

## ASSIGNMENT-2

CS 548-A (Fall 2016)

Name- Yugaank Arun Sharma

CWID- 10419077

Canvas Id- ysharma

**Design the XML Schema for a medical information system. You should provide the schema definition itself, structured as a collection of namespaces for the different form of documents, as well as instance documents that exhaustively demonstrate the different forms of documents that may be in such a system.**

The XML Schema(s) for Medical Information System are designed using Oxygen XML Editor.

There are three different solutions. It means the schema for the above said system is designed in three different ways which are-:

1. Using the *choice element* of XML schema to represent the choice among the different forms of treatment records.
2. Using *type substitutability* to represent the choice among the different forms of treatment records.
3. Using *element substitution* to represent the choice among the different forms of treatment records.

Each Solution has separate folders named Solution (x), where x is the number according to the above mentioned solution numbers. For ex-: Solution 1 Folder has the schema files and an Instance document which were designed using choice element.

Each folder or solution folder has 5 XSD files or XML Schema Data Files and an Instance document which contains the sample xml data of the Clinic.xsd It contains all the namespaces and elements of the system. Each Instance document is different than the other Instance documents which are in different solution folder because of the different design types. Solution 1 instance document is different than the solution 2 instance document because choice element is used in solution 1 and type substitutability is used in solution 2 and both are also different than solution 3 instance document where it shows element substitution is used in the design. All the three solutions focus the main agenda but are done differently.

This can be seen by the UML diagram which is in the root folder along with this PDF file. The UML diagram shows the design of this system model. Although they have different solutions their UML diagram would be same because its only purpose is to show the concept of the design model.

Details of the schema for these entity types-:

**(i) ClinicIds (namespace: clinic-ids)**

This schema is for identifier types, that defines patient identifiers and provider identifiers as simple types.

**(ii) Treatment (namespace: treat)**

This schema is for the treatment records that describes different forms of treatments. This is done in three different ways in this assignment as stated above- in three different ways. It defines the diagnosis and imports the ClinicIds Schema for provider ids. It further defines treatment type which in this case are- DrugTreatmentType, RadiologyType, SurgeryType. This treatment types selected either by choice element, type substitutability and element substitution.

**(iii) Patient (namespace: pat)**

This schema is for patient records, that imports the ClinicIds schema for identifier types and the schema for treatment records. It also includes one-to-many relationship from patients to treatments is represented by embedding treatment records in patient records, so each patient element includes a list of treatments as child elements. It also defines name of the patients and their date of birth.

**(iv) Provider (namespace: prov)**

This schema is for provider records, that imports the ClinicIds schema for identifier types. It describes its own type ProviderType which further describes name of the provider and their specialization type.

**(v) Clinic (namespace: clinic)**

This schema is for a clinic database, that imports the schemas for patient records and for provider records. A clinic database is simply a root element that contains patient and provider records. The <key> and <keyref> elements in the Clinic schema were used to specify that the provider identifier in treatment elements is a foreign key reference to the administering provider.

List of Files in the submission folder-:

-README.pdf

-UML\_DIAGRAM.pdf

<Folder> Solution 1

<Folder> Solution 2

<Folder> Solution 3