Lab Report Format for each questions:

- Cover (Print)
- Github Screenshot(instructor.basanta@gmail.com)
- Lab Question
- Introduction & Topic Theory
- Syntax and Format
    - Includes tags, attributes
- Code (Try to use your own data as much as possible)
- Output (Use your name for file name or URL)

Please complete following lab task and prepare lab report accordingly.

1. Write an XML file, which will display the Book information.

   It includes the following:
   1) Title of the book
   2) Author Name
   3) ISBN number
   4) Publisher name
   5) Edition
   6) Price

2. Write a DTD and XML Schema to validate the above details mentioned into question 1.
3. Write XML code to store at least four songs with details (name, singer, compose by, length).
4. Write a valid xml to validate following details using appropriate tools.
    a. Validate record of books with (title, author, page no, price)
    b. Author can be multiple with name, phone and email attribute
    c. Author Name have first name, middle name and last name.
    d. Author has title attribute with (mr, ms, mrs) value and default ms
    e. Price have currency attribute with value (NPR, INR and USD)
    f. In addition, highest price limit is 600.
    g. Book have unique ISBN as an attribute
5. Write a valid xml to validate following details.
    a. Validate record of students with (name, email, phone, address, DOB)
    b. Name have first name, middle name-optional and last name.
    c. Address have attribute type with value permanent-required and temporary-optional.
    d. Student has unique rollno attribute
    e. DOB have type attribute with (AD, BS) value
    f. DOB must be valid format (YYYY-MM-DD)
    g. Email must be into valid format
    h. Phone must be in valid format starting with 98 or 97
6. Write well-formed XML and validate using XML Schema.

You are required to store information regarding "School" in a university. The documents are in XML format. Each school will have one unique school id. You also need the name and the locations of the school. A school has a collection of staff. This staff needs to be implemented as a complex type. A staff needs one unique staff id. In addition, you also need to store the staff name, title, and category. While staff name has to exist, the title can be left blank. The staff category can only be chosen from "academic", "general", or "technical".

For each staff you need to store the address. This address need to be implemented as another complex type. The street, suburb and postcode have to be kept in a certain order. A staff can have at least one address, but s/he can have many addresses recorded.

A school also offers a collection of subjects. Each subject has a unique subject code. It also has a name, description, and capacity. A subject will be cancelled if the capacity is less than 6 students, and the possible maximum capacity for any given subject is 400 due to the maximum capacity of available lecture hall. A subject will be taught by at least one staff. You need to ensure that this information refers to a staff in that school.

7. Write well-formed XML , also write XML Schema for given DTD.

```
<!ELEMENT movies (Movie+) >
<!ELEMENT Movie ( title, year, _director, (comment | newcomment)+)>
<!ATTLIST Movie id ID #REQUIRED>
<!ELEMENT title (#PCDATA)>
<!ELEMENT year (#PCDATA) >
<!ELEMENT _director (#PCDATA)>
<!ATTLIST _director name CDATA #IMPLIED>
<!ELEMENT comment (#PCDATA)>
<!ELEMENT newcomment (#PCDATA)>
<!ATTLIST comment lang CDATA #IMPLIED>
```

8. Write valid XML and CSS to display following output.
   a. First define xml
   b. Define CSS to display following details.

9. Display following output using XML and XSLT.

10. Display following output using XML and XSLT.

Book List

Title	Author	Publisher	Edition	Price
Web Programming	Chrisbates	Wiley	3	300
Internet world-wide-web	Ditel	Pearson	3	400
Computer Networks	Foruouzan	Mc Graw Hill	5	700
DBMS Concepts	Navath	Oxford	5	600
Linux Programming	Subhitab Das	Oxford	8	300

11. Write valid XSD to validate following xml data

```
<?xml version="1.0"?>
<students xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
   <student regid="125" firstName="Hari" lastName="Kumar"  age="20" university="TU"/></students>
```

12. Consider the following XML document,

```
<?xml version="1.0"?>
<bib>
 <book year="1994">
    <title>TCP/IP Illustrated</title>
    <author>Stevens</author>
    <publisher>Addison-Wesley</publisher>
    <price>65.95</price>
 </book>
 <book year="1994">
    <title>Principles of Databases</title>
    <author>Abiteboul</author>
    <publisher>Addison-Wesley</publisher>
    <price>35.89</price>
 </book>
 <book year="1992">
    <title>Advanced Programming in the Unix environment</title>
    <author>Stevens</author>
    <publisher>Addison-Wesley</publisher>
    <price>65.95</price>
 </book>
```

```
<book year="2000">
   <title>Data on the Web</title>
   <author>Abiteboul</author>
   <author>Buneman</author>
   <author>Suciu</author>
   <publisher>Morgan Kaufmann Publishers</publisher>
   <price> 39.95</price>
</book>
<book year="1992">
   <title>The Economics of Technology and Content for Digital TV</title>
   <editor> Gerbarg <affiliation>CITI</affiliation> </editor>
   <publisher>Kluwer Academic Publishers</publisher>
   <price>129.95</price>
</book>
</bib>
```

- Write XML Schema to validate following document structure
- Write XSL code to transform above XML code into following table structure

Title	Year	Author	Editor	Publisher	Price
The Economics of Technology and Content for Digital TV	1992	Buneman	Gerbarg	Kluwer Academic Publishers	129.95

  - Also, Write XQuery to get following information
    a. Give the titles of all books sorted by price.
    b. How many books have been written by Abiteboul?
    c. Give for each author the number of books, which he has written.

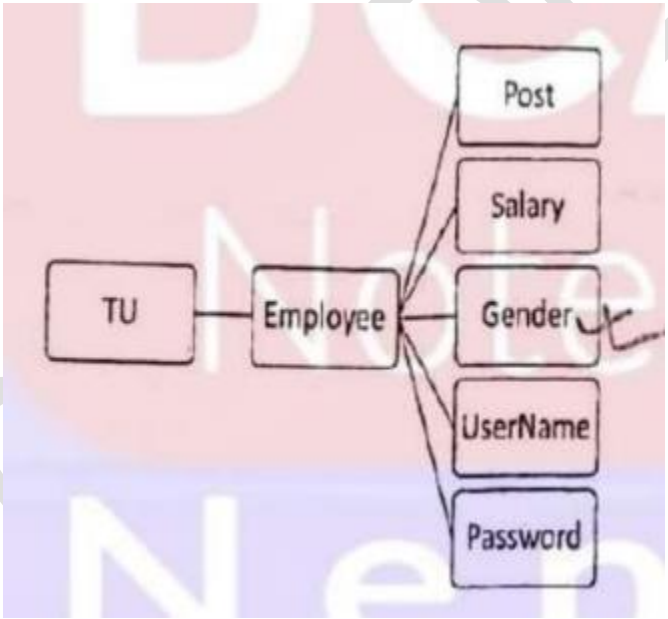
13. Write XML Schema and prepare file, which will display the patient information exists into hospital. It includes the following
    - Name of the patient
    - Name with details(first,middle,last) name
    - patient number (consists of 5 digit)
    - Doctor name
    - Disease of patient -multiple
    - Consultation charge (500-5000)
    - Lab test with list of multiple test
14. Consider the following XML document describing a catalog of at least 5 books with following format and transform this document into html html table with given format:

```
<?xml version="1.0"?>
<catalog>
  <book id="bk101">
```

```
    <author>Gambardella, Matthew</author>
    <title>XML Developer's Guide</title>
    <genre>Computer</genre>
    <price>44.95</price>
    <publish_date>2000-10-01</publish_date>
    <description>An in-depth look at creating applications
     with XML.</description>
  </book>
</catalog>
```

ID	Title	Publish Date	Author	Genere	Description	Price
bk101	XML Developer's Guide	1992-03-25	Buneman	Computer	Kluwer Academic Publishers	129.95

15. Make well-formed XML document as per diagram below and validate with given restriction



A. Username must have a minimum of 8 characters
B. Character limit for posts is 5 to 8
C. The password must be 8 characters long and begin with Aa-Zz
D. The gender must be one of male, female, others
E. The salary should range from Rs. 25000 to Rs. 50000

16.

Given an XML document that contains a list of **products** with the following elements: ***productname, category, price, and quantity***, write an XSLT stylesheet that:

a) Filters out any products that have a quantity less than 10

b) Groups the remaining products by category and creates a new XML document with a new element called "category" that contains the products within that category as child elements.

c) Within each category element, sorts the products by price in descending order.

d) Transforms the element "productname" into an attribute of each product element.

e) Add a new element called "total-price" to each product element, which contains the total price of the product (price * quantity)

17. Write well-formed xml based on following pattern and validate using XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<sales>
 <salesman>-multiple
  <name>  -> title attribute
   <first></first>
   <middle></middle>--Optional
   <last></last>
  </name>
  <phone type="personal"></phone> - type attribute with value (work,home,personal-default value
personal)
  <area></area>
  <records>
   <record>--multiple
    <product>  -- productid attribute
     <sku></sku>
     <product_name></product_name>
    </product>
    <quantity></quantity>
    <price></price>  => currency with value  (npr,inr,usd) and default npr value
    <date></date> -- type attribute ad or bs
   </record>
   <record>
    <product>
     <sku></sku>
     <product_name></product_name>
    </product>
    <quantity></quantity>
    <price></price>
    <date></date>
```

```
    </record>
   </records>
  </salesman>
</sales>
```

18. Write XML code along with XSLT code to transform document into new xml format

```
<students>
        <student>
        <name>Ram Thapa</student>
        <reg_no>5454545</reg_no>
        <symbol_number>87878</symbol_number>
        <marks>
                <web>54</web>
                <sad>54</sad>
                <dsa>54</dsa>
                <java>54</java>
                <stat>54</stat>
        </marks>
</student>
<student>
        <name>Rabina Giri</student>
        <reg_no>21221</reg_no>
        <symbol_number>7777</symbol_number>
        <marks>
                <web>65</web>
                <sad>78</sad>
                <dsa>78</dsa>
                <java>98</java>
                <stat>24</stat>
        </marks>
</student>
</students>
```

New Format required:

```
<students>
        <student reg_no=”545454”>
        <name>Ram Thapa</student>
        <symbol_number>87878</symbol_number>
        <marks>
                <subject name=”web”>54</subject>
                <subject name=”dsa”>54</subject>
                <subject name=”java”>54</subject>
                <subject name=”sad”>54</subject>
                <subject name=”stat”>54</subject>
        </marks>
        <total_marks>270</total_marks>
        <percentage>54</percentage>
```

```
        </student>
</students>
```