

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION

SUMMER SEMESTER, 2017-2018

DURATION: 1 Hour 30 Minutes

FULL MARKS: 75

**CSE 4635: Web Architecture**

Programmable calculators are not allowed. Do not write anything on the question paper.

There are 4 (four) questions. Answer any 3 (three) of them.

Figures in the right margin indicate marks.

1. a) You are asked to design a web application to manage students' attendance. Teachers can take or edit attendance for their respective subjects, can generate attendance report, view attendance sheet, archive attendance records and so on. Students can view their class attendance, get alert for less attendance. Answer the followings:
  - i. What Java technologies are suitable to implement the web application? Justify your answer. 10
  - ii. Draw the appropriate web architectural diagram to design the web application. Explain the web architectural model. 10
  - iii. Describe how you have ensured the concept of 'separation of concerns' through your architectural design solution. 5
2. a) Write the differences between XML and HTML. 5  
b) Consider the following architecture to produce dynamic HTML. Explain the architecture with a real-life example. 8

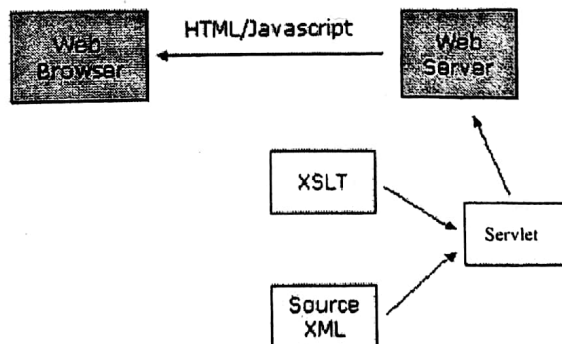


Figure 1: An XML architecture

- c) Suppose you have to provide an XML document for describing invoices for a commerce application. Each invoice includes:
  - An invoice number
  - A date of purchase
  - A billing address
  - A delivery address, if different from the billing address
  - Name and company of purchaser
  - A list of items giving code number, description, quantity ordered, price, and amount due for each item in the invoice.
  - Total amount of the order, in UK pounds.

Answer the followings:

- i. Provide a DTD suitable for defining the class of documents in this format.
- ii. Suppose Mr. X., puts in the following order on 1st February 2018:

FN-1425	Office Desk	2	£300 each
CE-2311	Mouse Mat	10	£10 each
MS-3829	Pencil	100	£0.50 each

Produce this order in XML, conforming to the DTD you have defined earlier. Include an entity in this document for the name of the purchasing company.

3. a) What is a Servlet? Explain the role of a Servlet in MVC approach with example.
- b) What is a session? Suppose, you have the following HTML form in Figure 2.

```
<form action="servlet1">
Name:<input type="text" name="userName"/><br/>
Password:<input type="password" name="pass"/><br/>
<input type="submit" value="Login"/>
```

Figure 2: HTML form

Write a servlet having URL, 'Servlet1' which will set the user name and password in the session scope and write another servlet, 'Servlet2' to get the value from that session scope and display only user name.

- b) What do you mean by Servlet dispatching? Explain the mechanism of Servlet dispatching with example.
4. a) What is a WAR file? Draw the directory structure of a Java web application containing Servlets, static pages, libraries, images, and configurations files.
- b) Write the differences between ServletConfig and ServletContext interfaces.
- c) Consider the Servlet Filter architecture in Figure 3:

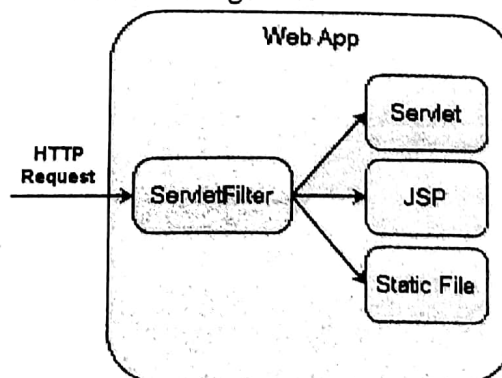


Figure 3: Servlet Filter of a web application

Answer the followings:

- i. Explain the architecture with a real life scenario.
- ii. Give an implementation of your example Servlet Filtering scenario.