# Introduction to Web Technology

## Lab Programming Exercise (Week 9)

*(this is not an assignment)*

**Initial Setup:** Create a directory to store the code of this lab exercise. Follow the instructions below to start a web server at the newly created directory.

Running web server on **Mac** using command:

```
python3 -m http.server [port-number] -d [web-directory]
```

For example, to run on port 50000 and directory /Users/jsmith/Desktop/myweb

```
python3 -m http.server 50000 -d "/Users/jsmith/Desktop/myweb"
```

The website will be at the address: `http://localhost:50000/`

Running web server on **Windows** using command:

```
python -m http.server [port-number] -d [web-directory]
```

For example, to run on port 8000 and directory "C:\Users\jsmith\Desktop\my web"

```
python -m http.server 8000 -d "C:\Users\jsmith\Desktop\my web"
```

The website will be at the address: `http://localhost:8000/`

Here is a sample of XML code with stylesheet:

```
<?xml version="1.0" ?>
<?xml-stylesheet type="text/xsl" href="FILE-NAME-HERE.xsl"?>
...XML code here...
```

Here is a sample of XSLT code:

```
<?xml version="1.0" ?>
<xsl:stylesheet
  version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns="http://www.w3.org/1999/xhtml">

  <xsl:output method="xml" indent="yes" encoding="UTF-8"/>

  <xsl:template match="/PUT-THE-ROOT-ELEMENT-HERE">

    <html>
      <head>
        <title>XSLT example</title>
      </head>

      <body>
        HELLO WORLD
      </body>
    </html>

  </xsl:template>

</xsl:stylesheet>
```

**Question 1.** Given the following XML code containing an exam result:

```
<?xml version="1.0"?>
<result ref="10007629P">
  <contestantId>00025142</contestantId>
  <examId>KB253DG</examId>
  <score>156</score>
  <band>C</band>
  <digitalSignature>a720cf8e23bc1256bce2</digitalSignature>
</result>
```

Write the XML code into the file `question1.xml` and use the stylesheet `question1.xsl` to produce the following output:

# Exam result

Reference number: 10007629P
Exam number: KB253DG
Contestant number: 00025142
Digital signature: a720cf8e23bc1256bce2
Score: 156
Band: C

**Question 2.** Similar to question 1, write the XML code into the file `question2.xml` and use the stylesheet `question2.xsl` to produce the following output:

# Exam result

| | |
|---|---|
| Reference number | 10007629P |
| Exam number | KB253DG |
| Contestant number | 00025142 |
| Digital signature | a720cf8e23bc1256bce2 |
| Score | 156 |
| Band | C |

**Question 3.** Given the following XML code containing subject enrolment statistics:

```
<?xml version="1.0"?>
<audit campus="Woolloomooloo" year="2000" session="A">

  <subject sid="0769642">
    <code>MATH101</code>
    <title>Calculus</title>
    <statistics>
      <enrol>170</enrol>
      <withdrawn>31</withdrawn>
    </statistics>
  </subject>

  <subject sid="1734231">
    <code>MATH234</code>
    <title>Abstract Algebra</title>
    <statistics>
      <enrol>40</enrol>
      <withdrawn>15</withdrawn>
    </statistics>
  </subject>

</audit>
```

Write the XML code into the file `question3.xml` and add a few more subject data. Use the stylesheet `question3.xsl` to produce the following output:

# Enrolment statistics

**Campus:** Woolloomooloo
**Year:** 2000
**Session:** A

| ID | Subject | Enrol | Withdrawn |
|---|---|---|---|
| 0769642 | MATH101: Calculus | 170 | 31 |
| 1734231 | MATH234: Abstract Algebra | 40 | 15 |
| 3423171 | MATH222: Analysis | 50 | 10 |
| 2317134 | MATH241: Algebraic Number Theory | 30 | 2 |
| 2133174 | MATH287: Complex Analysis | 60 | 20 |

**END OF THE PROGRAMMING EXERCISE**