**Week 2 Assignment**

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**Question 1: What are the four tiers of the web architecture?**

Web browser, Web server, App server, and Database

**Question 2: List programs for each of the four web tiers that our ubuntu10 VM has installed.**

Firefox, Tomcat, Java, and MySQL

**Question 3: What is the difference between a web server and an application server?**

A web server generates data presentation and an application server computes business logic

**Question 4: What is the main function of HTML?**

Presentation and interaction of people with the web browser

**Question 5: What is the main function of HTTP?**

To communicate with the web servers

**Question 6: Why many small companies only use web servers and don’t use application servers?**

Because their applications are used by a small group of clients and don’t generate significant computation load

**Question 7: Is HTTP a transportation layer protocol or an application protocol?**

Application protocol

**Question 8: Does JavaScript run in web browsers or on web servers?**

Web browsers, it can also run on the server (Node.js)

**Question 9: Can JavaScript access the web browser user’s file system?**

No

**Question 10: Can JavaScript communicate with the web site where it is downloaded?**

Yes

**Question 11: Can JavaScript communicate with the web site if the JavaScript is not downloaded from the web site?**

Yes

**Question 12: What is the web browser sandbox?**

Any software component running inside a browser cannot access the local client resources, and can only communicate with applications on the web server from where it is downloaded

**Question 13: Web browser or web server, who generated cookies?**

Web server

**Question 14: When and how are cookies sent to a web server?**

Cookies sent back by the browser with each HTTP request

**Question 15: Can a cookie downloaded from web site A be sent to web site B by a web browser?**

No

**Question 16: What is the general structure of an URL?**

<http://domain-name:port/application/resource?query-string>

**Question 17: Why we need port numbers in networking?**

To uniquely identify each server program

**Question 18: What is the default port number of a web server?**

80

**Question 19: How is a domain name mapped to an IP address?**

They are mapped by the Domain Name Server (DNS)

**Question 20: Could a server computer have multiple IP addresses?**

No

**Question 21: What is the function of domain name localhost?**

It’s very useful for testing web applications where the browser and the server are running on the same computer

**Question 22: Domain name localhost is mapped to which IP address?**

127.0.0.1

**Question 23: How to find your computer’s IP address on the Internet?**

Whatsmyip.com

**Question 24: How to find your Linux computer’s IP address in your home wireless network?**

Run “sudo ipconfig” in the terminal window

**Question 25: How to find your Windows computer’s IP address in your home wireless network?**

Run “ipconfig” in a DOS window

**Question 26: What is the difference between HTML tag name and element?**

A tag is just a predefined keyword; an element consists of tags with optional text or other elements in between them

**Question 27: HTML attributes are specified in start tag or end tag?**

Start tag

**Question 28: What are the two main HTML mechanisms for supporting interactions between a web browser and a web server?**

HTML form and hyperlink

**Question 29: Can a web server initiate a communication with a web browser?**

No

**Question 30: What are the two main attributes of HTML’s form element and what are their functions?**

The method attribute for specifying HTTP method for submitting the form data, and the action attribute for specifying the data destination

**Question 31: How to create a text field for users to enter a value?**

<input type=”text” />

**Question 32: How to create a submit button for users to submit the values in an HTML form?**

<input type=”submit” value=”submit”/>

**Question 33: What is the meaning of the name attribute of HTML input elements?**

It specifies the variable, which the server can access

**Question 34: How to create an HTML hyperlink?**

<a href=”url”> Hyperlink text </a>

**Question 35: When you click on a hyperlink, do you generate an HTTP POST or HTTP GET request?**

HTTP GET

**Question 36: When you click on a submit button of an HTML form, you find your form data appears in the web browser’s URL address field. Is your form using method Get or POST?**

GET

**Question 37: You use an HTML form to check the value of a specific stock. You found the stock price not changing for extended period of time even though you saw on TV that the stock’s price had changed. What could be the problem?**

It is very likely that the user is looking at a cached copy of the website

**Question 38: What are the main differences between HTTP GET and HTTP POST?**

GET -> Data length restrictions, less secure than POST, data is visible to everyone

POST -> No data length restrictions, more secure, data is not visible

**Question 39: HTTP GET and HTTP POST, which is more secure?**

HTTP POST

**Question 40: Which HTTP request method can be used to launch buffer overflow attack to a web server?**

HTTP GET

**Question 41: What is an HTTP request’s entity body for?**

For the HTML data from the server

**Question 42: What are an HTTP request’s header lines for?**

For the user agent and the URL of the web page from which the HTTP request is generated

**Question 43: How can a web browser or a web server know its communication partners capabilities regarding HTTP version and data type support?**

By reading the first line of the request, which is used to specify the submission type, the specific web resource, and the latest HTTP version that the browser supports

**Question 44: What is the function of HTTP response header line for “referee”?**

referee? There is no such thing. The “referer” specifies the URL from which the HTTP request is generated

**Question 45: What is the meaning of a web session?**

A sequence of related HTTP requests between a web browser and a web application for a single business transaction

**Question 46: What is web session data?**

All the data specified by the user during a session

**Question 47: When you shop at Amazon, how does Amazon maintain your session data (products that you have added to your virtual shopping cart)?**

They can use cookies, server side session objects, query strings, and hidden fields

**Question 48: What are the main mechanisms for supporting session data management?**

Cookies, hidden fields, query strings, and server-side session objects

**Question 49: What is web session ID and why its security is important?**

It identifies a specific user on the server. Security is important because this is sensitive information about the user and hackers can access it

**Question 50: Which session data management mechanism is relatively more secure?**

Server-side session objects

**Question 51: Which session management mechanism is relatively more scalable (supporting huge number of clients’ session data without committing proportional amount of resources on the web server)?**

Cookies

**Question 52: The life span of a cookie is determined by a web server, a web application, or a web browser?**

Web application

**Question 53: What are the pros and cons when you decide on the life span of a cookie?**

Pros -> session data can be stored and makes it easier to do similar HTTP requests

Cons -> security, longer life spans are less secure

LAB 4.1

**Question 54: List all differences between HTTP Get and HTTP POST requests that you observe through this exercise.**

GET -> The submitted data is in the URL

POST -> The submitted data is not in the URL, content type and length on the submitted request headers

**Question 55: If you use HTTP GET to submit form data that contains a space, such as “John Jay”, how the space is represented in query strings?**

With a +

**Question 56: If you change the action value of the form in “demo/echoGet.html” or**

**“demo/echoPost.html” from “http://localhost:8080/demo/echo” to “/demo/echo”, do you see any differences in the behavior of form data submission? (You need to use “sudo gedit echoGet.html” to change the file since the file was created by “root”)**

There is no difference

**Question 57: If you change the action value of the form in “demo/echoGet.html” or**

**“demo/echoPost.html” from “http://localhost:8080/demo/echo” to “/echo”, do you see any differences in the behavior of form data submission?**

I get an HTTP Status 404 error

**Question 58: If you change the action value of the form in “demo/echoGet.html” or**

**“demo/echoPost.html” from “http://localhost:8080/demo/echo” to “echo”, do you see any differences in the behavior of form data submission?**

I get an HTTP Status 404 error

LAB 4.3

**Question 59: Can the web developer determine how long a cookie should be alive on the end users’ computer?**

Yes

**Question 60: Is it a good idea to let your web applications’ cookies live forever on end users’ computers?**

No, because of security issues

**Question 61: Can you figure out how to delete all cookies live in your web browser?**

Yes, Settings -> Advanced Settings -> Clear browsing data

**Question 62: Can you figure out how to disable cookies for your web browser?**

Yes, Settings -> Content Settings -> Cookies – Block sites from setting any data

**Question 63: Can you figure out where are your cookies saved by your web browser?**

Yes, Chrome stores them in an SQL file in the computer

**Question 64: If your computer has multiple types of web browsers installed, do they share cookies?**

No

LAB 4.4

**Question 65: What type of HTTP request will be used when a user clicks on a hyperlink?**

HTTP GET

LAB 4.5

**Question 66: Which attribute of HTML form is used to implement JavaScript form data validation?**

onsubmit

**Question 67: Why JavaScript form data validation is not secure?**

Because people can save a copy of the file, modify it, and remove the validation.

LAB 4.6

**Question 68: A JSP page is more like an HTML file or a Java source code file?**

HTML file

**Question 69: In JSP, how to retrieve the value that the web browser user has typed in a text field?**

By using -> request.getParameter()

**Question 70: In JSP how to insert the value of a variable in the HTML file?**

By using -> <%=”value” %>

**Question 71: Is JSP a technology independent of the servlet technology?**

No, JSP files are converted into a servlet file, which is then compiled into binary file

**Question 72: When are JSP files converted into Java servlet files?**

After the first visit of the JSP page

LAB 4.7

**Question 73: What kind of files should be put under folder “WEB-INF”?**

Any files not directly accessible from the web browser. All java classes to be run on the server must be under this folder.

**Question 74: Where should Java servlet files be located in a servlet web application?**

In the classes folder (WEB-INF -> classes)

**Question 75: Appletes are Java classes to be downloaded to web browsers and run in web browser sandboxes. Should applet files be put under folder “WEB-INF”?**

No

**Question 76: What are the main methods that a Java servlet class should have?**

doGet() and doPost()

**Question 77: What are the functions of parameters request and response of servlet methods doGet() and doPost()?**

Request -> represents all the data submitted through the HTTP request

Response -> represents the data to be sent back to the remote web browser through and HTTP response

**Question 78: What is the main function of servlet methods doGet() and doPost()?**

doGet() -> the main function is to process HTTP Get requests

doPost() -> the main function is to process HTTP Post requests

**Question 79: What is the main function of configuration file “WEB-INF/web.xml”?**

Each servlet web application needs this file. It routes the application to a default file if no file is specified, and other configurations

**Question 80: What is a welcome file of a web application?**

It is the file that is display when the user visits the root of the application

**Question 81: What is URL pattern of a servlet?**

It is the pattern to match in the URL request

**Question 82: What is the relationship between a JSP page and a servlet class?**

The relationship is that JSP pages in the end get converted in servlets

REVIEW QUESTIONS

**Question 83: In your ubuntu10 VM, visit web application http://localhost:8080/bareJsp and study its source files. Explain the function and design of this web application.**

The application tests a successful installation of the J2EE SDK 1.4, it has a JSP file which uses Java to print out he multiple “Hello world” messages.