

## DATABASE SYSTEMS - ASSIGNMENT 2

---

### Notes

- ❑ Students should read *everything* presented below carefully.
  - ❑ This assignment is worth **15%** of the overall grade.
  - ❑ Appropriate software can be used to support your implementation
  - ❑ Assignment 2 is team work.
- 

### Submission

You should submit your coursework on LMS with one single zip file (all source code) **as announced on LMS**.

The file name will be *<class code>\_<team number>\_<submitter name>.zip* (e.g., CC02\_1\_NguyenVanA.zip). The zip file may contain resources as follows:

- Team member list with percentage contribution
- Source code
- Report
- Other supporting files (if any)

*Note: Do not forget to press "Submit" button.*

---

### Requirements

In the assignment 2, you are expected to implement and query the database from your assignment 1, **using a DBMS of your choice**:

- (i) Designing the database at the physical level.
- (ii) Implementing the above physical database.
- (iii) Performing database operations, such as SELECT, INSERT, UPDATE, DELETE...
- (iv) Building a desktop or web application to connect to the database.

## Assignment 2

---

### Part 1: Physical Database Design (2.5 marks)

#### A- Implementing the database (2 marks)

You have to implement your database, based on your assigned topic, into the physical database.

- Giving the full explanation of your choices of *data types*, *data length*, and *constraints* in your database.

#### B- Insert data (0.5 mark)

- Insert data for all tables in the database.
- Requirements: The data in the tables must be meaningful, and each table has at least 4 rows.

### Part 2: Store Procedure / Function / SQL (3 marks)

#### 2.1 Hospital Database

- a. Increase Inpatient Fee to 10% for all the current inpatients who are admitted to hospital from 01/09/2020. (0.5 mark)
- b. Select all the patients (outpatient & inpatient) of the doctor named 'Nguyen Van A'. (0.5 mark)
- c. Write a function to calculate the total medication price a patient has to pay for each treatment or examination (1 mark).  
Input: Patient ID  
Output: A list of payment of each treatment or examination
- d. Write a procedure to sort the doctor in increasing number of patients he/she takes care in a period of time (1 mark).  
Input: Start date, End date  
Output: A list of sorting doctors.

#### 2.2 Fabric Agency Database

- a. Increase Silk selling price to 10% of those provided by all suppliers from 01/09/2020. (0.5 mark)
- b. Select all orders containing bolt from the supplier named 'Silk Agency'. (0.5 mark)
- c. Write a function to calculate the total purchase price the agency has to pay for a particular supplier for each purchase request (1 mark).  
Input: Supplier ID  
Output: A list of payment
- d. Write a procedure to sort the suppliers in increasing number of categories they provide in a period of time (1 mark).  
Input: Start date, End date  
Output: A list of sorting suppliers.

#### 2.1 Quarantine Camp Database

- a. Update patient PCR test to positive with null cycle threshold value for all patients whose admission date is from 01/09/2020. (0.5 mark)
- b. Select all the patient information whose name is 'Nguyen Van A'. (0.5 mark)
- c. Write a function to calculate the testing for each patient (1 mark).  
Input: Patient ID  
Output: A list of testing

- d. Write a procedure to sort the nurses in decreasing number of patients he/she takes care in a period of time (1 mark).  
Input: Start date, End date  
Output: A list of sorting nurses.

### **PART 3: BUILDING APPLICATIONS (2.5 marks)**

Build an application with the following requirements:

- Programming environment: optional (desktop, web, or mobile application).
- Programming language: optional.
- The application connects to the database created in Part 1 and Part 2.
- Display the data on the form and perform the requirements below.
- Students need to prepare data and scripts for demonstration at the reporting session.

#### **I. Create user**

Log in to the database with DBA privileges such as SYS / SYSTEM ....., create a user named “Manager” and assign all access rights to this user.

#### **II. Requirement functions (2.5 marks)**

- Log in, log out (enter the user name/password for Manager account to log in/out). (0.5 mark)
- Log in to the user manager and do the followings (2 marks):
  - **Hospital Database**
    1. Search patient information: Search results include the name, phone number and information about the treatment and visit of the patient. (0.5 mark)
    2. Add information for a new patient. (0.5 mark)
    3. List details of all patients which are treated by a doctor. (0.5 mark)
    4. Make a report that provides full information about the payment for each treatment or examination of a patient (0.5 mark).
  - **Fabric Agency Database**
    1. Search material purchasing information: Search results include the name, phone number of the suppliers and information about the supply. (0.5 mark)
    2. Add information for a new supplier. (0.5 mark)
    3. List details of all categories which are provided by a supplier. (0.5 mark)
    4. Make a report that provides full information about the order for each category of a customer. (0.5 mark)
  - **Quarantine Camp Database**
    1. Search patient information: Search results include the name, phone number and information about his/her comorbidities. (0.5 mark)
    2. Add information for a new patient. (0.5 mark)
    3. List details of all testing which belong to a patient. (0.5 mark)
    4. Make a report that provides full information about the patient including demographic information, comorbidities, symptoms, testing, and treatment. (0.5 mark)

### **PART 4: DATABASE MANAGEMENT (2 marks)**

**A- Proving one use-case of indexing efficiency in your scenarios (1 mark)**

**B- Solving one use-case of database security in your scenarios (1 mark)**

----- **HAPPY IMPLEMENTATION!** -----