Faculty of Computer Systems & Software Engineering
Universiti Malaysia Pahang

BCI2023 Database Systems
Semester 1 2010/2011

Project Task 1 : E-Health Care System(E-HCS)

Lecturer's Name: Dr. Noraziah Ahmad

Group Members

1.	CHANG KWEE MING	CB09032	C22BCS
2.	LOW MEE PENG	CB09084	C22BCS
3.	RAIHANA BT.BAHARUM	CB10095	C22BCS
4.	MOHAMAD SHUKRI B. ZAHARI	CB09069	C22BCS
5.	HAZWANI LIANA BINTI ABBAS	CB09055	C22BCS

Contents

Project title

E-Health Care System

System overview

E-Health Care System (E-HCS) is a system that manages different types of data in a health care clinic system. This system also will help the clinic management work properly and smooth. Through system, there have a relationship between the nurse, patient and the doctor.

Firstly, patients need to queue up and fill in the registration form for the clinic management. After that, the staff admin (nurse) will key in the information and make an appointment to the patient and send to the doctor. From this, we are converting the form method to the computerized methods using oracle database system. During the appointment day, patient will be consult by doctor. After consulted by doctor, it will send the health history and the medicine slip to administrator (nurse).

Introduction/background

As a patient, we all know that most of clinics in these countries are still use manually registration on their patient by key-in the name in a “logbook”. So, this EHCS system will convert the manual into computerized system. Besides that, all data will recover in this system and keep the patients’ data concurrently..

In this system, there have a recovery data of the patient’s information. Apart from that, this system also can easily to use in searching the patient information by using it.

Problem statement

Via the manually to computerized system, its may have its own conditions:

- Waste the places in office to keep in the forms for the patient permanently.
- Double work if patient needs to queue up and repeat the step again during consult by doctor.
- Have a high potential risks on recovery data such as burning.
- Manpower and the environments in office do not allow the staffs to handle the form and lots of data and information.
- Encryption/decryption of data (unsecured for others people to access and alter the data without administration).

Objectives

For this system, there have many kinds of objectives that consider on it is:

- reduce the complexity of data
- Provides a level in finding patient information.
- Save time/reduce the manpower.
- Convert the manual form to computerized system.

Scope (system and user)

For User :

a) Patient : Register to the nurse.
View the appointments.
View the payment information.

b) Nurse : Approve the Register for the patient
Send the details of patient to the doctor
Calculate the payment

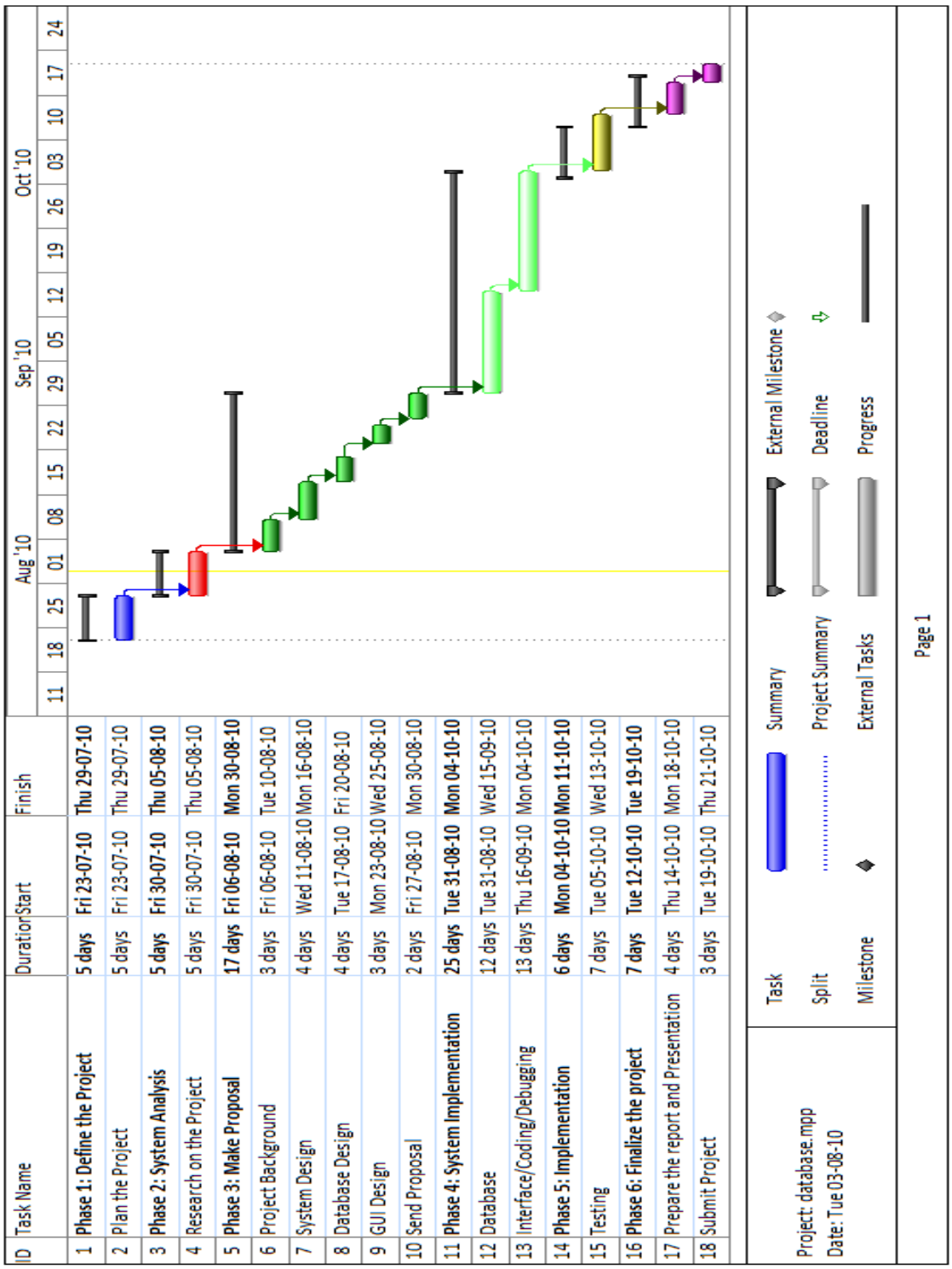
c) Doctor : Get the appointment details for each patient.

For System : It is based on the system while need to update the patient information.

Planning for the project

a. Staff(nurse) module- Chang Kwee Ming
b. Doctor module- Mohamad Shukri B. Zahari
c. Patient module- Hazwani Liana Bt. Abbas
d. Appointment module- Low Mee Peng
e. Medicine module- Raihana Bt. Baharum

Gantt chart


ID Task Name Duration Start Finish
1 Phase 1: Define the Project 5 days Fri 23-07-10 Thu 29-07-10
2 Plan the Project 5 days Fri 23-07-10 Thu 29-07-10
3 Phase 2: System Analysis 5 days Fri 30-07-10 Thu 05-08-10
4 Research on the Project 5 days Fri 30-07-10 Thu 05-08-10
5 Phase 3: Make Proposal 17 days Fri 06-08-10 Mon 30-08-10
6 Project Background 3 days Fri 06-08-10 Tue 10-08-10
7 System Design 4 days Wed 11-08-10 Mon 16-08-10
8 Database Design 4 days Tue 17-08-10 Fri 20-08-10
9 GUI Design 3 days Mon 23-08-10 Wed 25-08-10
10 Send Proposal 2 days Fri 27-08-10 Mon 30-08-10
11 Phase 4: System Implementation 25 days Tue 31-08-10 Mon 04-10-10
12 Database 12 days Tue 31-08-10 Wed 15-09-10
13 Interface/Coding/Debugging 13 days Thu 16-09-10 Mon 04-10-10
14 Phase 5: Implementation 6 days Mon 04-10-10 Mon 11-10-10
15 Testing 7 days Tue 05-10-10 Wed 13-10-10
16 Phase 6: Finalize the project 7 days Tue 12-10-10 Tue 19-10-10
17 Prepare the report and Presentation 4 days Thu 14-10-10 Mon 18-10-10
18 Submit Project 3 days Tue 19-10-10 Thu 21-10-10
Aug '10 Sep '10 Oct '10
11 18 25 01 08 15 22 29 05 12 19 26 03 10 17 24
Project: database.mpp
Date: Tue 03-08-10
Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline
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Case Study No 1

System Name : eClinic Management System
Summary:

In this Arian Soft eClinic System, there is a medical practice management, electronic medical records, prescription writing, and medical billing application on its own database system.

These programs also referred to as electronic health of database records system. Highly secure by industry compliance SSL and fast in processing due to its super architecture on My SQL DB. EClinic System is also combines ready-to-use functional modules for day-to-day clinic operations with reporting and accounting functions in order to deliver efficient management for patients, nurses and doctors.

EClinic also features expansibility and customization, with tailor-made modules according to different individual needs of each clinic. These enable health business owners/ health service managers to pursuit functions like customer relationship management (CRM) and short message service (SMS) for reminders or for reporting in health assessment programs and managed care.

Objective:

- To ensure business continuation by forwarding to another data centre for data input and retrieval when needed.
- Keeping all clinical information safe.
- Enable health business owners.

Special Requirement for this System:

FEATURES	eClinic	Others
Data encryption	Yes	No
Risk management	Yes	No
Automatic Back Up	Yes	No
Friendly User interface	Yes	No

Major features on this system:

- Multilanguage Support;
- Electronic Billing;
- Document management;
- Integrated practice management;
- E-Prescribing;
- Insurance tracking (3 insurances);
- Easy to customize;
- Prescriptions by printed script fax or email;
- Multiple Facilities
- Many layer of Access Level Administrator, Doctor, Nurse, Staff and Physician

ADDITIONAL MODULES

In-Patient

For wad management and other extended module available and can be fully customized.

Email and SMS Text Messaging

Remind the doctor about special visiting case. Remind for patient about clinical appointments. Other health related advice and reminder for taking medicine etc can be automated.

Case Study No 2

System Name: Dynacrates Clinic Management System
Summary:

Dynacrates is one of the Clinic Management software which helps in efficient clinic management by managing Doctor's appointments, medical billing, patients' treatment history, diagnostics information and the administrative activities of a clinic or a hospital. Apart from the standard features of other clinic management software, Dynacrates was developed considering the end user in mind. Dynacrates' ease of use, speed in retrieving information, multi-user functionality and manageability are exemplary compared to other applications.

Dynacrates offers modules for the management of Doctor's Appointments, Specializations, Diagnostics, Treatment, Prescriptions, Lab Analysis Reports, Patient-Information including history, Administrative activities and Billing.

Dynacrates has modules for various users in a Clinic. These modules are integrated thus information once entered is available wherever required without the need for re-entering it.

Objectives and Purposes of the system:

- Stores complete patient data
- Information at the press of a mouse-click
- Information availability across departments.
- Safe Storage of data
- Billing of patients
- Maintenance of Tariffs
- Multi Doctor, Multi Room appointment handling
- Portable database for Consulting Doctors
- Easy retrieval of History information

System Requirement of Dynacrates System (Minimum Requirement)

- For Single User: PC with 32MB RAM, 2GB HDD and Windows95/98/2000/NT
- For Multiple Users: PCs on a LAN with 32MB RAM, 2GB HDD and Windows95/98/2000/NT. The database is deployed at a central location.

COMPARISON BETWEEN TWO OF CASE STUDY

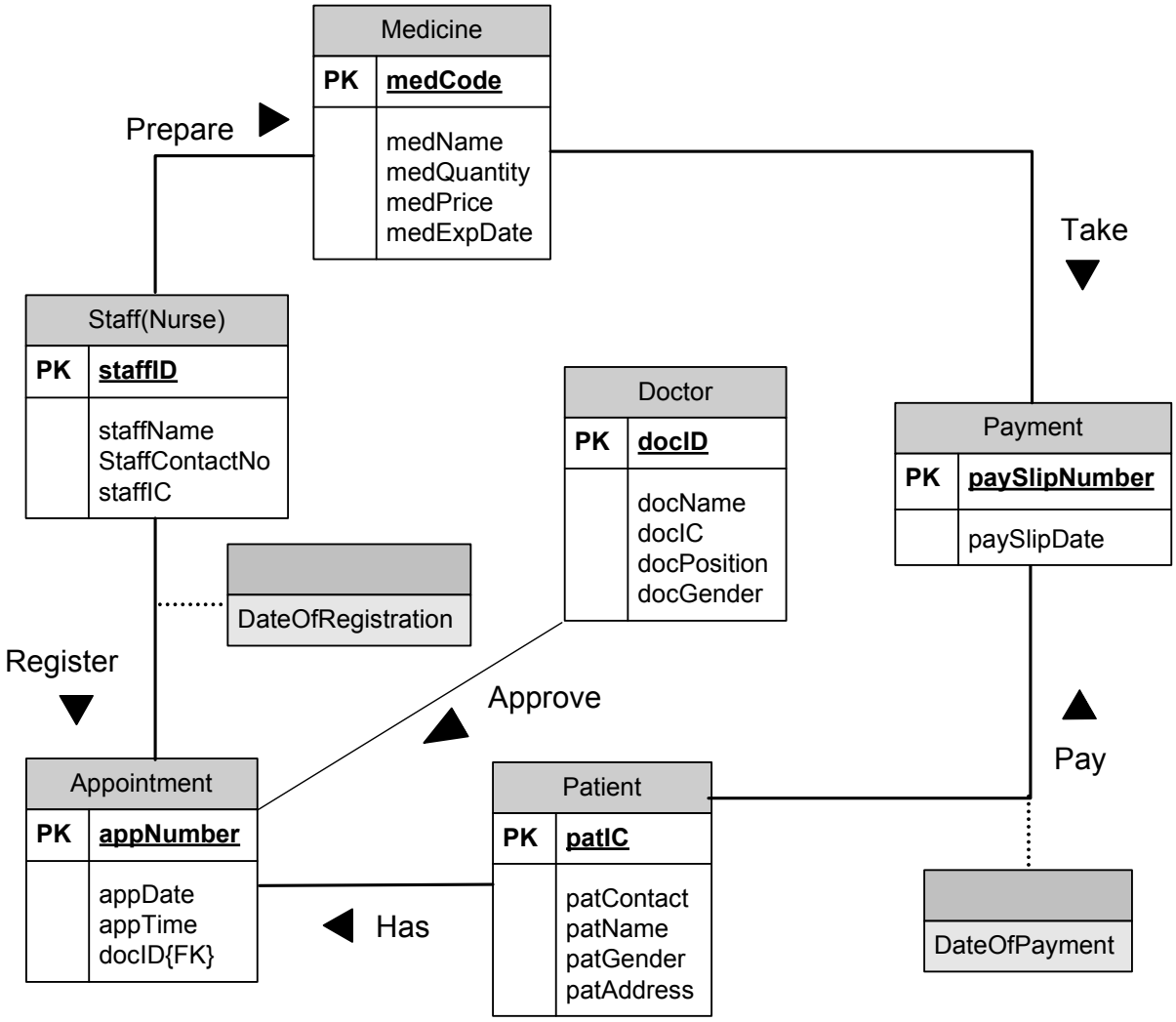
The table below shows the differentiation of two systems. There are consisting own module, entity, patient attributes, database and features. Normally users are require to make a registration before continues with the system application.

	DYNACRATES Clinic Management System	***eClinic Management System***
Module	▪ Doctor's Appointments ▪ Specializations ▪ Diagnostics ▪ Prescriptions ▪ Treatment ▪ Lab Analysis reports ▪ Patient-Information ▪ Administrative activities ▪ Billing	▪ In-Patient module ▪ Email and SMS Text Messaging module ▪ Add New Issue module ▪ Issues and Encounters modules ▪ Available Appointments
Entity	▪ Patient ▪ Doctor ▪ Consultant ▪ Treatment ▪ Appointment ▪ Report ▪ Bill	▪ Clinics ▪ Health Care Institute ▪ Hospital ▪ Traditional Health Care Provider ▪ Medical Advisor Groups or Individuals ▪ Administrator ▪ Physician
Patient's Attributes in Registration Form	▪ IC Number ▪ Name ▪ Address ▪ Gender ▪ Phone number ▪ Company information - Company Name - Address - Phone Number - Email Address - Fax Number ▪ Blood group ▪ Height ▪ Weight ▪ Voters card number ▪ Dependents	**Who** • Name patient • DOB • IC NO • Sex • Contact ▪ Address ▪ State ▪ City ▪ phone No ▪ Postal Code • Choices Pharmacy Allow Mail Message • Employer • Occupation

		• Address
		• State
		• Status
		  • Language
		  • Race
		  • Monthly Income

Database	ORACLE TM	My SQL DB
Features	▪ Stores complete patient data ▪ Information at the press of a mouse-click ▪ Information availability across departments. ▪ Safe storage of data ▪ Billing of patients ▪ Maintenance of Tariffs ▪ Multi Doctor, Multi Room appointment handling ▪ Portable database for Consulting Doctors ▪ Easy retrieval of history information ▪	▪ User friendly interface ▪ Web-based system ▪ Have Software Installation ▪ Security Monitoring ▪ Easy to use
References	http://ariansoft2u.com/download/eClinicSystem_BroV5.pdf	

UML DIAGRAM (ER DIAGRAM) FOR E-Health Care System



References:

PK = Primary Key

------ = Weak entity

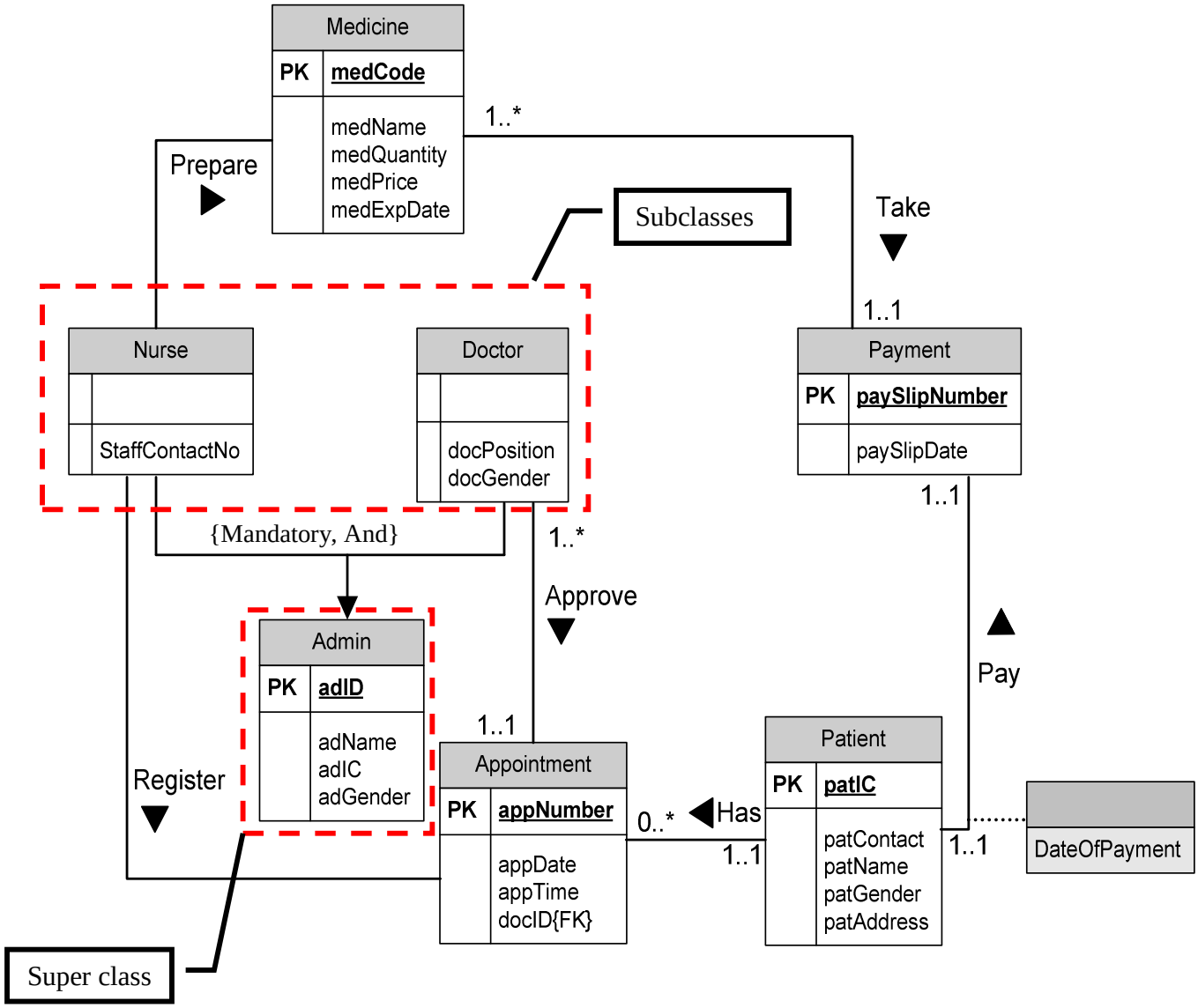
Weak entities:

a. Date of Registration
b. Date of Payment

Strong entities:

a. Nurse
b. Doctor
c. Appointment
d. Medicine
e. Patient

UML DIAGRAM (EER DIAGRAM) FOR E-Health Care System



Relational Model

INTRODUCTION

- The relational model used the basic concept of a relation or table.
- In relational model, every tuples must have a unique identification or key based on the data.
- The model is based on a collection of tables.
- Often, keys are used to join data from two or more relations based on matching identification.
- Key is one or more attributes that determine other attributes. The basic key:
    - Primary Key
        - The selected Candidate key to identify rows uniquely within relation.
    - Foreign key
        - An attribute whose values match primary key values in the related table

Below is the Relational Model of our task project:
MEDICINE TABLE
MEDICINE (medCode, medQuantity, medPrice, medExpDate)
Primary Key: medCode

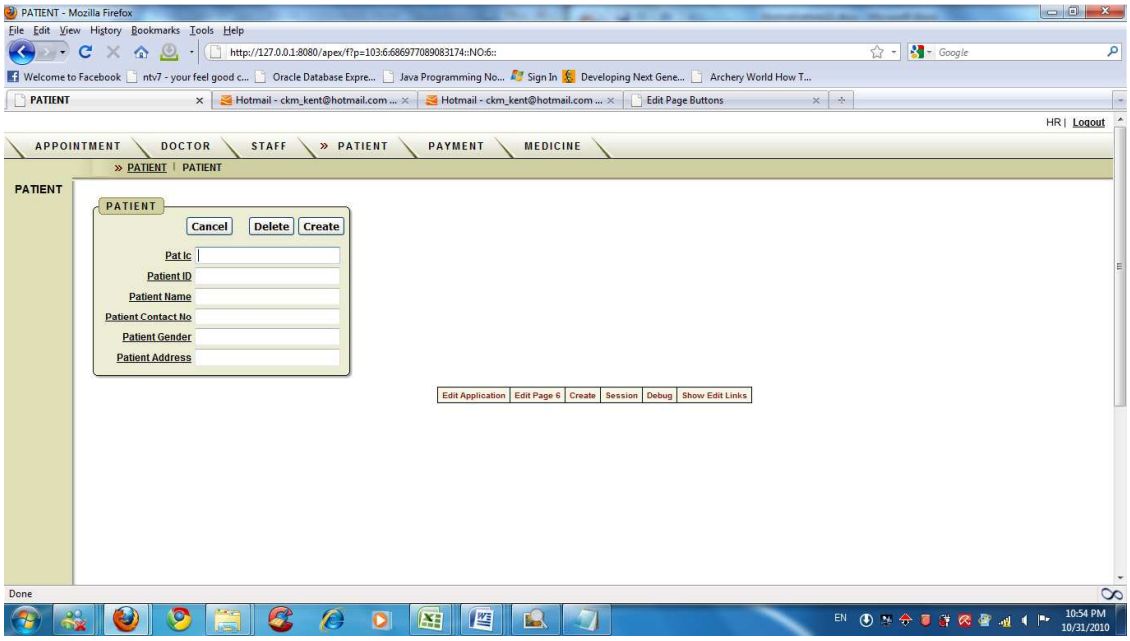
STAFF TABLE
STAFF (staffID, staffName, staffContactNo, staffIC)
Primary Key: staffID

APPOINTMENT TABLE
APPOINTMENT(appNumber, appDate, appTime, docID)
Primary Key: appNumber
Foreign Key : docID

DOCTOR TABLE
DOCTOR(docID, docName, docIC, docPosition, docGender)
Primary Key: docID

PATIENT TABLE
PATIENT (patIC, patName, PatContactNo, patGender, patAddress)
Primary Key: patIC

PAYMENT TABLE
PAYMENT(medSlipNumber, medDate)
Primary Key: medSlipNumber


PATIENT - Mozilla Firefox
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Welcome to Facebook
ntv7 - your feel good c...
Oracle Database Expre...
Java Programming No...
Sign In
Developing Next Gene...
Archery World How T...
PATIENT
Hotmail - ckm_kent@hotmail.com ...
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Edit Page Buttons
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DOCTOR
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» PATIENT
PAYMENT
MEDICINE
» PATIENT | PATIENT
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Patient Contact No
Patient Gender
Patient Address
Edit Application
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10/31/2010

Database Report

Date : 27/10/2010
Venue : Payung Putih
Time : 10.00p.m – 12.00 a.m

Group Members :

1. Chang Kwee Ming CB09032
2. Mohamad Shukri B. Zahari CB09069
3. Hazwani Liana Bt. Abbas CB09055
4. Low Mee Peng CB09084
5. Raihana Bt. Baharum CB10095

Topic:

1. We had discussed the SQL, normalization, QBE and the others that related to our database project.
2. Do some research based on nowadays situation.
3. Distribute the subtopic and update task 2 of the project.

……..
(Mohamad Shukri Bin Zahari)

Database Report

Date : 20/07/2010
Venue : XBK07
Time : 10.00 a.m – 11.00 a.m

Group Members :

6. Chang Kwee Ming CB09032
7. Mohamad Shukri B. Zahari CB09069
8. Hazwani Liana Bt. Abbas CB09055
9. Low Mee Peng CB09084
10. Raihana Bt. Baharum CB10095

Topic:

4. We had discussed the suitable project title for our database project.
5. Do some research based on nowadays situation.
6. We choose “e-Health Care System” as our project title for this project.

……..
(Mohamad Shukri Bin Zahari)

Database Report

Date : 23/07/2010
Venue : Beside InaShop
Time : 9.00 p.m – 10.30 p.m

Group Members :

1. Chang Kwee Ming CB09032
2. Mohamad Shukri B. Zahari CB09069
3. Hazwani Liana Bt. Abbas CB09055
4. Low Mee Peng CB09084
5. Raihana Bt. Baharum CB10095

Topic:

1. We go through to the TASK 1.
2. Do simple review on E/R Diagram.
3. Find the suitable case study.

……..
(Mohamad Shukri Bin Zahari)

Database Report

Date : 30/07/2010
Venue : XBK08
Time : 10.00 a.m – 11.00 a.m

Group Members :

1. Chang Kwee Ming CB09032
2. Mohamad Shukri B. Zahari CB09069
3. Hazwani Liana Bt. Abbas CB09055
4. Low Mee Peng CB09084
5. Raihana Bt. Baharum CB10095

Topic:

1. Decide the suitable entity for our database system in SCL , PBL session.
2. Sketch the E/R diagram.
3. Submit some task to Dr. Noraziah.

……..
(Mohamad Shukri Bin Zahari)

Database Report

Date : 01/08/2010
Venue : Library
Time : 10.00 a.m – 12.30 p.m

Group Members :

1. Chang Kwee Ming CB09032
2. Mohamad Shukri B. Zahari CB09069
3. Hazwani Liana Bt. Abbas CB09055
4. Low Mee Peng CB09084
5. Raihana Bt. Baharum CB10095

Topic:

1. Discuss on the Case Study.
2. Complete the TASK 1.

……..
(Mohamad Shukri Bin Zahari)