important, it has to be managed well enough to secure continuity for the hospital.

In this project, I am presenting a database management system for a hospital. Using Microsoft Access, I have created the most needed databases for this hospital, these databases would be enough to manage information, accounts and processes.

Departments of the hospital:

Our hospital consists of five main departments: Registration, Accounting, Laboratory, Pharmacy, and Medical departments.

- *Registration Department:*

It is located in the reception lobby of the hospital, in where it can receive patients once they arrive. The staff of this department consists of two employees called the registrars, they are normally professional in information system management and well-trained on using Microsoft Access for doing their works. This department is responsible for registering patients and managing their files.

- *Accounting Department:*

This department consists of three employees, they are normally accountants and also trained on using the designed accounting databases system. They create an account for each patient and manage these accounts as well as the general accounts of the hospital.

- *Medical Department:*

This is responsible for diagnosing and treatment of the patient. It consists of eight doctors and four nurses, doctors vary in their specialization and each one is responsible for their own field.

- *Laboratory:*

This is where required lab tests are made to patients and results are given. Two laboratorians work at this department, they are qualified and well-trained.

- *Pharmacy:*

The pharmacy store gives the patient medicines and doses that are recommended by the doctor. The staff, consisting of two pharmacist, provide the patient with the prescription of the doses and the way to use them.

System Design

The following processes take place for every case at our hospital:

- Patient registration
- Diagnosis
- Laboratory Check up
- Treatment
- Pharmacy supply

- Patient Registration:

The patient arrives at the hospital, he/she goes to the registration department (in the reception hall) to get registered. The registrar staff takes some information about the patient and stores them into the Patients Table.

The patient is then given two forms: a patient card and an accounting form. The patient card is created to be used as an ID card of the patient, with which he/she can follow the treatment process, and be more aware of their case. This card is also necessary for the patient in his next visits to the hospital.

The accounting form is a general bill which contains all the costs of the treatment. (For example: when the patient requires some medicines from the pharmacy, he is asked to pay the price to the accounting department. The accounting department signs on the account form and writes in the amount of money paid the patient, then the patient returns to the pharmacy to get the required medicine.)

After the patient takes these forms from the registration department he/she is directed to the Diagnosing Department to get some diagnosis.

- Diagnosis

In the Diagnosing room, the doctor checks up the patient to identify his case. After finishing the diagnosing the doctor opens the patient table and types the results of the check up in the Diagnosis field.

- Laboratory

If the patient needs any laboratory test such as blood check, he/she is sent to the laboratory department, in where the laboratorian staff checks the patient in the needed type of diagnosis. When the laboratorian finishes this process, he open the laboratory table and types the results and costs in the proper fields.

The patient then returns to the doctor with the results of the lab check.

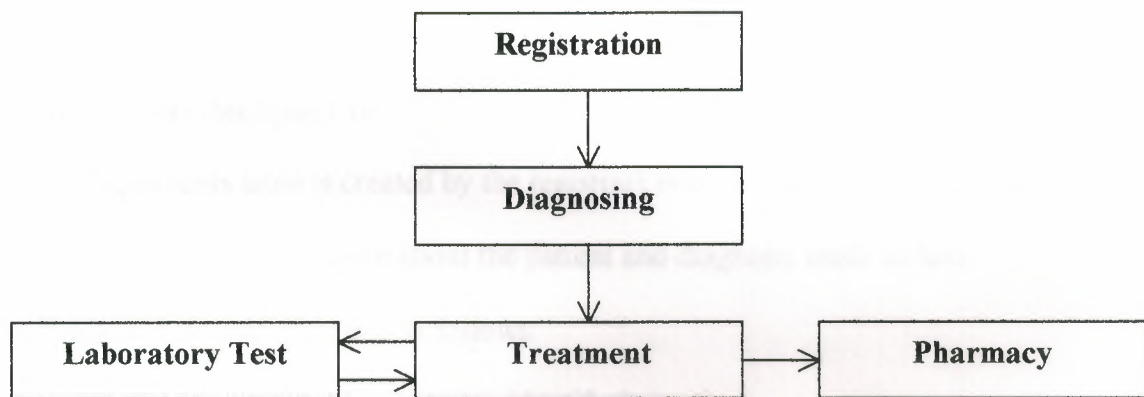
- Treatment

The doctor takes the results of the diagnosing from the patient and starts the proper treatment.

After treatment is done, the doctor opens the Patient-Account table and enters the cost of treatment and asks the patient to pay the money at the accounting department. If the patient needs any medicine, the doctor gives a prescription to the patient which includes the recommended medicines and the way it should be taken.

- Pharmacy

The patient goes to the pharmacy and gives the prescription to the pharmacist, who gives the necessary medicines and asks the patient to pay the price at the accounting department. After this process is done, the pharmacist opens the Pharmacy table and types the necessary information in the proper field together with the costs of the given medicines.



System Flowchart

Declaration of Databases

a. Tables:

1. Patients
2. Staff
3. Medicines
4. Laboratory
5. Pharmacy
6. Account-Pharmacy
7. Account-Laboratory
8. Account-Patient

1. Patient table: (See figure 1.1)

The patients table is created by the registrars once the patient arrives in the hospital. It contains information about the patient and diagnosis made to him.

The fields of this table are filled as follows:

Patient ID: this is an ID number given to identify the patient.

First Name: first name of the patient.

Last Name: last name of the patient.

Birth Date: the birth date of the patient.

Address: home address or any permanent address of the patient.

Home Phone: the home phone of the patient or his family.

Occupation: the patient's job or profession.

Diagnosis: entered by the doctor, it contains the diagnosis made for the patient.

Social Security #: if a patient has social security, the number is entered in this field.

Notes: other notes are entered in this field.

2. Staff table: (See figure 1.2)

All information about the employed staff in the hospital is entered in this table.

The fields of this table are filled as follows:

ID: this is the ID number of the employee.

First Name: first name of the staff is entered in this field.

Last Name: last name of the staff.

Title: this is the title or occupation of the staff, whether it is a Doctor, Nurse, Accountant, ..etc.

Address: home address of the staff is entered in this field.

Home phone: home phone number of the staff.

Mobile phone: cellular phone number of the staff is entered in this field. This is needed for reaching the doctor or nurse at any time in case of emergency.

Birth Date: birth date of the employee.

Date Hired: this is the date on which the employee was hired at the hospital.

Salary: the salary wage of the staff (monthly).

Social Security Number: in this field, the social security number is entered.

Photo: in the field, you can see the photograph of the employee.

Notes: any other notes are entered in this field.

3. Medicines table: (See figure 1.3)

This table is used for entering information about the medicines and doses available in the pharmacy. It also indicates the number of units available of each medicine and their prices.

Serial Number: the serial number of the medicine.

Name & Code: the name and code of the medicine.

Description: this is the description of the medicine and what it is used for.

Supplier Company: the company that supplies the hospital with this medicine.

Units in Stock: the number of units available of this medicine in stock

Price per Unit: the price of this medicine per one unit.

4. Laboratory table: (See figure 1.4)

This table is related to the laboratory tests. After diagnosing the patient, the staff of the lab enters the information in the proper field as follows:

Patient ID: This is the ID number of the patient

Patient Name: the name of the patient.

Date checked: the date on which the patient was checked.

Type of check: the type of check which was given to the patient

Result: the result of the check.

Cost: the cost charged to the patient for doing the lab check.

Notes: other notes.



5. Pharmacy table: (See figure 1.5)

This table is related to the pharmacy department. At the pharmacy, the staff enters the information in the proper fields as shown below:

Date: the current date.

Patient Name: the name of the patient.

Medicine Given: the medicine which is given to the patient.

Units sold: the number of units given.

Given By: the name of the doctor that recommended this medicine.

Notes: other notes are entered in this field.

6. Accounts-Pharmacy table: (See figure 1.6)

This table is an accounts table for the pharmacy. It indicates the number of units sold of each medicine and at which price.

The fields of this table are filled as follows:

Date: This is the date of the account.

Name & Code: The name & medical code of the medicine.

Units in Stock: The number of units available of this medicine in stock.

Units Sold: The number of sold units.

Price per Unit: The price of medicine sold per one unit.

7. Accounts-Laboratory table: (See figure 1.7)

This table indicates the accounts and costs charged to patients for their lab check.

Date: the current date.

Patient Checked: the name of the patient.

Cost Charged: the cost of the lab check.

Notes: other notes.

8. Accounts- Patients table: (See figure 1.8)

This table indicates the following fields:

Date: the date of the account.

Bill Number: the number of the bill or invoice.

Patient Name: the name of the patient.

Supervising Doctor: the name of the doctor.

Diagnosis Cost: the cost charged for diagnosing.

Treatment Cost: the cost charged for treatment.

Laboratory Charge: the amount of money charged for lab check.

Pharmacy Charge: the charged price of medicines given to the patient.

Discount (percent): if the patient has a health insurance, a discount is given to them.

The value entered in this field is a percentage value.

Payment Date: the date of the payment done.

Payment Method: the method of (check, credit card, or cash).

Credit Card Number: The name and number of the credit card is entered in this field.

Check Number: if payment was done by money check, the number of check is entered in this field.

Notes: other notes are entered in this field.

b. Queries:

1. Medicines Query
2. Account-Patient Query
3. Account-Pharmacy Query
4. Account-Patient for May/2000 Query

1. Medicines query: (See figure 2.1)

This query calculates the total price of each medicine available in stock, this is important because it lets the manager know the value of the stock medicines.

“Total Price = units in stock * price per unit”

2. Account-Patient query: (See figure 2.2)

This query calculates the total cost for the patient, then calculates the required payment by subtracting the discount from total cost.

“Total cost = diagnosis cost + treatment cost + laboratory charge + pharmacy charge”

“required payment = Total cost – (total cost * discount)”

3. Account-Pharmacy Query: (See figure 2.3)

This query calculates the income of each medicine sold in the pharmacy, and the number of units left in stock.

“Income = Units sold * Price per unit”

“Units left in stock = Units in stock – Units sold”

4. Account-Patient for May/2000 Query: (See figure 2.4)

This query displays all the account of the month May of the year 2000. This data is taken from the Account-Patient table and given a criteria that only the date between 5/1/00 6/1/00 is displayed with the related fields.

c. Forms:

1. Staff form
2. Patient form
3. Prescription form
4. Medical Reports form

1. Staff Form: (See figure 3.1)

This form shows information about the staff of the hospital with their picture.

2. Patient Form: (See figure 3.2)

This form shows information about the patient.

3. Prescription: (See figure 3.3)

This form is the prescription which the doctor makes for the patient to be able to get medicines from the pharmacy.

4. Medical Reports: (See figure 3.4)

The patient needs a medical report from the hospital, which proves his case to their boss at work or to an instructor in their school. So, the form is filled and printed as a medical report for the patient.

d. Reports:

1. Account-Patient Report
2. Account-Laboratory Report
3. Staff Report

1. Account-Patient Report:

It is a report about the accounts of the patients. This report information taken from Account-Patients Query about the patients' total cost of treatment, the percentage of discount, and the required payments. The report arranges the data according to patient's name.

2. Account-Laboratory Report:

It is a report of the accounts of the laboratory. It includes the patient's name and the cost charged, this data is arranged according to the date of the lab test.

3. Staff Report:

It is a report about the staff of the hospital. This report shows information about the staff arranged according to their titles at the hospital.

Screen Layouts

A. Tables:

1. Patients table:

ID	First Name	Last Name	Birth Date	Address	Home Phone	Occupation	Diagnosis	Social Security #	Notes

Figure 1.1

2. Staff table:

ID	First Name	Last Name	Title	Address	Home Phone	Mobile Phone	Birth Date	Date Hired	Salary	Photo	Social Security #	Notes

Figure 1.2

3. Medicines table:

Serial Number	Name & Code	Description	Supplier Company	Units in Stock	Price per unit

Figure 1.3

4. laboratory:

Patient ID	Patient Name	Date Checked	Type of Check	Results	Cost	Notes

Figure 1.4

5. Pharmacy:

Patient ID	Patient Name	Medicine Given	Units Sold	Given by	Notes

Figure 1.5

6. Account-Pharmacy:

Date	Name & Code	Units in Stock	Units Sold	Notes

Figure 1.6

7. Account-Laboratory:

Date	Patient Checked	Cost Charged	Notes

Figure 1.7

8. Account-Patients:

Date	Bill Number	Patient Name	Supervising Doctor	Diagnosing Cost	Treatment Cost	Laboratory Charge	Pharmacy Charge	Discount (percent)

Payment Date	Payment Method	Credit Card #	Check Number	Notes

Figure 1.8

B. Queries:

1. Medicines Query:

Name & Code	Units in Stock	Price Per Unit	Total Price

Figure 2.1

2. Account-Patient Query:

Date	Bill #	Patient Name	Supervising Doctor	Diagnosing Cost	Treatment Cost	Lab Charge	Pharmacy Charge	Discount (percent)	Payment

Figure 2.2

3. Account-Pharmacy Query:

Date	Name & Code	Units in Stock	Units sold	Price per unit	Income	Units Left in stock

Figure 2.3

4. Account-Patients for May/2000 Query:

Date	Bill #	Patient Name	Supervising Doctor	Diagnosing Cost	Treatment Cost	Lab Charge

Pharmacy Charge	Total Cost	Discount (percent)	Payment

Figure 2.4

C. Forms:

1. Staff Form:

ID		
First Name	Last Name	Photo
Birth Date	Date Hired	
Title		
Home Phone		
Mobile Phone		
Salary		

Figure 3.1

2. Patients Form:

Patient ID
First Name
Last Name
Birth Date
Address
Occupation
Home Phone
Diagnosis
Social Security Number
Notes

Figure 3.2

3. Prescription:

Patient Name	
Medicine Given	Given by
Units Sold	
Notes	

Figure 3.3

4. Medical Reports:

Patient Name
Supervising Doctor
Diagnosis
Notes
Signature of Doctor

Figure 3.4

Conclusion

Using this program, the hospital can manage the process and organizes the accounts. I have showed some examples of the most common processes and their related databases. But this project can be largely extended , if needed, to manage anything else we have not mentioned here. Any more tables, queries, forms or reports required by the manager of the hospital can be done in the same way showed in this project.

I would like to thank everyone who helped me in finishing this project, and special thanks to Mr. Okan Donangil for his supervising and support.

I hope this project would be as useful as I tried to create it.