

# UNIT

# 1

## INTRODUCTION TO PHP AND FILE HANDLING



### PART-A SHORT QUESTIONS WITH SOLUTIONS

**Q1. Write a short note on PHP.**

OR

**What is PHP? What are the common uses of PHP?**

(Model Paper-I, Q1(a) | May-17(R13), Q1(a))

**Answer :**

PHP was created by Rasmus Lerdorf, in 1994. Originally, it was named as Personal Home Page (PHP). Later, it was changed by its user community to Hypertext PreProcessor, which is the recursive name for PHP.

PHP is an XHTML-embedded server-side scripting language. It means that the PHP code, can be embedded within the XHTML document to generate dynamic web pages. Since, PHP is a scripting language, it uses the PHP processor, to process the PHP code. PHP takes most of its syntax from C, Java and Perl. It is an open source which means that, its code is freely available and can be changed. It is written in C language and can run on most operating systems and with most web servers.

**Q2. Give any two advantages of PHP.**

May-16(R13), Q1(a)

**Answer :**

The advantages of PHP are as follows,

1. PHP is an open source language developed and maintained by large number of people.
2. It is very fast as it make use of many resources.
3. It is easy to use as its syntax is similar to that of 'C'.
4. It can be executed on any platform.

**Q3. Write a short note on arrays in PHP.**

Model Paper-II, Q1(a)

**Answer :**

Arrays in PHP are flexible and built-in data structure. PHP's array can be defined as a combination of arrays found in a typical language such as C and associative arrays or hashes available in other languages such as, Perl, Ruby and Python.

In PHP, an array element consists of two parts a 'key' and a 'value'. Another interesting feature of arrays is that, keys can be only positive integers, only string or a combination of both i.e., some of its elements have integer keys and some have string keys. If the logical structure of an array is similar to the array in another languages then the keys are positive integers which are always stored in ascending order. If the logical structure of the array resembles with hashes, then the keys are strings and their order is determined using a hashing function.

**Q4. How can you create array in PHP? Explain.**

May-16(R13), Q1(b)

**Answer :**

**Creating an Array**

Arrays in PHP can be created in two ways, using the assignment statement and the array construct.

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**(a) Using Assignment Statement**

Creation of an array is same as creating a scalar variable, using the assignment statement. That is, an array is created when a value is assigned to an element of an array that does not exist. Example, if the array named \$month currently does not exist, then the following statement creates it.

`$month[0] = "March";`

If the array with numeric keys already exists, then it is not necessary to specify the subscript of an array element because it is implicitly provided. The subscript of the element will be taken as 1, greater than the largest subscript used so far in the array. If the subscripts are not numeric keys, then the value 0 is used. Example, in the following statement, the subscript of the second element of array \$month will be 2.

`$month[ ] = 12;`

This example also shows that, it is not necessary for the array elements to have the same type.

**(b) Using Array Construct**

The syntax of the array construct is same as that of a function, but it is not a function. The array construct takes the values of array elements (sometimes also the keys) as its parameters. If it is used with empty parentheses then it creates an empty array.

**Example**

```
$score = array();
$score = array(10, 50, 43, 100, 25);
```

The first statement, creates an empty array. The second statement creates an array of five elements with numeric keys, 0, 1, 2, 3 and 4.

**Q5. How to declare a string in PHP? List various string functions in PHP.**

**Answer :** (Model Paper-I, Q1(b) | May-17(R13), Q1(b))

**Declaring a String in PHP**

A string is a sequence of one or more characters. PHP does not have a character data type, like other languages. Therefore, a single character is also considered as a string of length 1. The maximum length of a string is unlimited, provided that the memory is available for it.

A string literal is defined using a single quote (' ') or double quotes ("").

**String Functions**

PHP has several functions for string manipulation. Some of the most commonly used functions are,

1. `strlen()`
2. `strcmp()`
3. `substr()`
4. `strtolower()`
5. `strtoupper()`
6. `trim()`.

**Q6. Write about any two PHP operators.****Answer :**

The two PHP operators are as follows,

**1. Arithmetic Operators**

In PHP, there are 5 arithmetic operators (+, -, \*, /, %) used to perform various mathematical operations. These operators are very simple. Moreover, PHP provides several predefined mathematical functions to perform conversions, calculate logarithms, square roots, geometric values etc.

**2. Assignment Operators**

In PHP, there are 5 assignment operators (=, +=, \*=, /=, -=) that assign a value to a variable. Few assignment operators assign values to variables whereas others perform some operation prior to the assignment.

**Q7. Discuss in brief about switch case statement.****Answer :****Switch Case Statement**

When the nested if-else structures build up, it becomes difficult to get a clear picture of the program. A simple menu system would solve the problem by offering multiple choices or actions. A switch statement solves the problem. It consists of two parts,

- (i) The declaration of the switch, which includes the value to be tested.
- (ii) A list of cases which associate actions with certain values. A specific action is taken when the switch value matches the value in the corresponding case.

**Syntax**

```
switch (expression)
{
    case label1:
        statement1;
        break;
    case label2:
        statement2;
        break;
    case label3:
        statement3;
        break;
    default:
        statement4;
}
```

**Q8. What is the functionality of break and continue statement?****Answer :****Break**

The break statement alters the flow of control. When it is executed in a for, while, do/while or switch structure, causes the control to break out of that immediate structure. When the break statement is executed separately it causes the control to break out of a nested set of structures. After executing the break statement, the program control reaches to the first statement after the enclosing labeled statement and the program execution resumes from there,

**Syntax**

```
for(expression 1; expression 2; expression 3)
{
    statement(s);
    break;
}
```

**Continue**

When the continue is executed in a for, while, do/while, causes to terminate the current iteration. When it is used separately, it causes the control to break out of current iteration. After it is executed the program control goes to the next iteration.

**Syntax**

```
for(expression1; expression2; expression3)
{
    statement(s);
    continue;
}
```

**Q9. What is cookie?****Answer :**

A cookie is a small object of information that a web server stores on the web browser system. Cookies are stored, when the web browser requests a resource from the web server. Thus, server can connect requests from a particular client to previous and subsequent requests, the server can also provide a customized interface to the client based on his/her preferences.

**Q10. How can you set a cookie?****Answer :**

A cookie is set in PHP using the setcookie function. This function takes seven parameters among which first parameter is mandatory and remaining are optional. It has the following syntax,

```
setcookie($name, $value, $expire, $path, $domain,
$secure, $httponly)
```

Model Paper-III, Q1(a)

The \$name is the name of the cookie, that needs to be sent along with the rest of the HTTP headers. The \$value is the value of the cookie, which is a string. This value will be stored on the browser's client machine. This parameter should not store the sensitive information for the security purposes. The \$expire, specifies the expiration in seconds for the cookies. This parameter uses a UNIX timestamp. So this time is specified in number of seconds since UNIX epoch, which began on January 1, 1970. The time() function returns the current time. Therefore the cookie's expiration time is set as the return value of time() function plus the number of seconds to be expired.

**Q11. What are different ways in which a cookie is deleted?****Answer :**

Deleting a cookie is not a very difficult task. A cookie can be deleted in the following three ways,

1. A cookie can be deleted by itself by assigning a time to die.
2. If the time to die is not assigned, the cookie will be deleted automatically when the browser gets closed.
3. The cookie gets deleted when the user performs the functionality of "logout" through a user-interface.

**Q12. Write a short note on operator precedence and associativity.**

Model Paper-II, Q1(b)

**Answer :****Operator Precedence**

Operator precedence determines the order of evaluation of operators in an expression. Precedence rules are specified in the math class.

Consider the example below,

$\$total = 4 + 3 * 2$

From the above table it can be seen that, precedence of multiplication is higher than that of addition. So, multiplication operation is performed first, resulting to 4 + 6 or 10.

**Operator Associativity**

Operator associativity determines the order of evaluation of operators with same precedence. Associativity can be either in left-to-right or right-to-left direction.

Consider the following example,

$\$expression = 4/2 * 4;$

**Right-to-left Evaluation:**  $\$expression = 4/2$

**Output:** 0.5

**Left-to-right Evaluation:**  $\$expression = (4/2) * 8$

**Output:** 16

**Q13. Write a PHP program to count the number of lines in a file.**

**Answer :**

```
<?php
$file1 = "samplefile.txt";
if(file_exists($file1))
{
    $arr = file($file1) //file( ) created an array $arr in
                        //which each line is separately indexed
    echo($file1). "consists of".count($rows). "line";
}
else
{
    echo "file doesn't exist.";
}
```

**Q14. How do you execute a PHP script from the command line?**

**Answer :** (Model Paper-III, Q1(b) | April-18(R15), Q1(a))

PHP script can be executed using web service and through command line Interface. It is very much easier to execute PHP files using command line. Inorder to execute PHP script through command line first user need to login to windows, then open command prompt. Later redirect to the php directory, where php executable file can be searched. Now access php executable file and set the path to php file. So that it can be executed from command line.

1. Create a php file

It requires <?php..?> to run the file from command line

```
<?php
echo "Hello world, php here";
echo "\n";
?>
```

2. Navigate to c:\local\bin\php\php5.3.13 from command prompt through 'cd' command.

```
% php echo1.php
"Hello world.php here";
%
```

3. Later use the executable command

php.exe path\_to\_php\_file

php -a helps to execute CLJ in interactive mode where user can execute php simply by typing php -a

**Example**

%php -a

Interactive mode

<?php

echo "Hello world from php.";

?>

**Q15. Is multiple inheritance supported in PHP? Explain.**

**Answer :**

April-18(R15), Q1(b)

No, multiple inheritance is not supported in php because only one child class can inherit only one parent class. This is because of the diamond problem in php is not solved till date.

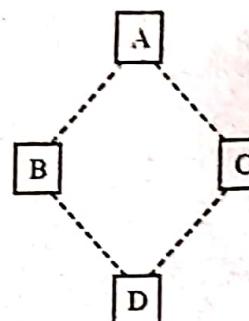


Figure: Diamond Problem

In the above figure, class B and C will override the methods of A, but the class D doesn't override it. The class D does not know which class to be inherited from class B or C. This problem can be solved temporarily in two different ways. They are,

1. Using interface
2. Using Traits instead of classes.

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## XML, PARSING XML DATA



### PART-A SHORT QUESTIONS WITH SOLUTIONS

**Q1. Define XML. What are the advantages of XML?**

**Answer :**

(Model Paper-III, Q1(c) | April-18(R16), Q1(d))

**XML**

Extensible Markup Language (XML) is a simple markup language that describes the structure of a document. It has been derived from the Standard Generalized Markup Language (SGML) for large-scale electronic publishing. It is also used in data exchange on web.

Unlike HTML and other presentation languages, XML does not display data but carry and store data. Thus, XML is easy to implement.

XML defines a set of rules with the help of which other markup languages can be created. Thus, it may be referred as "Meta-markup". Once a language is created using XML, it can be manipulated by any number of applications that are designed for a specific set of requirements.

**Advantages**

- ❖ It is extensible. This specifies only the structural rules of tags, allowing the users to create their own tags or to use the existing tags.
- ❖ It is a platform independent language.
- ❖ It is very simple as that of HTML. It has very few syntax rules.
- ❖ It is extremely suitable for document storage and processing, both online and offline.

**Q2. State rules to define tags in XML.**

(Model Paper-I, Q1(c) | May-17(R13), Q1(c))

**Answer :**

The rules of XML syntax are as follows,

1. The tags used in the XML document are case - sensitive i.e., it can use either uppercase or lowercase or mixed letters.
2. For every opening tag of XML document there must be a closing tag. Even an empty tag must also have a closing tag.
3. Every XML document must contain one root (start) element. A root element is present at the beginning of XML document.
4. The elements of the XML document must be nested.
5. Always, the attributes values of XML document are written with in a single or double quotation marks. But anyone of the quotation mark is used throughout the document.
6. XML document support white spaces (i.e., spaces among the words). It does not required any ASCII characters for adding spaces. However, it inserts a non-breakable space.

**Q3. What is XML DTD?**

Model Paper-II, Q1(c)

**Answer :**

Document Type Definition (DTD) as the name suggests, refers to certain pieces of code which can act as major building blocks to the original XML document. They are also referred as grammatical specifications to which one or more XML documents can be adhered. Each DTD's carries certain list of elements (which specifies the rules for structuring a given XML document). DTDs can be declared as external files (with .DTD extension) being referred from the XML file or they can be introduced within the given XML document.

**Q4. Define XML schema.****Answer :**

XML schema is mainly used for structuring XML documents like DTDs, they also form major building blocks of XML documents, hence it is not wrong in claiming XML schemas as an alternative to DTDs.

It is necessary to know the limitations of DTD's which lead developers to focus their attention on other alternatives.

1. XML schemas depends on XML syntaxes for their documentation.
2. XML schema documents supports usage of data types
3. Using XML schema secure data communication between various entities are ensured
4. As XML schemas are written in XML, they are extensible in nature
5. XML schemas can be taken as the successors so DTDs.

**Q5. How can you declare attributes in XML? Give an example.****Answer :**

(Model Paper-I, Q1(d) | May-16(R13), Q1(d))

**Declaration of XML Attributes**

Any additional data provided along with the "elements" is called as an "attribute". More often, attributes are defined after elements. Attributes are followed by their value.

**Example**

```
<A href = "http://jntu.ac.in">
```

**Details on Attributes**

Attributes in case of a DTD are declared using "ATTLIST" declaration. Now, analyze the consequences related to attribute declarations. The syntax in this aspect is given below,

```
<!ATTLIST name_of_element name_of_attribute
attribute_type default_value>
```

**Q6. Give the importance of DOM.**

Model Paper-II, Q1(d)

**Answer :**

The importance of DOM can be understood by concentrating on few essential concepts of "HTML". It is known that, DHTML=HTML (all the tags and features) + Scripts + Animation logics. But, few cooperative organizations of W3C submitted certain proposals of making the object model of HTML to be visible to its operating scripts. In this aspect, the developers of W3C worked hard to design a solution (not inventing new tags or features) which certainly promote intraoperatively and remain scripting language neutral i.e., DOM.

**Q7. Write a short notes on XHTML.****Answer :**

The XHTML is a new version of HTML. It has become a W3C recommendation in January 2000. It is an enhanced version of HTML by using XML that changes the direction and using the HTML in the way it must to be. In short, rules does matter. Earlier, the browser must be intimated about anything and it would render. XHTML ends all that, if any mistake is made it matters.

**Q8. Write in brief about SAX.**

Model Paper-III, Q1(d)

**Answer :**

SAX means simple API for XML. It is a stream oriented XML Parser. It iterates over the XML and calls certain methods based on "listener" object when it coincides with the structural elements of XML. Consider the below events for which it calls listener object,

- ❖ Start Document
- ❖ Start Element
- ❖ Characters
- ❖ Comments
- ❖ Processing instructions
- ❖ endElement
- ❖ endDocument.

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## INTRODUCTION TO SERVLETS

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### PART-A SHORT QUESTIONS WITH SOLUTIONS

Q1. Write any four advantages of servlets over CGI.

Answer :

The different advantages of servlets over CGI are as follows,

#### 1. Improved Performance

With CGI, a separate process is created for each request. In contrast, with servlets a light weight thread inside the JVM handles each request. In addition, a servlet stays in memory between requests whereas a CGI program needs to be loaded and started for each CGI request. As the number of requests increase, servlets achieve better performance over CGI.

#### 2. Portability

Java servlets adhere to the 'write once, run anywhere' philosophy of Java. On the other hand, CGI tends to be less portable and tied to a specific web server.

#### 3. Extensibility

Java is a robust, fully object-oriented language. Java servlets can utilize Java code from any source and can access the largest of APIs available for the Java platform, covering database access using JDBC, e-mail, directory servers, CORBA, RMI, EJB etc.

#### 4. Simpler Session Management

A typical CGI program uses cookies for session management. However, cookies alone cannot track users session. On the other hand, servlets use a right set of API to track users session depending upon the requirements.

#### 5. Improved Security and Reliability

Servlets have the added advantage of benefiting from the in-built Java security model and the inherent Java type safety making the servlet more reliable. Further more, a servlet can be run by a servlet container in a restrictive sandbox (just like an Applet runs in a Web Browser's Sandbox) which allows secure use of untrusted and potentially harmful servlets.

Q2. Name two CGI environmental variables.

Answer :

(Model Paper-I, Q1(e) | April-18(R15), Q1(e))

The following are the different CGI environment variables,

• SERVER\_NAME: Represents the DMS or IP address of the server.

• SERVER\_SOFTWARE: Indicates the version and name of the software present at the server and answers the request.

• GATE WAY\_INTERFACE: Indicates the version of the specification of CGI.

• SERVER\_PROTOCOL: Indicates the HTTP version of the server.

• SERVER\_PORT: Indicates the port number of the server.

• CONTENT\_TYPE: Indicates the types of the content.

### **Q3. Mention some uses of servlet.**

April-18(R15), Q1(e)

#### **Answer :**

The different uses of servlet are as follows,

1. They are used to accept and produce the content to serve the client dynamically. For example, online shopping site uses servlets to check the price of an item in database and that data is used to produce a web page which is sent to browser.
- 2.. They are used to process and store the data provided by a HTML form.
3. They are used in cookies and session tracking which use the recently accessed data and track the accessed web pages.
4. They are also used to balance the load among different servers that have the same data.

### **Q4. Write a short note on javax.servlet.http package.**

#### **Answer :**

Java.servlet.http this package contains 7 interfaces and 6 classes (of which 1 is abstract), and these classes and interfaces are HTTP specific. Most of the classes and interfaces in this package extend the Core Servlet API to provide HTTP specific functionality. The most important class of javax.servlet.http package is HttpServlet and the most important interfaces of javax.servlet.http package are HttpServletRequest (which extends javax.servlet.ServletRequest interface to provide HTTP Specific features), HttpServletResponse (which extends javax.servlet.ServletResponse interface) and HttpSession.

### **Q5. Define ServletContext.**

Model Paper-II, Q1(e)

#### **Answer :**

ServletContext is the runtime environment (provided by the container to every web applications) in which every servlet of an application runs. Hence, user can say that ServletContext is a reference to a web application. The run time environment contains information about all the servlets within the web application and information about the container itself. Hence, different web applications have different ServletContext.

All this information is maintained by the container in javax.servlet.ServletContext object. The container (or even individual servlets) can provide information of its own (not provided by the ServletContext interface) to all the servlets by adding an attribute to the ServletContext (using setAttribute( ) method).

### **Q6. What does servlet config interface do?**

May-16(R13), Q1(e)

#### **Answer :**

The servlet implements the ServletConfig interface. When the servlet is loaded, the related configuration data is acquired. The methods that are declared in this interface are,

#### **(i) ServletContext getServletContext()**

This method returns the available context for this servlet.

#### **(ii) String getInitParameter(String prm)**

This method returns the initialization parameter value "prm".

#### **(iii) Enumeration getInitParameterNames()**

This method returns an enumeration of the initialization parameter names.

#### **(iv) String getServletName()**

This method returns the servlet name that is being invoked.

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**Q7. When a servlet accepts a call from a client, it receives two objects. What are they?**

**Answer :**

The following are the two objects received by the servlets and defined by javax.servlet package.

(Model Paper-III, Q1(e) | May-16(R13), Q(f))

1. Servlet Request
2. Servlet Response.

#### 1. **Servlet Request**

It sends the communication request from the client to the server.

#### 2. **Servlet Response**

It sends the response back from the server to the client.

#### **Q8. What are cookies.**

**OR**

**What is the purpose of using cookies? How they are created?**

May-16(R13), Q1(h)

**Answer :**

Cookies are state objects stored by a web browser (or other Http client) and can be used by server-side applications to store and retrieve information. Cookies can be created by servlets and sent to the browser. For every subsequent request made by the browser, all the unexpired cookies from the same server are sent, as part of the http request. This allows server-side applications to access state information without the effort of encoding it in a hyperlink or HTML form.

#### **Q9. Write a short notes on HttpSession interface and session tracking.**

Model Paper-I, Q1(f)

**OR**

**What is session tracking? Explain.**

May-16(R13), Q1(g)

**(Refer Only Topic: Session Tracking)**

**Answer :**

#### **Http Session Interface**

HttpSession interface is the core interface to support session tracking with lots of useful methods, which may be used to manage a user session. HttpSession interface is implemented by the container and can be accessed by using the getSession() method of HttpServletRequest object.

#### **Session Tracking**

Servlets provide an outstanding support for session tracking using the HttpSession interface, which is a high level interface built on top of cookies or URL rewriting. In fact on many servers, they use cookies if the browser supports them, but automatically revert to URL-rewriting when cookies are not unsupported or explicitly disabled.

#### **Q10. Write a short note on,**

- (i) **Type 1 driver**
- (ii) **Type 2 driver.**

**Answer :**

#### **(i) Type 1 Driver**

Type 1 driver (comes with JDK) allows an application to access database through an intermediate ODBC driver. It provides a gateway to the ODBC API, since its sole purpose is to translate JDBC methods into ODBC function calls. Here ODBC acts as a mediating layer between the JDBC driver and the vendors client libraries.

(ii) **Type 2 Driver**

Type 2 driver converts JDBC calls into calls on the client API for the DBMS. The driver communicates directly with the database server and therefore requires that some database client software to be loaded on each client machine again limiting its usefulness for the internet. This type of driver offers better performance than the type 1 driver.

**Q11. What are the steps involved in the life cycle of a servlet?****Answer :**

(Model Paper-II, Q1(f))

The servlet life cycle consists of the following steps,

1. The servlet class is loaded by the container during start-up or the first time it is accessed.
2. The container calls the init( ) method. This method is used to initialize the servlet. It must be called before the servlet services any request. It can be called only once in the lifetime of the servlet.
3. The servlet can service client requests once when it is initialized. Every request is serviced in a separate thread of its own. The service( ) method of the servlet can be called by the container for every request.
4. Finally the container calls the destroy( ) method, if the result is not required. The destroy( ) method can be called only once in the life cycle of a servlet.

**Q12. Differentiate between ServletContext and ServletConfig.****Answer :**

ServletContext	ServletConfig
<ol style="list-style-type: none"> <li>1. It contains environment details for a web application, containing several servlets.</li> <li>2. It is one per web application.</li> <li>3. It defines a set of methods that a servlet uses to communicate with its container or other servlets.</li> <li>4. Context wide initialization parameters are specified within &lt;context-param&gt; elements of the web.xml. They are available to all the servlets within that application.</li> </ol>	<ol style="list-style-type: none"> <li>1. It contains configuration information for an individual servlet.</li> <li>2. It is one per servlet.</li> <li>3. It is a servlet configuration object used by a container to pass information to a servlet during initialization.</li> <li>4. Initialization parameters for individual servlet are specified in the &lt;servlet&gt;'s sub element &lt;init-param&gt;, of the web.xml. They are unknown to other servlets.</li> </ol>

**Q13. How is a Servlet different from an Applet?****Answer :**

(Model Paper-III, Q1(f) | May-17(R13), Q1(e))

Servlet	Applet
1. A servlet is used for developing server side web resource program inorder to generate dynamic webpage.	1. An applet is used for developing client side web resource program in order to generate static web page.
2. It requires a servlet container for execution.	2. It requires a browser window or applet viewer for execution.
3. It is executed at server side.	3. It is executed at client side.
4. It is stored and executed in web resource.	4. It is stored at server and moves to browser for execution.
5. The methods of lifecycle are init( ), service(–, –) and destroy( ).	5. The methods of lifecycle are init( ), start( ), stop( ) and destroy( ).

**Q14. Write about servlet API.****Answer :**

May-17(R13), Q1(f)

The Servlet API consists of classes and interfaces needed to build servlets. These classes and interfaces comes in two packages javax.servlet and javax.servlet.http. Protocol independent classes and interfaces exist in the package javax.servlet. Whereas, HTTP specific classes and interfaces exist in javax.servlet.http. The classes and interfaces of the servlet API (in the packages javax.servlet and javax.servlet.http) defines a contract between the servlet and the run time environment. The servlet API contains 20 interfaces (13 of javax.servlet + 7 of javax.servlet.http) 15 classes (9 of javax.servlet + 6 javax.servlet.http) and 2 exception classes (of javax.servlet).

## PART-A

### SHORT QUESTIONS WITH SOLUTIONS

**Q1. What is custom-tag libraries?**

**Answer :**

A library that comprises of a set of custom actions is called custom tag library. These actions are implemented in two forms.

- (i) Java classes
- (ii) Tag files

Custom actions are developed to extend the functionality of JSP standard actions like <jsp:useBean>, <jsp:get property>etc. Some of the custom actions are <ora:add cookie>, <ora:calender> <ora:motd>, <ora:ifUserInRole>, <ora:nocache>etc.

**Q2. What are expressions?**

**Answer :**

Expressions are a quick way to insert data into a HTML page. JSP expressions are Java language expressions between "<%=" and "%>" characters. For example, to multiply 3 and 9 and display the result, write the following code,

<% = 3 \* 9 %>

No semicolon here, as in scriptlets.

Using expressions the code will be as given below,

<% out.println (3\*9); %>

**Q3. What are the two beans used by JSP applications?**

Model Paper-I, Q1(g)

**Answer :**

JSP applications use two types of beans. They are as follows,

1. **Value Beans**

Used primarily to capture information about some instance for example, product, account etc.

2. **Utility Beans**

Used primarily to perform some operation, such as deleting the user information from a database, calculating the rate of interest etc. Value beans may be used by a utility bean or produced by the utility bean.

**Q4. Discuss in brief about the scopes associated with the implicit objects.**

**Answer :**

(i) Implicit objects are associated with four scopes. They are,

Application Scope

Objects of this scope exist for the time the server is running and can be used by any JSP or servlet.

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## (ii) Page Scope

Objects of this scope exist for the time the page is being used, in which they are defined.

## (iii) Request Scope

Objects of this scope exist for the time the request is being processed.

## (iv) Session Scope

Objects of this scope exists for the time the client is logged in. That is for the client's entire browsing period.

## Q5. List the JSP Implicit objects.

**Answer :**

(Model Paper-II, Q1(g) | April-18(R15), Q1(h))

Scope	Object	Class or Interface	Description
Page	config	javax.servlet.ServletConfig	Provides initialization information for the jsp page's servlet. This object is rarely used.
	exception	java.lang.Throwable	Represents the uncaught exception, which is passed to the JSP error page, hence it is accessible only from an error page.
	out	javax.servlet.jsp.JspWriter	Used to write data to the response stream, it is the most frequently used implicit object.
Request	page	java.lang.Object	Represents the instance of the jsp page's servlet, processing the current request. This object is rarely used.
	pageContext	javax.servlet.jsp.PageContext	Provides access to all the data associated with the whole page and access to several page attributes.
Session	response	Subtype of javax.Servlet.ServletResponse	Responses to be returned to the client. It is rarely used.
	request	Sub type of javax.servlet.ServletResponse	Represents the client request, and includes parameters from GET/POST requests.
Application	session	javax.servlet.http.HttpSession	Represents the session object for the client, which can be used to track the information about a user from one request to another.
Application	application	javax.servlet.ServletContext	Represents the context for the JSP page's servlet, in which the servlet is running and contains data shared by all the JSPs and servlets in the application.

## Q6. What are the different types of scripting elements?

**Answer :**

The different types of scripting elements are as follows,

### (i) Scriptlets

Scriptlets are the code fragments of a language (possibly Java) which are executed at run time to process an HTTP request. Hence, they have access to the jsp implicit objects.

#### Syntax

<% statement<sub>1</sub>; [statement<sub>2</sub>; ...] %>

XML equivalent syntax is,

<jsp:scriptlet> statement<sub>1</sub>; [statement<sub>2</sub>; ...] </jsp:scriptlet>

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### (II) Declarations

Declarations enable a programmer to declare variables and methods of a language (possibly java), which can be used from any point in the jsp page. Unlike scriptlets they cannot access jsp implicit objects.

#### Syntax

`<%! statement1; [statement2;.....] %>`

Note the "!"

XML equivalent syntax is,

`<jsp:declaration> statement1; [statement2;....]</jsp:declaration>`

### (III) Expressions

Expressions enable a programmer to write expression in a language (possibly java) which gets evaluated at request processing time, the resulting value is converted into a string and passed to the `println()` method of out object. A `ClassCastException` will be raised if the resulting value cannot be converted into string.

#### Syntax

`<%= statement1; [statement2;.....] %>`

Note the "="

XML equivalent syntax is,

`<jsp:expression> expression </jsp:expression>`

## Q7. What are the two components of JSP?

Model Paper-III, Q1(g)

Answer :

The two components of JSP page are,

1. JSP elements
2. Template data.

### 1. JSP Elements

These are the things that the jsp container understands (making up the syntax of jsp) and translates (making up the semantics of jsp). Hence, user can say that jsp elements instructs the jsp container, what code to generate (depending upon the syntax) and how it should operate (depending upon the semantics).

### 2. Template Data

Every thing else in the page that the jsp container does not understand is called template data. Actually these are the static portion of the jsp page (for example, HTML, WML, XML or even plain text) which are passed through the jsp container unprocessed to the browser.

## Q8. List all the classes used in the implementation of javax.Servlet.jsp. target package.

Model Paper-I, Q1(h)

Answer :

The classes that are used in the implementation of javax.servlet.jsp.target package are,

1. TagInfo
2. TagSupport
3. TagLibraryValidator
4. VariableInfo
5. TagVariableInfo

6. TagSupport
7. ValidationMessage
8. PageData
9. TagAttributeInfo
10. TagData
11. TagFileInfo
12. TagExtraInfo
13. JspFragment
14. FunctionInfo
15. BodyContent
16. BodyTagSupport
17. SimpleTagSupport
18. TagAdapter.

#### **Q9. Write a short note on page directive.**

**Answer :**

Page directive is used to specify the current page setting as a whole. While using page directives, the following points should be remembered.

- ❖ It applies to the entire JSP page and any of its static include files (a combination of these two is called translation unit).
- ❖ It does not apply to any dynamically included files.
- ❖ It can be used any number of times, but each attribute can be used only once; import attribute which is an exception to this, can be used any number of times.
- ❖ It can be placed anywhere in the jsp page, but it is a good programming practice to include it at the top of the jsp page. General syntax of page directive is

<%@directive [attribute<sub>1</sub> = "value<sub>1</sub>", attribute<sub>2</sub> = "value<sub>2</sub>" ...] %>

Some of the examples of page directives are,

<%@ page language = "java" %>

<%@ page info = "written by nadeem" %>

<%@ page import = "java.util.Date" %>

#### **Q10. Discuss in brief about Taglib directive.**

**Answer :**

##### **Taglib Directive**

Taglib directive is used to extend the jsp functionality by making use of custom actions. It enables a programmer to make use of custom actions defined in the tag library (collection of tags). The taglib directive specifies the following,

- ❖ The current jsp page uses custom tags from a specific tag library.
- ❖ The prefix for the tag library, that the current jsp page uses to distinguish its custom tags from the tags in other libraries.

##### **Syntax**

<%@ taglib (uri = "taglibURI" | tagdir = "tagExtDir") prefix = "tagPrefix"%>

#### **Q11. How to deal with syntax errors in JSP page?**

**Answer :** (Model Paper-II, Q1(h) | April-18(R15), Q1(g))

##### **Syntax Errors**

Syntax errors are generated when the statements are not written according to the syntax or grammatical rules of a language. These types of errors are detected by the compiler during compilation process. Hence, it is also called as compile-time error. There are two different syntax errors. They are,

##### **(i) Element Syntax Errors**

These errors occur when,

- ❖ The JSP directives are terminated improperly
- ❖ The JSP actions are terminated improperly
- ❖ The JSP attribute names are mismatched
- ❖ The end quote in attribute value is missed.

These errors can be handled by providing the JSP elements as defined in the specification.

##### **(ii) Expression Language Syntax Errors**

These errors are also known as EL errors. They occur when,

- ❖ Both the curly braces are missed
- ❖ The end curly brace is missed
- ❖ The name of the property is misspelled
- ❖ The name of the parameter is misspelled.

These errors can be handled by providing the language expressions properly.

#### **Q12. What is the need for using JavaBeans?**

**Answer :**

Model Paper-III, Q1(h)

The need for JavaBeans arises because of the requirement to separate business logic from presentation logic. By using JavaBeans, Java programmers can fully concentrate on writing business logic while the web page designers can design elegant and versatile looking web pages by using JavaBeans in the form of HTML-like tags. JavaBeans are typically used to hold and generate dynamic data for the JSP pages (presentation logic).

# UNIT



## CLIENT SIDE SCRIPTING

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### PART-A SHORT QUESTIONS WITH SOLUTIONS

Model Paper-I, Q1(i)

#### Q1. What is JavaScript?

**Answer :**

Most of the internet applications are built using many interoperable languages, hence HTML alone will not be sufficient in making these applications interactive. Therefore, HTML incorporates a simple language referred as "JavaScripts or Jscripts" which probably scrutinizes the web applications in most sophisticated manner.

JavaScript is a programming language with direct support to object oriented methodologies. It facilitates inclusion of certain executable data along with it. Hence, it can be said that, with the usage of JavaScripts, a given web page will no longer remains a store house of static data. But it can also maintain dynamic data which can interact with the users, dynamically create HTML context and also controls the browser actions.

#### Q2. What are the advantages of JavaScript?

**Answer :**

The advantages of javascript are as follows,

1. It is supported by most of the web browsers.
2. It provides an easy way of accessing document objects as well as it can manipulate almost all of these objects.
3. It gives attractive animations with a less download time for the multimedia data types.
4. No special plug-ins are required to use JavaScripts.
5. Security is the biggest advantage of JavaScript. Because JavaScript can't read from/write to the local hard drive and the system. Can't get a virus directly from JavaScript.

May-17(R13), Q1(i)

#### Q3. What is the scope of variable in JavaScript?

**OR**

#### What are the different types of scope rules for variables?

Model Paper-II, Q1(i)

**Answer :**

The scope rules for variables are of two types,

(i) Local scope

(ii) Global scope.

##### (i) Local Scope

If the variable is declared inside a function definition then the variable is said to have a local scope. In this case, a variable can be accessed only within the function itself.

##### (ii) Global Scope

If the variable is declared outside a function definition then the variable is said to have global scope. In this case, the variable can be accessed anywhere in the program.

**Q4. What is variable and give some examples?****Answer :****Variables**

A variable is a data item that can be manipulated at any time. In JavaScript, the variables are same as the other programming language variables. If a value is given to a variable then this is called assignment.

**Example**
 $a = 10$ 
 $b = 20 + a$ 
 $c = b * a$ 

Here,  $a$ ,  $b$  and  $c$  are the variables. However, it is not compulsory that the value of a variable must change in a code, it may or may not, but most of the times it changes.

**Q5. What is the difference between undefined and not defined in JavaScript?**

(Model Paper-III, Q1(l) | April-18(R15), Q1(j))

**Answer :****Undefined**

The variables that are declared and have not been assigned with a value are known as "undefined".

**Example**

```
var x; //undefined
```

**Not defined**

The variables that are not declared are known as "not defined".

**Example**

```
x; //not defined
```

The "not defined" variable results error in the code.

Other than the above one difference, both "undefined" and "not defined" are same but they are used based on the browser type.

**Q6. What are the different types of data types used in JavaScript?****Answer :**

JavaScript data types can be classified into mainly four types. They are,

1. Boolean data type
2. String data type
3. Null data type
4. Number data type.

**1. Boolean Data Type**

This data type consists of two logical values,

- (a) True
- (b) false

**2. String Data Type**

In this data type of JavaScript, information is written in double quotes.

**3. Null Data Type**

The user can use this data type when he/she feels it does not want to initialize the value of a particular variable.

**4. Number Data Type**

This data type is just the opposite of String data type. The value is declared without double quotes.

**UNIT-6 Client Side Scripting****Q7. Give a note on this keyword in JavaScript.****Answer :**

The keyword 'this' is used to create a reference to an object. It will be passed implicitly when method is called. This will be done automatically. Any member function can find the address of the object and access its data (to which it belongs) by using this keyword.

April-18(R15), Q1(l)

**Example**

```
function point (a, b)
{
    this.a = a;
    this.b = b;
}
```

Here, a newly created object is passed to the constructor which has a reference 'this' that refers to the newly created object to access its properties and methods.

$P = \text{new point}(3, 4);$

Object 'P' is created with the help of new operator and 'point' constructor in such a way that a reference to object  $P$ , is passed to the constructor. This constructor internally has a reference 'this' that is initialized by the reference passed to the constructor. Hence, this pointer refers to object P, this.x and this.y refer to  $P.x$  and  $P.y$  respectively.

**Q8. What is an 'event'? How are events handled in JavaScript?****Answer :**

(Model Paper-I, Q1(j) | May-17(R13), Q1(j))

**Event**

Responses made by the browser on account of user's interactions are often referred to as Events. For example, playing audio clip as soon as the page is loaded, generation of informative text as the mouse pointer is moved through a certain region of the web page, submission of user entered data to the server upon clicking the submit button etc., are the normally observed events.

**Event Handler**

Once the event is generated, there is often requirement of code to process these events. Such code is known as Event handler. In general event handlers are of two types.

- (i) Interactive event handlers
- (ii) Non-interactive event handlers.

The event handlers which solely rely on the user's activity for them to be invoked are interactive event handler.

**Example**

onClick, onBlur etc.

The event handlers which do not rely on the user's activity for them to be invoked are Non-interactive event handlers.

The event handlers which do not rely on the user's activity for them to be invoked are Non-interactive event handlers.

**Example**

onPageLoad etc.

**Q9. Write a short note on DOM.****Answer :**

Document object model or DOM is an interface using which given programs/scripts can dynamically alter (arrange, format etc.) the contents of a given web document. Here, one has to remember that DOM remains a language and platform independent interface. Also the given web document can further be processed (if required) and the result of which can be induced in it again.

**Q10. Write about structure of JavaScript.****Answer :**

The structure of javascript code begin with the tag "`<script language = "type/javascript">`". This tag validates the javascript and minimizes the occurrence of errors. If in case, the javascript is not supported by the browser in which the code is to be embedded, then certain lines can be included that helps in hiding the code. These lines are as follows,

```
<script language = "type/javascript">
<!
document.write("javascript structure!")
/>
</script>
```

**Q11. Discuss in brief about any three predefined JavaScript functions.**

Model Paper-II, Q1(j)

**Answer :**

1. **Function** : `isFinite()`

**Description** : This function takes a numeric value as an argument and returns true, only if the given argument results a finite numeric value. Else it returns false.

**Usage** : `isFinite(5/2); //The function now returns a true value since 5/2 results in a finite or terminating numeric`

2. **Function** : `parseFloat()`

**Description** : It takes a string value as argument and converts it into its floating point equivalent value. If the conversion fails then a value `Nan` is returned.

**Usage** : `parseFloat(22.45); //Converts string 22.45  
//into numeric 22.45`

3. **Function** : `Eval()`

**Description** : It takes a string as argument, which is nothing but a code corresponding to a script. When this function is called the code is executed and is stored in the form of strings.

**Usage** : `Eval (2*3) //when it is called, it returns a result 6`

**Q12. What is the difference between GET and POST methods in JavaScript?**

May-16(R13), Q1(l)

**Answer :**

GET and POST methods are used to transfer the information inputted into the form to the desired destination. PHP deals with GET and POST variables using `$_GET` and `$_POST` superglobals respectively. Using these superglobals, the user can easily specify the address from where the data is coming and handles the data in a desired way.

**Q13. How does one access cookies in a JavaScript?**

(Model Paper-III, Q1(j)) | May-16(R13), Q1(l))

**Answer :****Cookies in JavaScript**

Cookies are the string of text. It can be operated by using any standard string function. It can be accessed in Javascript by using `document` object in the properties of cookies. The following is the syntax used for cookie,

`"identifier = value"`

Where, identifier denotes a valid variable in the JavaScript and value denotes the value of the variable.

**Example**

```
document.cookie = "username=Ravi";
```

In the `document.cookie` string, if there are more than one cookie in the website then the pairs of the identifier-value are separated by the semicolon.