**OPEN SOURCE TECHNOLOGIES**

**UNIT – 1**

1) What is open source software?

Open-source software (OSS) is [computer software](http://en.wikipedia.org/wiki/Computer_software) with its [source code](http://en.wikipedia.org/wiki/Source_code) made available and licensed with a [license](http://en.wikipedia.org/wiki/Open-source_license) in which the [copyright](http://en.wikipedia.org/wiki/Copyright) holder provides the rights to study, change and distribute the software at no cost to anyone and for any purpose.

Ex: Linux, Unix, Apache, Mozilla Firefox, Android.

2) List out the advantages of open source software.

1) No cost or a lower cost for licensing "open source" solutions.

2) Continuing software enhancements available through the open source community. 3) Open architecture allows for greater opportunities for health information exchange.

3) List out the disadvantages of open source software.

1) Must understand business logic to adjust configuration or make code adjustments

to meet unique work flow and clinical needs.

2) Difficult for smaller organizations to afford the resources individually.

3) Often have to adapt and develop training materials appropriate for the particular

application of the open source solution.

4) What is commercial software?

Commercial software is computer software produced primarily for sale or commercial purposes. Examples: [Red Hat](http://en.wikipedia.org/wiki/Red_Hat), [Apple Computer](http://en.wikipedia.org/wiki/Apple_Computer), [Sun Microsystems](http://en.wikipedia.org/wiki/Sun_Microsystems), [Google](http://en.wikipedia.org/wiki/Google), [Microsoft Corporation](http://en.wikipedia.org/wiki/Microsoft_Corporation).

5) List out the advantages of commercial software.

The advantages of commercial software are it has most likely been thoroughly tested and is relatively bug free. It was probably designed by professionals specifically with the needs of customers in mind.

6) List out the disadvantages of commercial software.

The disadvantages of commercial software are that it may be expensive and the user may need to routinely upgrade the software, which in turn will cost additional dollars.

7) What is Unix?

The Unix operating system is a set of programs that act as a link between the computer and the user.

8) What is Linux?

Linux is a unix-like operating system developed by Linus Torvalds. It was originally developed as a free operating system for Intel x86-based personal computers

9) What is Kernel?

The kernel of the OS is the central core of the system, which interacts with the computer and provides services for the user and application programs to use.

10) Define a shell.

A shell is a special program which gives us the familiar text mode prompt. It can be used to start other programs and it understands some special commands of its own.

11) Mention some of the Linux distributions.

Some of the Linux distributions are Debian, Red Hat, Slackware, SuSe, Mandrake,

Immunix.

12) What is a process?

Every object in Unix is a file; everything that runs is a process. Some run once and quit; others run constantly in the background. Each process has an owner and a process ID (PID).

13) What is the use of kill command?

A kill command is used to terminate a process that gets out of hand. The kill command takes a PID as its argument that got from ps or top command and terminates that process.

14) What is the use of grep command?

The grep command searches through all of the files in a specified location trying to find files that contain lines that match a given string. It returns a list of all the files that scored a match. Ex: grep “this” myfile.txt

This will show all lines containing “this” in myfile.txt.

15) What is the use of find command?

The find command is used to **find a file whose location is forgotten. To find all files in a directory called “mydirectory” and all its subdirectories enter : find mydirectory –print**

**To find a particular file, enter : find mydirectory –print –name filename**

16) What is the use of locate command?

**The locate command is find a file in a faster way than the find command. It searches a ready-built index in order to locate files rapidly. To find all files containing the word “big”, enter : locate big**

17) What is the use of cat and more command?

**The contents of a file will be displayed with the “cat” command.**

**Ex: Cat myfile.txt**

**If the file is longer than one screen, the contents can be displayed with the “more” command.**

**Ex : more myfile.txt**

18) What is the use of man command?

It stands for manual, and it will give the detailed information on commands and aspects of Linux.

19) What is the use of popd and pushd commands?

Pop command is used to pop to another directory, remembering where the user came from, so that the user can pop back.

Push command is used to push the current directory on the stack so that the user can pop back to it.

20) What is the use of /boot directory?

The /boot directory contains the basic linux boot files. The Linux kernel lives here. The kernel is the basic executable that runs everything else in Linux.

**Unit –II**

1) What is apache?

Apache is an open source web server. Because it is so widely used, it is widely tested, and when a bug is discovered or a new Web feature is implemented, bug fixes and updates are almost immediate.

2) What is a daemon?

Programs that are always running in the background are called daemons. The web pages that is seen when the Web is surfed are served up via the HyperText Transfer Protocol (HTTP) by an httpd daemon.

3) How to start and stop apache manually?

Apache can be start and stop by the following script.

# /etc/init.d/httpd start

# /etc/init.d/httpd stop

4) Why online manuals should be removed?

The Apache manuals were installed in the html directory /var/www/html/manual/, which can be accessed via file:///var/www/html/manual/ or http://localhost/manual.

If these are left on the machine, a cracker could gain information about the machine and installation by simply hitting this directory. So they are moved to someplace out of the web path.

5) Why symbolic links should be disallowed?

Allowing symbolic links from within our web server document tree to other directories can cause content control problems. So symbolic links are not allowed.

6) Why directory indexes are not allowed?

If indexes are added to the Options directive, clients can access directory listings if they type in a directory. This has a drawback because it lets people look at the directory structure, perhaps to see files that the user didn't want to serve like .htaccess files, old versions, backups. Hence directory indexes are not allowed.

7) Define apache log files.

Apache keeps detailed logs of accesses to our website, errors, and more. The Apache logs are located at /var/log/httpd/access\_log and /var/log/httpd/error\_log. These locations are configurable in httpd.conf.

8) What is the use of swatch or logwatch?

Swatch or logwatch is a log monitor program that runs to maintain the apache log files for security violations and problems.

9) Mention some information an apache writes to the log files.

Some of the information that can be written to the log includes the following:

* The client (Web surfer) IP address
* The date
* The URI requested (all the stuff after www.example.com/)
* The referrer - the web page the client was at when they clicked the link to take them to our web page
* The user agent (the browser the client is using)

10) What is the use of logs?

The most important use of the logs is to look at them when there is a problem to figure out what went wrong.

11) What is the use of .htaccess?

The .htaccess is useful for restricting access to certain portions of our website, either by allowing access only from specific IP addresses or domains or by password control.

**Unit - III**

1) What is My-Sql?

MySQL is an Open Source Standard Query Language (SQL) database that is fast, reliable, easy to use, and suitable for applications of any size.

2) What is the use of CREATE DATABASE command?

The CREATE DATABASE command is used to create a new database.

EX : mysql> CREATE DATABASE people;

3) What is the use of SHOW DATABASES command?

Before creating a database, the current databases are checked to make sure a database of that name doesn’t exist already. The SHOW DATABASES command is used to display the list of the databases that already exists.

EX : mysql> SHOW DATABASES;

4) What is the use of USE command?

The USE command is used to connect the MySQL to the newly created database or to an existing database.

EX : mysql> USE people;

5) What is the use of CREATE TABLE command?

The CREATE TABLE command is used to create a new table with in a database.

EX : mysql> CREATE TABLE age\_information

(lastname CHAR(20),

firstname CHAR(20), age INT);

6) What is the use of SHOW TABLES command?

The SHOW TABLES command is used to display the list of tables with in a database.

EX : mysql> SHOW TABLES

7) What is the use of DROP TABLE command?

The DROP TABLE command is used to remove a table from a database while a table is not created properly.

8) What is a BLOB and a TEXT?

A BLOB is a data type in MySQL. It is a Binary Large OBject that can hold a variable amount of data. The types with TEXT in their name are just like their corresponding BLOBs except when matching is involved: The BLOBs are case-sensitive, and the TEXTs are case-insensitive.

9) Mention the types of BLOB & TEXT data types.

1) TINYBLOB & TINYTEXT maximum length 255 characters

2) BLOB & TEXT maximum length 65535 characters

3) MEDIUMBLOB & MEDIUMTEXT maximum length 16777215 characters

4) LONGBLOB & LONGTEXT maximum length 4294967295 characters

10) What is the use of DESCRIBE command?

The DESCRIBE command gives information about the fields in a table.

EX : mysql> DESCRIBE age\_information;

11) What is the use of SHOW COLUMNS command?

The SHOW COLUMNS command is used to show the column details of a given table. It is same as DESCRIBE command.

12) What is the use of INSERT command?

The INSERT command is used to add information into a table.

EX : mysql> INSERT INTO age\_information

(lastname, firstname, age)

VALUES (´Wall´, ´Larry´, 46);

13) What is the use of SELECT command?

The SELECT command selects records from the database. When this command is executed from the command line, MySQL prints all the records that match the query.

EX : mysql> SELECT \* FROM age\_information;

14) What is the use of UPDATE command?

The UPDATE command is used to change the value in an existing record.

EX : mysql> UPDATE age\_information SET age = 47

WHERE lastname = ´Wall´;

15) What is the use of DELETE command?

The DELETE command is used to delete a record from the table.

EX : mysql> DELETE FROM age\_information

WHERE lastname = ´Raymond´;

16) What is the use of GRANT command?

The GRANT command is used to grant the privileges for a new user.

EX : mysql> GRANT SELECT,INSERT,UPDATE,DELETE

ON people.\* TO apache@localhost

IDENTIFIED BY ´LampIsCool´;

17) What is DBI?

The DataBase Independent interface (DBI) is a module that provides methods to manipulate SQL databases. With DBI, one can connect to a database within a PHP Script or others like Perl script and issue all kinds of queries, including SELECT, INSERT, and DELETE.

18) What is table joins?

In relational databases, data often has complex relationships and is spread across multiple tables. Sometimes it is necessary to grab information from one table based on information in another. This requires that the two tables be joined.

19) Define loading a database with example.

A database can be loaded or otherwise SQL commands can be executed from a file. The commands or database are put into a file and it is named as mystuff.sql and it can be loaded in. This is known as loading a database. EX : $ mysql people < mystuff.sql

20) Define dumping a database with example.

A database can also be dump out into a file. This is known as dumping a database.

EX : $ mysqldump people > entiredb.sql

**Unit - IV**

1) What is PHP?

**PHP (Hypertext Preprocessor)** is an open-source HTML-embedded server side scripting language. PHP is used to develop dynamic and interactive web applications and also used as a general purpose programming language.

2) Why PHP is called as hypertext pre-processor?

HyperText means, text containing all sorts of web markups, PreProcessor means all of the HyperText is processed first and then the result is send as pure HTML to the web browser. A client cannot see the PHP source code because it is pre processed and interpreted.

Hence PHP is called as hypertext preprocessor.

3) Write the features of PHP.

* PHP is easy to learn and runs efficiently on the server side
* PHP can be [used](http://php.net/manual/en/install.php) on all major operating systems, including Linux, many Unix variants, Microsoft Windows, Mac OS X, RISC OS, and many more.
* PHP is FREE to download from the official PHP resource**:** [www.php.net](http://www.php.net/)
* PHP takes less time to make a website.

4) Write the characteristics of PHP.

Five important characteristics make PHP's practical nature possible.

* Simplicity
* Efficiency
* Security
* Flexibility
* Familiarity

5) How to embed PHP into HTML?

There are several ways to embed PHP code into HTML docemnets. They are

1) One way is to put the PHP code within the tags <? ... ?>

2) If PHP is combined with XML, PHP tag <?php ... ?> is used.

3) <script> tag is used.

4) the **< % ... %>** tag is used.

6) What are all needed to run PHP on the local machine?

To run PHP code on the local machine three things are needed.

* Web Server (e.g. Apache)
* PHP (Interpreter)
* MySQL Databases (optional)

7) What is needed to create the PHP script?

To write the PHP script, a text editor program is used. Most computers come with one or more text editors, for example:

* Windows Notepad
* Vi or Emacs on Linux
* TextEdit on Mac OS X

By professionally, [Adobe Dreamweaver](http://www.adobe.com/downloads/), [NetBeans](http://www.netbeans.org/features/php/) and [Sublime Text](http://www.sublimetext.com/) is used to edit PHP code.

8) How to use variables in PHP?

All variable names (including arrays)in PHP begin with a dollar sign ($)

followed by an alpha (A–Z, a–z) or underscore (\_), followed by zero or more alphanumeric

characters or underscores. There is no limit on variable name length.

EX : $i

$\_1st\_name

$array[0]

9) What are enumerated arrays?

Enumerated arrays are zero-based arrays indexed with integer values- $array[0]:

Ex : <?

$a[0] = 10;

$a[1] = 4\*4;

$a[2] = 12;

?>

10) What are associative arrays?

Associative arrays are indexed with unique strings— $array["key"]

EX : <?

$capital["Tamilnadu"] = "New Delhi";

$capital["Cochin"] = "Kerala";

?>

11) Write the difference between $\_GET and $POST method?

|  |  |  |
| --- | --- | --- |
| **Sno** | **$\_GET Method** | **$\_POST Method** |
| 1 | It is used to collect values from a form sent with method="get". | It is used to collect values from a form sent with method="post". |
| 2 | Information sent from a form is visible to everyone (it will be displayed in the browser's address bar) | Information sent from a form is invisible to others. |
| 3 | It has limits on the amount of information to send (max. 100 characters). | It has no limits on the amount of information to send. |

12) Define cookies.

A cookie is often used to identify a user. A cookie is a small file that the server embeds on the user's computer. Each time the same computer requests a page with a browser, it will send the cookie too.

13) Define session variables.

A PHP session variable is used to store information about, or change settings for a user session. Session variables hold information about one single user, and are available to all pages in one application.

14) Mention the operators used in PHP.

The operators used in PHP are arithmetic operators, Increment/Decrement operators,

comparison operators, Assignment operators, Logical operators, Array operators, andString operators.

15) Mention the string operators.

The string operators are

1) **.** Concatenation(Concatenates $txt1 and $txt2)

2) **.=**  Concatenation assignment(Appends $txt2 to $txt1)

14) Mention the array operators.

The array operators are

1) **+** Union

2) **==** Equality

3) **===** Identity

4) **!==** Non-identity

5) **!=** Inequality

6) <> Inequality

15) Write the syntax for nested if statement.

<?

if ($i == 0)

{

statements0

}

elseif ($i == 1)

{

statements1

}

elseif ($i == 2)

{

statements2

}

elseif ($i == 3)

{

statements3

}

elseif ($i == 4)

{

statements4

}

?>

16) Write the syntax for while statement.

while (condition)

{

statements

}

17) Write the syntax for foreach loop.

foreach (array\_expr as variable)

{

statements

}

18) How to write a php function?

There are two steps in using a function.

* Creating a PHP Function
* Calling a PHP Function

19) What is the use of return statement in PHP?

A PHP function can return a single value or an array of values. The return statement returns the value from the function to the caller.

20) Write the syntax to declare and to call a function.

The syntax to declare a function is:

function function\_name(variable\_list)

{

statements

}

The syntax to call a function is: function\_name(variable\_list);

**Unit - V**

1) What is the use of print() and die() function?

This function outputs a string that ends up being displayed in the browser.

For example:

print "<h1>PHP Results</h1>";

print "$name : $age : $result[0]";

PHP also has the **die()** function, which outputs a string and then exits the script. It is usually used to output an error message when something unexpected happens.

2) Mention the array functions and its uses.

The array function are

array\_push() : To add elements to the right side

array\_pop() : To remove the rightmost element.

array\_unshift() : To add elements to the left side.

array\_shift() : To remove the leftmost element.

3) What is the use of sort() and rsort() function?

The sort() function is used to sort an enumerated array in ASCII ascending order and

the rsort() function is used to sort an enumerated array in ASCII descending order.

4) What is the use of asort(),arsort(),ksort() and krsort() function?

asort() sort an associate array by value in ascending order.

arsort() sort an associate array by value in descending order,

ksort() sort an associate array by key in ascending order.

krsort() sort an associate array by key in descending order

5) What is the use of count() function?

The function count() returns the number of elements of its argument. If it is passed the value of a scalar variable, it returns 1. If it is passed the value of an array, it returns the number of things in the array.

6) What is the use of array\_keys() and array\_values() function?

array\_keys() function return the keys of of an associative array.

array\_values() function return the values of an associative array.

7) What is the use of array\_reverse() function?

array\_reverse() function is used to return the values of its arguments in reverse order. It does not return the keys or indices.

8) Mention some of the functions that can br performed on a string.

Some of the functions that can be performed on strings are:

* Compare Two Strings
* Find a String In Another String
* Return Part of a String
* Find Out How Many Instances of A String Occur In Another String
* Replace Part of a String
* Trim Whitespace From The Ends of a String
* Make An Entire String Lowercase or Uppercase

9) What is the use of join() function?

The join() function is used to join the array elements into a string.

EX : $array = array(2, 4, 6, 8);

$string = join(":", $array);

// $string is now "2:4:6:8"

10) What is the use of substr() function?

The substr() function is used to return a portion of a string from a character index (zero-based), for a number of characters.

EX : $string = "hello, world!";

$substring = substr($string, 2, 6);

// $substring is "llo, w"

11) What is the use of trim() function?

The trim() function is used to removewhitespace from each end of a string and returns the result.

EX : $string = " hello, world!\n\n\n";

$string2 = trim($string);

// $string2 is "hello, world!"

12) Mention some of the variable related functions and its uses.

isset() - determines If a Variable Is Set and Is Not NULL

[empty()](http://www.php.net/manual/en/function.empty.php) - determines Whether a Variable Is Empty

[gettype()](http://www.php.net/manual/en/function.gettype.php) - gets the Type of a Variable

[settype()](http://www.php.net/manual/en/function.settype.php) - sets the Type of a Variable

[unset()](http://www.php.net/manual/en/function.unset.php) - unsets a Given Variable

13) What is the use of mysql\_connect() and mysql\_close()function?

The mysql\_connect() function returns a MySQL link identifier on success or an error message on failure.

The mysql\_close()function closes the connection to the MySQL server.

14) What is the use of mysql\_db\_query() function?

This function executes a query for the specified database. It returns a result identifier on success or returns false on error. The result identifier is used to retrieve the result from the query.

15) What is the use of mysql\_num\_rows() and mysql\_fetch\_row() function?

The mysql\_num\_rows() function returns the number of rows selected by a query.

The mysql\_fetch\_row() function returns the next row as an enumerated array. Each column is stored as an array element, indexing starting with 0.

16) What is the use of mysql\_errno() and mysql\_error() function?

The mysql\_errno() function returns the error number of the most recent function call or 0 if there was no error.

The mysql\_error() function returns the error text of the most recent function call or the empty string if there was no error.

17) What is the use of mysql\_select\_db() function?

The mysql\_select\_db() function selects a database that is used by all subsequent mysql\_query() function calls. The function returns true if successful, false on error.

18) What is the use of mysql\_query() function?

The mysql\_query() function is used to query the currently selected database and returns true if successful, false on error.

19) What is the use of mysql\_fetch\_array() function?

The mysql\_fetch\_array() function returns the next row as an associative array with the table field names as the array keys and the table values as the array values. It returns the fetched row or false if there are no more rows.

20) What is the use of mysql\_affected\_rows() function?

The mysql\_affected\_rows() function is used to return the number of affected rows from the last INSERT, UPDATE, or DELETE MySQL query.

21) What is the use of mysql\_free\_result() function?

The mysql\_free\_result() function frees the memory used by the result. If this function is not called, all the memory used by the result is deleted when the script finishes running. This function is needed only if memory is concerned as the script is running.