MEI-24406 FIS
Assignment 1

XSD Design

The XSD has a complex root element, *SensorCatalogue*, which contains zero or more *Sensor* elements. Each *Sensor* element, in turn, has an id attribute and contains all the elements specified in the assignment handout – *Type*, *Model*, *Vendor*, an optional *Description*, and between one and five *Outputs*. The first four elements of *Sensor* are simple strings and therefore require no extra effort. On the other hand, the various types of *Output* have certain restrictions (e.g. IntegerOutput can only have a value between 0 and 100). To implement these requirements, a custom type can be created and the "restrict" keyword can be used to specify its minimum and maximum values. Then, the correct custom type (myInteger, myFloat, myDouble, myText) can be used as the "type" for the various elements of *Output*.

The other aspect of the XSD design that necessitates special attention is the *id* of the *Sensor* and of the various elements of *Output*. The required format of *id* can be described using the following regular expression.
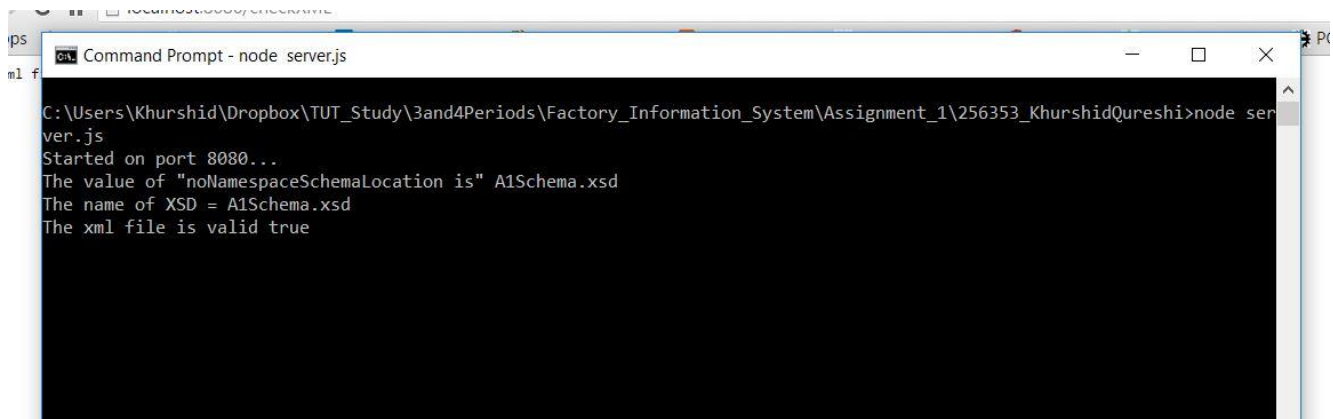
$$[A-Z]\{3\}[a-z] - [0-9]\{2\}[a-z]$$

Finally, whenever an element is optional or must appear a minimum or maximum number of times, its behavior can be used using "minOccurs" and "maxOccurs", respectively. For instance, "minOccurs = 1" and "maxOccurs = 5" can be used to specify that there must be at least one *Output* and at most five.

List of Errors in A1Example.xml

The server reported the following errors in A1Example.xml.

1. There is no *id* for the first *Sensor* element.
2. The value of IntegerOutput exceeds 100 (110).
3. For the second sensor the *id* does not follow the proper format.
4. For the second sensor there are two descriptions.
5. For the third sensor the *id* doesn't appear in the line.

Server side console view.