North South University

Database Systems Project Book

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Contents

1. Hospital Management System

Admission

A patient is admitted to the hospital by filling up a form (Attachment 1). The form data is entered into the system by an operator using a graphical user interface (to be designed by the students). In the interface, there will be some mandatory fields and some optional as mentioned in the form. After filling up and submission using the interface, all data will be saved in the database to the corresponding tables and a receipt will be printed as per Attachment 2.

Doctor Initial Investigation

After admission, a duty doctor will record all information of the patient as per the printed patient information form generated from the system as per Attachment 3. A nurse will submit all data recorded by the duty doctor using an Interface (to be designed by the student).

Medical treatment by Specialist

Each patient is admitted into the hospital under a specialist. A specialist may be Professor, Associate Professor, Asst. Professor or Consultant. Whenever, a specialist visits a patient, he/ she advises the patient about different medicines and tests as per Attachment 4. A nurse of the ward gives the entry of the medicine and test information using an Interface (to be designed by the students). An order is prepared for medicine and for test accordingly.

Issue Medicine

Medicine order is sent to the medicine store and medicines are issued to the patient entering the medicine data using an interface (to be designed by the students). Medicine data contains the price of the medicine and the amount issued to that patient.

Test Result

Test order is sent to the Pathology/Radiology/Imaging centers as per the test order. Test samples are sent to the Pathology center if it is pathology test. For each sample, patient id is used as sample

id and has a collection date and time. Test result is given sample wise. Radiology or Imaging are done by corresponding centers for different tests and results are stored as text and images.

Hospital Doctor, Nurse and Ward Management

The hospital management system contains information about doctors, patients, nurses, and other employees. A doctor can have a unique id, name, address, mobile numbers, working days, and specialization. One doctor called registrar will be responsible for a ward. In each ward, there will have many doctors and nurses. Among the nurses, there will be a staff nurse who will be the supervisor of all nurses of the ward. A nurse will be identified by nurse id. The other information for a nurse is name, present address, permanent address, duty shift, and mobile number. A doctor or a nurse can be transferred from one ward to another ward.

In the hospital, there will be many wards and each ward will contain many beds and each bed will have a bed id and rent. Each ward will have an id and type. Each patient will have an id, name, address, ward number / cabin number, disease name, disease severity, special note and bed no. Medicine will be supplied from the store of the hospital. Doctors will give prescriptions to patients from the list of medicines. Each medicine has id, name, price and date of expiry. The Doctor, Nurse, Ward and Medicine data entry/ edit forms are given in Attachments 5, 6, 7 and 8 respectively.

Task 1: Design ERD

Task 2: Transform the ERD into relational schema

Task 3: Create tables using SQL DDL

Task 4: Design and implement all of the interfaces mentioned in text and all forms for data entry into the system.

Task 5: Sample data entry and showing all of the functionality of the system.

Output

The following shall be the output of the system.

- Specialist detailed Bill
- Medicine detailed bill
- Summary bill of a patient for discharge

Patient Admission Form

Date of Admission: _____ (DD/MM/YYYY)

Name: _____ (First name) _____ (middle name) _____ (Last Name)

Date of birth: _____ (DD/MM/YYYY)

Mobile (1) _____ Mobile (2) _____

Present Address:

Street No. / Village _____ Street Name _____

Area _____ Thana _____ District _____

Permanent Address:

Street No. / Village _____ Street Name _____

Area _____ Thana _____ District _____

Profession

    1) Government job, 2) Private Job, 3) Business, 4) Farmer, 5) Retired 6) Others

Amount deposited: _____

Choice Cabin / Ward

Signature with date

Name:

Relation with the Patient:

Patient Admission Receipt

Patient Id ????????? (generated by the system)

Date of Admission: _____ (DD/MM/YYYY)

Name: _____ (First name) _____ (middle name) _____ (Last Name)

Date of birth: _____ (DD/MM/YYYY)

Mobile (1) _____ Mobile (2) _____

Present Address:

Street No. / Village _____ Street Name _____

Area _____ Thana _____ District _____

Permanent Address:

Street No. / Village _____ Street Name _____

Area _____ Thana _____ District _____

Profession _____

Amount deposited: _____

Cabin No. _____ or Ward No. _____ Bed No. _____

Signature with date

Name of the employee:

Designation:

Patient Initial Investigation Form

Patient Id ????????? (generated by the system)

Date of Admission: _____ (DD/MM/YYYY) (generated by the system)

Name: _____ (First name) _____ (middle name) _____ (Last Name)

Date of birth: _____ (DD/MM/YYYY)

All above information will be printed from system

_____

Patient personal information

Height _____ Weight _____

Symptoms of the disease: 1. _____ 2. _____ 3._____

　　　　　　　　　　　　　4. _____ 5. _____ 6. _____

Blood Pressure: Lower _____ upper _____

General Food Habit:

Breakfast 1. _____ 2. _____ 3._____

Lunch   1. _____ 2. _____ 3._____

Dinner   1. _____ 2. _____ 3._____

Hobby:

Game: 1) Foot ball 2) Hokey 3) Volley Ball 4) Cricket 5) Chess 6) All 7) None

Others: 1) Tourism 2) Writing

Disease Name:

Signature with date

Doctor Id: _____ Name of the doctor:

Designation:

Medical Advise by the Specialist Form

Patient Id ????????? (generated by the system)

Date of Admission: _____ (DD/MM/YYYY) (generated by the system)

Name: _____ (First name) _____ (middle name) _____ (Last Name)

Date of birth: _____ (DD/MM/YYYY) Bed No. _____ Ward No. _____

All above information will be printed from system

_____

Date of advice: _____ Time: ____

Medicine advice

Serial Number	Name of Medicine	Quantity	Times in a day	Morning		Noon		Evening	
				Before meal	After meal	Before meal	After meal	Before meal	After meal

Test Advice

Serial Number	Name of the test

Signature with date

Name of the doctor:

Designation:

Attachment 5

Doctors Information Form

Doctor Id _____ (generated by the system)

Name: _____ (First name) _____ (middle name) _____ (Last Name)

Date of birth: _____ (DD/MM/YYYY) Date of Appointment _____

Educational Qualification

Serial No.	Degree	Board/Institute	Year	Division/CGPA	Position
1.	SSC				
2.	HSC				
3.	MBBS				
4.	,,				
5.	,,				

Experience

Serial No.	Job title	From	To	Organization
1.				
2.				
3.				
4.	,,			
5.	,,			

Membership

- BMA
- British Medical Society
- American Medical Society
- Others

Nurses Information Form

Nurse Id _____ (generated by the system)

Name: _____ (First name) _____ (middle name) _____ (Last Name)

Date of birth: _____ (DD/MM/YYYY) Date of Appointment _____

Educational Qualification

Serial No.	Degree	Board/Institute	Year	Division/CGPA	Position
1.	SSC				
2.	HSC				
3.	BSc (Nursing)				
4.	,,				
5.	,,				

Experience

Serial No.	Job title	From	To	Organization
1.				
2.				
3.				
4.	,,			
5.	,,			

Ward Information Form

Ward Id _____ (generated by the system)

Ward Name: _____

Registrar Id _____ Name _____ (from database)

Nurse Supervisor Id _____ Name _____ (from database)

Serial No.	Bed No.	Bed type	Rent	Status (Empty/ occupied)
1.				
2.				
3.				
......				

Medicine Entry Form

Supplier Id _____ Supplier Name _____

Date of Supply _____ (MM/DD/YYYY)

Medicine Id	Name	Type	Unit price	Quantity	Date of Manufacture	Expiry date

2. Cricket Players and Clubs Information System

The aim of this system is to keep information of all the cricket players and clubs of Bangladesh. There are many cricket clubs in Bangladesh. A club has many players. A player registers to a club for a certain period of time with a start date and end date and signs a contract with the club. In the contract a total fee and a schedule of payment is mentioned. In the payment schedule, there is a payment id which is unique for a schedule of the player. Other information for the payment is schedule date, amount and actual payment date. The sum of the total payment of the schedule cannot be more or less than the fee mentioned in the contract. A player's profile must be stored in the database as follows

Name, father's name, mother's name, educational qualifications (degree name, department/ institute, Board/ University, Year), previous clubs where he played for (club id, start date, end date, total runs, total wickets), international events (event id, location, performance details etc. (Here student can add attributes of importance to describe the performance details of the player.) To enrol to any club, the player needs to fill up a registration for as per Attachment 1. After submission of the registration form, if the club decides to hire the player for the club, a contract is signed as per Attachment 2. A new club is registered after submission of information as per Attachment 3.

Bangladesh Cricket Control Board (BCCB) organizes different types of events. An event has an event id, location, start date, end date. In an event, there are many matches in different times in different venues. Many matches can be organized in a venue in different times but a match must be organized in a single venue. Every match has a match id, date, team-batting-first, team-bowling-first. You have to keep the performance of every player of every match according to the form as per Attachment 4-1 and the details information about the event as per Attachment 4-2.

The club forms teams to participate to different events organized by BCCB in different times. Among the players, a team leader is selected. Different teams of the club can have different team leader. A team has a team id, date of formation and team leader. A team must be form with a maximum of 15 players. A player can play many teams in different times. A team is formed for exactly one event. In the event, a team participates in many matches. The team information is kept as per the Attachment 5.

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Player Registration Form

First Name: _____ Middle Name _____ Last Name _____

Father's Name _____ Mother,s Name _____

Present Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Permanent Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Date of Birth _____ (DD-MM-YYYY)

Previous History

Club Name	From	To	Total Runs	Total Wickets	Team leader (Y/N)

Best Performance

Club Name	Opponent club name	Event Id	Match Id	Runs	Wickets

Educational Qualifications

Name of degree	Institute/Department	Board/University	Year	Result

Membership

- ○ ICCB
- ○ BCCB
- ○ ACCB
- ○ Others

If others, Name of the organization _____

Signature of the Player: _____

Date: _____

Contract Form

Club Id _____ Club Name _____

First Party

Name of the Player

First Name: _____ Middle Name _____ Last Name _____

Player Id _____

Second Party

Authorized Person

First Name: _____ Middle Name _____ Last Name _____

Designation _____

Contract Period

Start Date _____ (DD-MM-YYYY) End Date _____(DD-MM-YYYY)

Contract Amount _____

Payment Schedule

Serial Number	Due date	Payment date	Amount

Contract witness 1: _____

Contract witness 2: _____

Club Registration Form

Name of the club _____

Date of Establishment _____ (DD/MM/YYYY)

Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Name of the President _____

Players Performance in Match Form

Match id _____ Venue Id _____ Date of the Match _____ (DDMMYYYY)

Player id	Total wickets	Total runs	Outstanding performance

Attachment 4-2

Match Information Form

Event id _____ Venue Id _____ Date of the Match _____ (DDMMYYYY)

Match id	Man-of-the match	Umpires	

Team Information Form

Club id _____   Player id _____

Team formation date _____ (DD/MM/YYYY)

Event name / event id _____

Team leader id (Player id) _____ Player name: _____

Coach id _____ Coach name _____

Player id	Name

1. University Academic Information System

A university has many students in undergraduate and post-graduate studies. A student has id, name, present address (H-no, street, city, district), permanent address (H-no, street, city, district), type (resident/non-resident), credit-earned, CGPA, date of enrolment. There are many departments in the university. A student must be assigned in one department but a department have many students. Any new student applying for admission into the university must submit his detailed information as per the student information form (Attachment 1).

A department offers many courses and a student can take many courses. A course can also be taken by many students. For each course and student pair, you have to keep information about semester, year and grade-point. For each course, there are many sections. A student can enroll for a course in only one section. A section has section id, semester and year.

There are many teachers in a department. A teacher has id, name, room no, mobile, email. A teacher has office hours as day, time from, time to. Office hours can be one or more days in a week. A teacher teaches many courses and a course is taught by many teachers. A teacher can teach many sections of a course but a section can have only one teacher. Teacher information can be submitted to the system as per attachment 2.

There are many rooms in the university located in different buildings. A room has an id, type, status and floor. Classes are held for different sections in different rooms in different time slots. A time slot has id, from-time and to-time. A room is assigned to a section of a course in a semester. A room can be booked by a faculty for a time-slot if the status of the room is vacant.

At the beginning of the semester, the status of all rooms in vacant. As per the number of courses and sections offered in a semester, the status of the rooms are changed as occupied. A room is allocated to multiple sections in different semesters for different courses.

Teachers submit grades at the end of each semester. The grade submission is given as per attachment 3. Teachers can submit grades only for those courses taken by that teacher.

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Student Application Form

First Name: _____ Middle Name _____ Last Name _____

Father's Name _____ Mother,s Name _____

Present Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Permanent Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Date of Birth _____ (DD-MM-YYYY)

Educational Qualifications

Name of degree	Institute	Board	Year	Result
JSC/JDC				
SSC				
HSC				

Teacher Information Form

First Name: _____ Middle Name _____ Last Name _____

Father's Name _____ Mother,s Name _____

Present Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Permanent Address

House No. _____ Location _____ Village/Street _____

Thana _____ District _____ Post code _____

Date of Birth _____ (DD-MM-YYYY)

Educational Qualifications (Before graduation)

Name of degree	Institute	Board	Year	Result
JSC/JDC				
SSC				
HSC				

Educational Qualifications (Graduation and after Graduation)

Name of degree	Major	Minor	Institute	Year	Result
B. Sc.					
M. Sc.					
Ph. D.					

Experience

Position	Organization	Time from	Time to	Remarks
Lecturer				
Asst. Professor				

Associate Professor				
Professor				
Post-Doc				

Research Publication

List of Authors	Type (Journal/Conference)	Pub-Info (Title, Volume Number, Issue Number for journal), Title, venue, date for conference)	Page number	Year

Graduate work

Degree (MSc, PhD, Diploma)	Thesis title	Research area	Month	Year

Grade Submission by Teachers Form

Course Id: _____ Semester _____ Year _____

Student Id	Name	Letter Grade