King Saud University
College of Computer and Information Sciences
Department of Computer Science
CSC 457Internet Technologies

First Semester, 1436/1437                                    Time: 1:00 – 4:00 PM

*__(Answer all 10 questions)__*

# Final Exam

**Question 1. What is a web server? Give 2 examples and explain their advantages and disadvantages? (10 points)**

- Web servers are the computers that actually run websites.

- A computer program that is responsible for accepting HTTP requests from web clients, which are known as web browsers, and serving them HTTP responses along with optional data contents, which usually are web pages such as HTML documents and linked objects (images, etc.).

**Internet Information Server/Services (IIS)**

- Internet Information Server (IIS) is:

    - World Wide Web server.

    - Gopher server.

    - FTP server.

    - SMTP.

- Windows Vista and Windows Server 2008 has IIS 7.0

- Windows XP has a restricted version of IIS 5.1 that supports only 10 simultaneous connections and a single web site.

**Web Server-IIS Advantages**

- It is has a GUI interface, which makes the installation a bit easier.

- Works well with other Microsoft applications.

- Performance Monitor feature is very useful.

- Good Tech Support.

**Web Server-IIS Disadvantages**

- It only works with the Windows OS.

- It is not a terribly flexible web server, due to Microsoft constraints.

- Source code is proprietary.

## Web Server-Apache

- Apache is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation.

- The first version of Apache, was developed in 1995.

- The original version of Apache was written for UNIX, but there are now versions that run under OS/2, Windows and other platforms.

Some features of Apache are:

- Virtual Hosts

- Customized responses to errors and problems

- Allows you to easily set up password-protected pages

## Web Server-Apache Advantages

- Industry standard for most web servers.

- Open source.

- Allows remote administration.

- Multi-platform.

The software is free

## Web Server-Apache Disadvantages

- Console mode installation.

- No real tech support, except for message boards and third party vendors.

- Apache is not regularly updated.

- Requires more technical knowledge to install and configure.


**Question 2.  What is a Virtual Host?  And what are the advantages of using it ? Explain its methods in details? (10 points)**

**advantages**

- Virtual hosting is a method that servers such as web servers use to host more than one domain name on the same computer, sometimes on the same IP address.

- Its main advantage is: cost-effectiveness because you won't have to pay for a dedicated server to host just your website.

- Virtual web hosting is a good solution for small- to medium-sized websites that aren't constantly being visited or that have reasonable bandwidth needs.

- In simple terms, the virtual hosting company's server will allocate out hosting services and bandwidth to more than one website.

- Two methods:

    - Name based

    - IP based

Name-based virtual hosts use multiple host names for the same web server IP address.

**Virtual Host-Name based**

How it works?

- The browser sends the URL to the server.

- The server can use this information to determine which web site, as well as page, to show the user.

- For example: www.site1.com and www.site2.com, both resolve to the same IP address.

- For www.site1.com, the server would send the HTML file from the directory /var/www/user/abc/site/, while requests for www.site2.com would make the server serve pages from /var/www/user/xyz/site/.

- Fails when site is accessed through IP.

- Can not work in secure environment.

**Virtual Host-IP Based**

- In IP-based virtual hosting each site points to a unique IP address.

- The client is not involved in this process.

- It can serve only a certain maximum number of requests per second depending on:

- the HTTP request type,

- whether the content is static or dynamic,

- whether the content is cached,

- hardware and software limitations of the OS of the computer on which the web server runs.

- When a web server is near to or over its limits, it becomes unresponsive.

**Question 3. Write an HTML file to create a webpage that has the following features (30 points):**

1- Title of the webpage "**CSC457 Internet Technology**"
2- Background color is yellow, center alignment, and font size 24pt using _**class attribute and CSS external file**_.
3- Write "This is a red centered paragraph" in the webpage.

**CSS file : test1.css**
```
body{ background-color: yellow}

p.red {font-size: 24pt; color: red}
p.center {text-align: center;}
```

**Html File :**
```
<html>

<head>
<title>الانترنتCSC457 Internet Technology </title>
<linkrel="stylesheet"type="text/css"href="test1.css"/>

</head>
<body>

<pclass="red center">This is a red centered paragraph. </p>

</body>
</html>
```

**Question 4. Write an HTML code using Java script to popup an alert has a "Hello World" message when clicking on a button.**

**Using JS- Event Driven Example**

<html>

<head>

<script language="javascript">

```
<!--

function popup() {

alert("Hello World")

}                    -->

</script>

</head>

<body>

<input type="button" onClick="popup()" value="Click Here">

</body>

</html>
```
Click to see result

**Question 5.Write a java script to detect and display the following properties of a browser:**

 **-Browser type.**

**- If cookie is enabled**

**- The language being used.**

```
<html>
<body>
<scripttype="text/javascript">
var browser=navigator.appName;
varb_version=navigator.appVersion;
varb_cookie=navigator.cookieEnabled;
varb_language=navigator.systemLanguage;

document.write("Browser name: "+ browser);
document.write("<br>");
document.write("Cookie enabled: "+ b_cookie);
document.write("<br>");
document.write("Language: "+ b_language);

</script>
</body>
</html>
```

**Question 6. List and explain the advantages and disadvantages of the three possibilities of making a web site dynamic?**

- Server side processing

- Client side processing

- Mix of server side and client side processing

- **Server side processing**

    - Server is responsible for executing a program (script) and then sends the results in HTML format to client (browser) to interpret.

    - Advantages are:

        - Application logic resides at one place i.e. server

        - Ensures better security.

- Common scripting technologies user are:

    - Active Server Pages (ASP)

    - Java Server Page (JSP)

- Client Side Processing

**Client-side processing refers to the processing doneat the browser.**

- The browser has two primary parts: the interface (which is the part we see) and the processing software (which is the part that we do not see).

- The browser interface still has to send messages, but it sends them internally to another part of the overall browser software.

- Advantages are:

    - Customize interaction with the user

    - Validate user input

    - It reduces the load on the web server.

    - Less information must travel between the server and the

    - client saving time and bandwidth.

- Common scripting technologies user are:

    - VBScript

    - JavaScript

**Mix of server side and client side processing is a normal approach.**

- Client side processing is used for formatting the page and validating the input.

- Secured info like user id and password should not be done on client side.

**Question 7. What is a Namespaces in XML ? How it could be used ?**

- Namespace is used to provide a unique name for a document.

- One way to do it by using a prefix to the element :

  - Animal:name , person:name

- Namespaces usually take the form of a URL, beginning with a domain name, an optional namespaces label in the form of a directory name and finally a version number, which is also optional :

- Xmlns="http://www.mydomain.com/ns/animals/1.1"

**Question 8. What is a Web Service ? What is the SOAP ? Explain the SOAP elements briefly ?**

- A service that is platform independent, will work between systems that are distributed and can communicate through firewalls without raising security issues.

- Simple Object Access Protocol (SOAP)

  - Provide a mechanism that allows access to objects across the NET.

    - Cross platform boundaries

    - Go through firewall setup for normal web browsers (port 80)

    - Post little security risk

  - SOAP is a text file using XML.

  - Remote Procedure Call (RPC)

    - One of the most common messaging pattern.

    - Client node sends a request to another node (usually server), which then responds.

- SOAP = XML + HTTP

- The main idea behind SOAP is to wrap the message you want to send to the remote application in XML and then transport it over HTTP.

- SOAP shares the same port as any other Web communication over port 80.

- SOAP is using the same HTTP request/response protocol.

- The Content-Type header for SOAP request and response states:

    - **POST / item HTTP/1.1**

    - **Content-Type : application/soap+xml ; charset=utf-8**

- The mime type is **application/soap+xml**

- The Content-length header for SOAP request and response specifies the number of bytes in the body.

- Using SOAP with XML contains several elements :

    - Envelop – identifies the XML document as SOAP message (required)

    - Header – contains header information (optional)

    - Body – contains call and response information (required)

    - Fault – provides information about errors occurred while processing the message (optional)

**Question 9. Write a .NET webservice to add 2 numbers and return the result. Show the webservice extension file name and the attributes being used. The domain name to host the websirvice is :** www.acbd.com **and the directory is mywebservice.**

Following is our First Web Service example which works as a service provider and exposes two methods (add and SayHello) as Web Services to be used by applications. This is a standard template for a Web Service. .NET Web Services use the .asmx extension. Note that a method exposed as a Web Service has the WebMethod attribute. Save this file as FirstService.asmx in the IIS virtual directory (as explained in configuring IIS; for example, c:\MyWebSerces).

```
FirstService.asmx
<%@ WebService language="C" class="FirstService" %>

using System;
usingSystem.Web.Services;
usingSystem.Xml.Serialization;

  [WebService(Namespace="http://localhost/MyWebServices/")]
publicclassFirstService : WebService
  {
      [WebMethod]
publicint Add(int a, int b)
      {
return a + b;
```

```
        }

        [WebMethod]
public String SayHello()
        {
return "Hello World";
        }
    }
```

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## Question 10.  List the steps needed to access the database from an ASP Page? (10 points)

The common way to access a database from inside an ASP page is to:

- Create an ADO connection to a database

- Open the database connection

- Create an ADO RecordSet

- Open the RecordSet

- Extract the data you need from the RecordSet

- Close the RecordSet

- Close the connection.