COSC 2450 - Assignment 2

# Web Development Technologies

#### COSC2450 ASSIGNMENT 2 SPECIFICATIONS

Version 2.0 update on 8/8/2013

Scope of change: security requirement

## 1) Submission Guideline

- Assignment 2 is due Sunday Week 11, 11:59PM and worth 35% of the assessment. You must attempt this assignment individually.
- Each submission package must include
- Visual Studio.NET project files and all source files
- All SQL script necessary to recreate the database schema, tables schema, stored procedures and triggers used in the system and populate default data
- Test your script properly before submission it must be executed in the lecturer's machine (when required) without any manual change. Marks will be deduced for scripts containing errors or requiring manual changes.
- o A README.txt file documenting the followings
- Your full name, your Student ID
- Features that you have implemented including *known limitations* of those features
- Instructions to deploy and execute the whole application.
- While the readme.txt file won't give you any mark, missing it or any of the required information may incur a mark deduction to up to 2 marks.
- Refer to Submission Standard document (in Black Board) for more details about assignment submission rules for this course.

#### **Important Points**

You are supposed to demo your application during the lab of Week 12 or Week 13. Each student must book demo time at one of these 2 labs. Your presence to the lab demonstration is necessary for your assignment to be marked.

## 2. System Specification

#### 1) Overview

For this assignment, you will deal with the following topics: ASP.NET, ASP.NET AJAX, AJAX Control Toolkit, ADO.NET, SQL Server, stored procedures/LINQ-2-SQL, and triggers.

#### 2) Non-functional Requirements (7 marks)

#### a) User-friendly UI (5 mark)

The UI must be easy to use. Therefore, spend time thinking about the design of your application (e.g. workflow, screen navigation, web layout etc.) before actually implementing it. Note that this component is only concerned with overall application's usability. Marks for individual function's usability are already incorporated in the marking guideline in Functional Requirement section.

### b) Good OO design/code (2 marks)

Adherence to the coding standards described in this document (
http://www.idesign.net/idesign/download/IDesign%20CSharp%20Coding%20Standard.zip),
good OO design and exception handlings mechanism, use of generics collections.

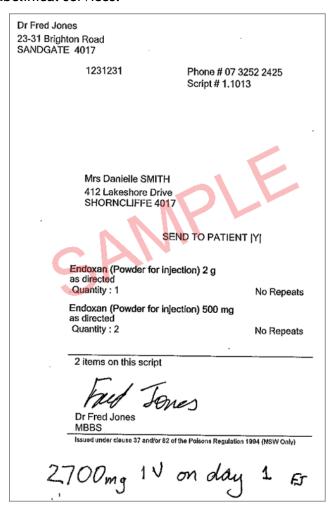
#### 3) Design Requirements

These technical requirements must be strictly adhered to. Not adhering to these requirements may make you lose many marks for the relevant components.

- a) You are recommended, but not required, to use ASP.NET Membership API, Role API and/or Profile API for the user management functionality. If you do this, you must use aspnet\_regsql to generate the schema and merge that with your database.
- b) For database operations, you can choose between these 2 strategies: use *ADO.NET* with stored procedures or *LINQ-2-SQL*. You must **not** use dynamic or hardcoded SQL statements in your application.
- c) You must use UpdatePanel and UpdateProgress controls for most modification operations in the site except for the popup. For example saving, displaying etc. should be done via asynchronous postback enabled by UpdatePanel.
- d) You must use validation controls to make sure that only the valid data is entered into the system. For example email address of a user must be valid.
- e) You must use Calendar control of the AJAX Control Toolkit for any date time selection in your application.
- f) You must use ASP.NET Master Page to organize reusable site elements and common styling.

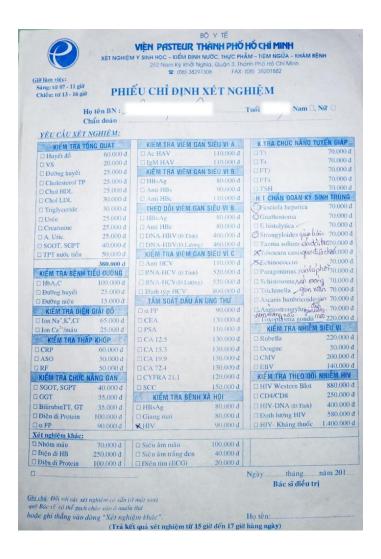
#### 4) Functional requirement: (28 marks)

This assignment requires you to build an Electronic Medical Record (EMR) system that support management patient treatment in medical facility such as clinic or hospital. Based on your assignment 1, you need to amend your data model to capture the following business requirement. Each visit to medical facility will also include prescriptions (list of drugs that a patient has to take with dose, quantity, and duration) and subclinical services.



Each visit will consist of a prescription with one or many prescription details. Each prescription detail contains information of drug, quantity (number of tablets), dose per day (how many tablets a day), and special instruction. Each prescription will have information such as ID, date, prescribed doctor.

Each visit will also contain a lab order with one or many lab order details. Each lab order detail contains information of a medical service and its result. Each lab order will have information such as ID, date, ordered doctor.



N/A			Dat	
	ematology BG Analysis			
Specimen: Arte				
Date and time sp	ecimen gathered: 0	7/21/2010 21:42pm		
Blood Gases:				
Acid/ Base:	Results:	Reference Range:	Flag:	
pH	7.27	7.35-7.45	(L)	
pCO2	48mmHg	35-45 mmHg	(H)	
pO2	92mmHg	80-100 mmHg	1	
		04.06 B #		
HCOs	25 mEq/L	24-26 mEq/L		

In the assignment 1 you have developed the following entities: doctor, hospital, patient, and visit. Therefore, in this assignment you need to build additional entity classes for Prescription, PrescriptionDetail, LabOrder, LabOrderDetail, Drug,

DrugGroup, MedicalService, MedicalServiceGroup. ICD, ICDChapter Information of a drug includes drug name, generic name, unit (tube, tablet, bottom...), and price. Information of a medical service includes service name and price. In this assignment, you are also required to change ICD value in visit as a string to coded value meaning that you must build an ICD class to serve as a lookup list for visit. Each ICD will have ICD chapter, ICD name, and ICD code.

- a. Amend the data model to cope with the business requirement discussed above,
   i.e. classes for the following entity
   Prescription, PrescriptionDetail, LabOrder, LabOrderDetail, Drug, DrugGroup,
   MedicalService, MedicalServiceGroup. ICD, ICDChapter
- Build the GUI (Webforms) to maintain lists of all entities in the data model in including Patient, Doctor, Hospital, Visist, Prescription, PrescriptionDetail, LabOrder, LabOrderDetail, Drug, DrugGroup, MedicalService, MedicalServiceGroup. ICD, ICDChapter.

For each entity, you have to implement 6 operations: add new, update, delete, view all, view one item, and search. Note that as discussed in the design requirement section, there must be service (or data store) layer that perform CRUD operations on these entities, implemented either by LINQ to SQL or Stored Procedures.

- c. As the list of hospitals and doctors will be constantly changed, you must simulate an online data source which contains all updated doctors and hospitals. This will be implemented by using web services. For example, <a href="http://your/url/HospitalList">http://your/url/HospitalList</a> will return a json or xml string that contains all latest hospitals, and similar for <a href="http://your/url/DoctorList">http://your/url/DoctorList</a>.
  Your system will talk to these webservices in every 5 minutes to check for change and update your local list accordingly.
- d. Use crystal report to build the following report:Report 1

Patient V	isit List				
From Date	1/02/2013				
To Date	28/02/2013				
Hospital	ABC				
No	Patient Name	Age	ICD	Prescription	Lab Test
				Amoxilin (12, 3);	Blood 6 params, Chest X
1	Patient 1	26		Paracetamol (6, 2)	Ray, Stomach Ultrasound

### Report 2

MORBIDITY AND MORTALITY REPORT									
	From D	ate:	To Date	2:					
No	Disease	MÃ ICD - 10	Morbidity			Mortality			
			Total			Total			
				Male	Childre n<15y		Male	Childr en<15 y	
VN			1	2	3	5	6	7	
	Chương I : Bệnh nhiễm khuẩn và kí sinh trùng								
001	Tå	A00							
002	Thương hàn, phó thương hàn	A01							
003	Lị trực khuẩn đo Shigella	A03				•••••	<u> </u>		
004	Lị Amip	A06				•••••	<u></u>	<u></u>	
005	Ía chảy, viêm đạ đày, ruột non có nguồn gốc nhiễm khuẩn	A09							
006	Bệnh nhiễm khuẩn đường ruột (A04- A05, A07-A08)	A02,							
007	Lao hô hấp	A15-16					<u> </u>	ļ	
008	Các dạng lao khác	A17-19		ļ					
009	Dịch hạch	A20					. <del> </del>	<u> </u>	
010	Bệnh do Brucella	A23	•••••	· <del> </del>					
011	Phong Uốn ván sơ sinh	A30 A33			-		· <del> </del>	<del> </del>	

c. This is an amendment to the Assignment 2-2013B (update 8/8/2012) You have to implement security for the system using either the use ASP.NET Membership API, Role API and/or Profile API or your own API. Authorization to the system will be in 2 levels: admin user role and normal user role. Admin user can do all accesses to the system whereas normal user can NOT make changes (add, update) on the lists of ICD, Hospital, Doctor, Drug, DrugGroup, MedicalService, MedicalServiceGroup.