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K.S.R. COLLEGE OF ENGINEERING (Autonomous)
Department of Computer Science and Engineering

SEMESTER - V

16CS513	OPEN SOURCE TECHNOLOGIES	L	T	P	C
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Prerequisite: *Basic knowledge of Operating Systems and Database management systems(16CS003,16CS411)*

Objectives:

- To understand the basics of open source software.
- To gain the knowledge of working with Linux platform and different Linux distributions.
- *To learn the basis of open source database and servers.*
- To be familiar with the programming Language PHP.
- To Learn the programming Language Python.

UNIT - I	BASICS OF OPEN SOURCE SOFTWARE	[9]

Introduction to Open Source Software - Need of Open Source Software - Advantages of Open Source Software - Application of Open Source Software - Open Source Operating Systems: LINUX Introduction - General Overview - Kernel Mode and User Mode - Development with Linux - Basic UNIX Commands - File Filters: File Related Commands - Piping - Joining, awk and Backup Commands.

UNIT - II	WORKING WITH SERVERS	[9]

Apache Web Server - Working with Web Server - Configuring and Using Apache Web Services - Samba Installation and Configuration: File Sharing - Installing NFS - Installing SMTP Mail Server - Installing Common Unix Printing System. - Open Source Software tools and Processors - Eclipse IDE Platform - Compilers - Model Driven Architecture tools.

UNIT - III	MYSQL	[9]

Introduction - Setting up Account - Record Selection Technology - Working with Strings - Date and Time - Sorting Query Results - Generating Summary - Working with Metadata - Using Sequences.

UNIT - IV	PHP	[9]

Introduction - Programming in Web Environment - Variables - Constants - Data Types - Operators - Statements - Functions - Arrays - OOP - String Manipulation and Regular Expression - File Handling and Data Storage - PHP and SQL Database - PHP and LDAP - PHP Connectivity - Sending and Receiving E-mails.

UNIT - V	PYTHON	[9]

Syntax and Style - Python Objects - Numbers - Sequences - Strings - Lists and Tuples - Dictionaries - Conditionals and Loops - Files - Input and Output - Errors and Exceptions - Functions - Modules - Classes and OOP - Execution Environment.

Total = 45 Periods

Course Outcomes: On Completion of this course , the student will be able to

- Demonstrate the use of various open source software available in the industry.
- Understand use of Open source database.
- Compare the technical differences between PHP and Python.
- *Build an open source platform to develop a project/application for solving real world problem.*
- Demonstrate the interoperability among various open source tools and its applications.

Text Books:

1	N. B. Venkateshwarlu, "Introduction to Linux: Installation and Programming", B S Publishers,2011. (Unit I,II,V)
2	Robin Nixon, "Learning PHP, MySQL, JavaScript, CSS & HTML5", O „Reilly Publications, 2014.(Unit III,IV)

References:

1	Robert Sheldon and Geoff Moes, "Beginning MySQL ", Wiley India, 2006.
2	Christopher Negus," Linux Bible", Wiley Publishing Inc, Indianapolis, 2011.
3	Adam McDaniel, "Perl and Apache: Your visual blueprint for developing dynamic Web content", Wiley Publishing Inc, Indianapolis, 2010.
4	Martin C. Brown, "Perl: The Complete Reference", Tata McGraw-Hill, 2nd Edition, Indian Reprint, 2009.
5	Steven Holzner, "PHP: The Complete Reference", Tata McGraw-Hill, 2nd Edition, Indian Reprint, 2009.
6	Vikram Vaswani, "MYSQL: The Complete Reference", Tata McGraw-Hill, 2nd Edition, Indian Reprint, 2009.

UNIT I

1. What is Open source software? [Understanding]

Open Source Software is software for which the underlying programming code is available to the users so that they may read it, make changes to it, and build new versions of the software incorporating their changes. There are many types of Open Source Software, mainly differing in the licensing term under which (altered) copies of the source code may (or must be) redistributed.

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it means that the program's users have the four essential freedoms:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to distribute copies of your modified versions to others (freedom 3).

2. What is the Need of Open Source Systems?[Remembering]

[REMEMBERING]

- No initial cost
- No licensing issues
- Openness and Transparency
- Speed of Access
- Freedom of movement
- Portable
- Reliable
- Stable
- Security

3. Why the open source software become popular? [Analyzing]

The following are the four important factors that lead to the development of Open Source Software:

1. To diminish the high monopoly value of the Proprietary Software
2. To avoid discrimination among persons like developers of the product and users of the product
3. To enable the user finding and fixing the bugs themselves
4. To allow customers to have control over the products they use and to redistribute the same with or without modifications.

4. Give the advantages of open source system? [Evaluating]

- Lesser hardware costs
- High-quality software
- No vendor lock-in
- Integrated management
- Simple license management
- Lower software costs
- Scaling and consolidating.

5. Mention some Applications of Open Source Systems? [Remembering]

- Finance
- Educational
- Data Storage and Management
- Games
- Media
- Networking and Internet
- Graphics

6. Give some characteristics of Linux? [Understanding]

Some Characteristics of Linux is a Unix-like computer operating system one of the most prominent examples of free software and open source development: typically all underlying source code can be freely modified, used, and redistributed by anyone

The name "Linux" comes from the Linux kernel, started in 1991 by Linux Torvalds

Predominantly known for its use in servers supported by corporations such as Dell, Hewlett-Packard, IBM, Novell, Oracle Corporation, Red Hat, and Sun Microsystems used as an operating system for a wide variety of computer hardware, including desktop computers, supercomputers, video game

systems, such as the PlayStation 2 and PlayStation 3, several arcade games, and embedded devices such as mobile phones, routers, wristwatches, and stage lighting systems

7. What are the two phases in the evolution of Linux?[Applying]

A Development Phase: Here the Kernel is not reliable and the Process is to add functionality to it, Optimize it and to try new ideas. This Phase gives rise to odd-numbered version numbers, such as 1.1,1.3 etc., This is the time when the maximum amount of work is done on the kernel

A Stabilization Phase: where the aim is to produce as stable a kernel as possible. Only minor adjustments and modifications are made. The version numbers of so called Stable Kernels are even, such as 1.0,1.2 etc.,

8. What are the advantages of Linux? [Evaluating]
[Understanding]

- Low-Cost
- Runs on old Hardware
- Choice
- Installation and GUI
- Security
- Open source

9. List the disadvantages of Linux [Understanding]

- Learning
- Lack of equivalent programs
- More technical ability needed
- Not all hardware compatible

10. What are the types of system? [Evaluating]

Operating system is a generic term which in fact describes several families of systems Single task system: Only one program may be run at a time, and therefore only one person may work on a machine at one time. However, the process may make use of the whole of the resources and power of the machine

Multi task system: Several Processes can be executed in parallel. Operating time is cut up into small intervals and each process is executed during these short periods.

11. What are the roles of an operating system? [Understanding]

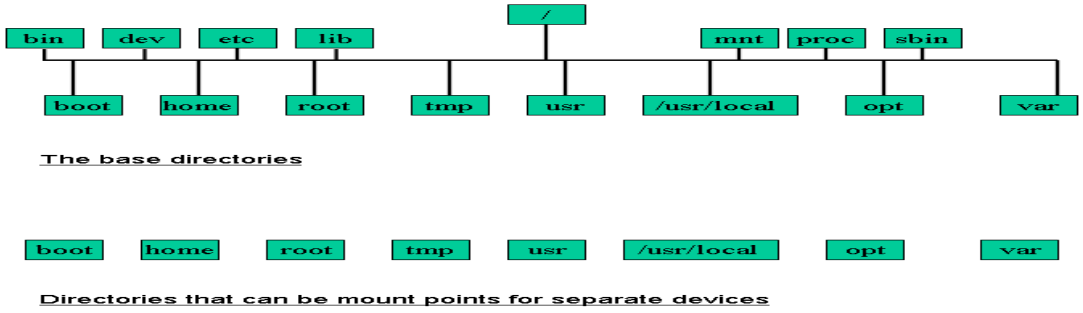
- Virtual Machine:
- Sharing the Processor:
- Memory Management:
- Resource management:
- Communication hub of the machine

12. Define Kernel mode and user mode (or) What are the two distinct modes of operation of the CPU in Linux? [Applying]

The kernel is a privileged mode, in which no restriction is imposed on the kernel of the system. The kernel may use all the instructions of the processor, manipulate the whole of the memory, and talk directly to the peripheral controllers.

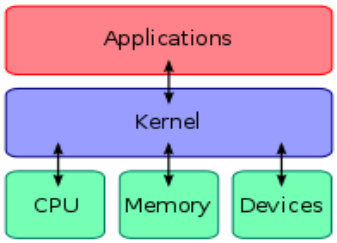
The user mode is the normal execution mode for a process. In this mode, the process has no privilege.

13. Give Linux File system Hierarchy [Analyzing]



14. Define Kernel. [Remembering]

The **kernel** is the central component of most computer operating systems. Its responsibilities include managing the system's resources (the communication between hardware and software components).



15. What is the command used to login. [Analyzing]

Logging In

login [*name* | *option*]

- Log in to the system. **login** asks for a username (*name* can be supplied on the command line) and password (if appropriate).
- If successful, **login** updates accounting files, sets various environment variables, notifies users if they have mail, and executes startup shell files.

Example: **login:** arun

Password:

16. What is the command used to create directory, change and view contents in directory.[Creating]
Make directory (mkdir)

This command is used to create a new directory.

Syntax: $mkdir dirname - The name of the directory that you wish to create.

Example: $ mkdir example - This would create a new directory called example.

Change directory (cd)

Changes the directory.

Syntax: **$**cd [directory] directory -Name of the directory user wishes to enter.

$cd.. Used to go back one directory on the majority of all Unix shells. It is important that the space be between the cd and the..

$cd - When in a Korn shell to get back one directory used to go back one directory.

Example: **$**cd mydir- The above example would go into the mydir directory if it exists.

$cd ../home/users/computerhope

The above example would go back one directory and then go into the home/users/computerhope directory.

cd ../../ -Next, the above example would go back two directories.

Cd - Finally, typing just cd alone will move you into the home directory.

Output: $ cd example

[student@server example]$

View directory (ls)

List the content of a current directory.

Syntax: **$ls [-options] name**

Options, a - to list all directory entries

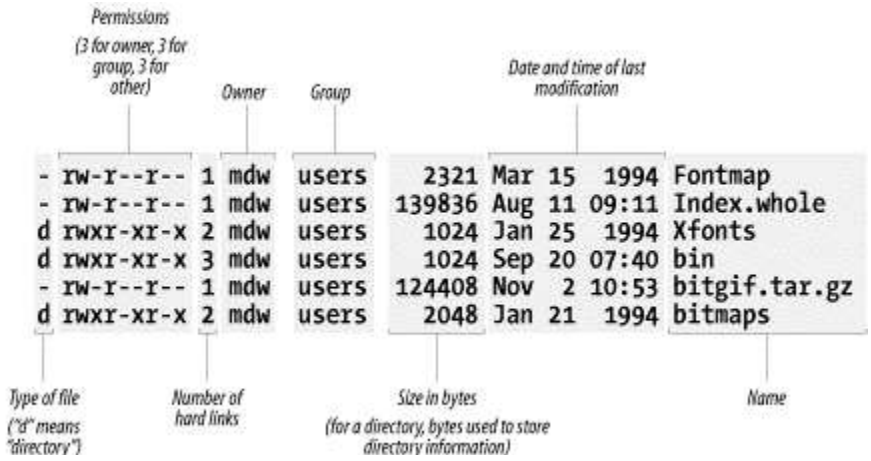
d - to list name of directories

l - to list files in long form

t - to list files sorted by name

Example: **$ls –l** - list each of the files in the current directory and the files permissions, the size of the file, date of the last modification, and the file name or directory.

Output: [student@server example]$**ls –l**



Copy directory contents (cp)

Copying a file from one directory to another directory.

Sysntax: $cp source directory destination directory

Example: [student@server ~]$ cp /home/student/example/Raj /home/student/example2

The above command copy the contents from the directory Raj to example2

Move directory (mv)

This is used to rename a directory.

Sysntax: $mv oldname newname

Example: $ mv example2 exapmle3

Remove directory (rmdir)

Deletes a directory.

Sysntax: **$**rmdir [option]... directory...

Example: $rmdir example3 (For Empty Directory)

$rm -r example3 (For non-empty Directory)

Current directory (pwd)

This command displays full path of the current working directory.

Syntax: $pwd

Example: $pwd

/home/student/example

Create and view file (cat)

Allows look, modifying or combining a file.

Syntax: cat > filename */create file/*

cat filename */view file/*

Example: $**cat > file1**

Hai

Hoe are you?

[1]+ Stopped cat >file1

$cat file1

Hai

How are you?

Copy file (cp)

Used to create duplicate copies of ordinary file.

Syntax: $cp source destination

Example: $cp file1 file2 (file1 contents were copied into file2)

Move a file (mv)

Used to rename a file.

Syntax: $mv oldname newnmae

Example: $mv file1 file2 (file1 has been renamed as file2)

Delete a file (rm)

Used to delete a file.

Syntax: $rm filename

Example: $rm file1(file1 has been removed)

17. Create a File and implement file related commands. [Creating]

Head

This command displays the initial part of the file. By default it displays first 10 lines of the file.

Syntax: $head filename

Example: $head file1 (It will show the top 10 lines of file1)

Tail

This command displays the later part of the file. By default it displays first 10 lines of the file.

Syntax: $tail filename

Example: $tail -4 file1 (It will show the last 4 lines of the file1)

Line, Word, character counting (wc)

This command is used to count the number of lines, words and characters of information contained in a file.

Syntax: $wc [option] filename

Options, l – to count the number of lines

c – to count the number of characters

w – to count the number of words

Example: $wc file1

Sort a file or directory (sort)

Used to sort file or directory contents in ascending and descending order.

Syntax: $sort filename (ascending) $sort –r filename (descending)

Example: **$sort file1**

Data structures

Fundamentals

Problem solving

$sort –r file1

Problem solving

Fundamentals

Data structures

Find file contents (grep)

This command is used to find particular information in a file

Syntax: $grep [pattern] filename

Example: $grep hai file1

hai

Set file permissions (chmod)

Chmod command is used to change the permission for the existing file. This command can be used in two ways to change the permission. They are

Symbolic Mode:

Syntax: $chmod [who][opcode][mode] filename

Who	Opcode	Mode
u – User	'+' - add Permission	r – read
g – Group	'-' - Remove Permission	w – Write
o – Other	'=' – Assign Absolute	x - execute
a – All		

Example: $chmod u+r file1 (read mode enabled to the users of the file1)

Absolute Mode:

Syntax: $chmod [octalnumber] filename

Example: $chmod 641 file1

Find file (or) directory (find)

Used to find a particular file or a directory

Syntax: $find filename

Example: $find file1

file1

18. Give the use of echo command. [Evaluating]

Echo

This command used to display the list after the keyword echo.

Syntax: $echo list

Example: $echo unix lab

unix lab

Date

This command used to display system date information

Syntax: $date

Example: $date - To display the system date and time.

Mon Apr 20 15:41:50 EDT 2009

$date +%m - To display only the month number.

4

$date +%h - To display month in character.

April

$date +"%h%m" - To display month in character and number

April 4

19. Give the use of Pipe command.

Pipe symbol

The pipe enables the user to take the output from command1 and feed it directly into the input of command2.This is done the character **"|"**, which is placed between the two commands.

Syntax: $command1|command2|…|commandn

Example: $who|wc –l|temp

Combining commands

More than one command can be given in the same command line. Each command must be separated by a semicolon (;). There are two types

Sequential commands

Give several commands on the same line by separating them with a semicolon (;)

Syntax: $command**1**; command2; command**n**

Example:: $chmod + rwx emp;ls – l emp

Command grouping

We can group commands using parentheses. Each command inside the parentheses must be separated by semicolon. The grouped commands output will be sent to another file. We can see the output by opening the file.

Syntax: $(commnad1;command2)>filename

Example: $(date;ls –l emp)>temp

20. Write the commands related to process management. [Creating]

Process management:

In Linux process management commands are used to the following purpose:

- Identifying process
- Monitoring and controlling the process
- Modifying and obtaining various information from process

The most familiar process management commands are ps, top, pstree and kill, etc,

Pgrep:

- It provides an interface, enabling to select processes using simple pattern matching
- It lists the process IDs (PIDs) of processes matching the specified pattern.

Syntax: $pgrep [option] [pattern]

Example: $pgrep bash

Pidof

It enables user to locate the Process ID (PID) of a process by name

Syntax: $pidof [option] process

Example: $pidof man

21. List out the commands to terminate process. {Analyzing]

Terminating the process:

These terminating commands are used to stop the individual or all process.

Kill:

This is used to terminating the process.

This is the **/bin/kill** command.

Syntax: $kill [*option*] *IDs*

Example: $kill 1029

Kill all:

Kill processes by command name. If more than one process is running the specified command, kill all of them. Treat command names that contain a / as files; kill all processes that are executing that file.

Syntax: $killall [*options*] *names*

UNIT – II

1. **What are the processes to access internet? [Remembering]**
    - First user need to sign up with an ISP (Internet Service Provider)
    - After sign up, user have to configure the system with any one of the method (Dial up, DSL,etc.,)
    - After the configuration with the help of browser user can able to access internet from their computer.
2. **What are the process to send and receiving the mail in Linux? [Understanding]**
    - In Linux the user can use ***Email Clients*** to send and receive the mails
    - An Email client is an application that understands the various email transmission standards and allows the user to send and receive the mails
    - The ***SMTP*** service is to send the mails, the ***POP & IMAP*** services used to receive the mails.
3. **List the email clients available in Linux. [Evaluating]**
    - Evolution
    - Mozilla Mail
    - Kmail
    - Plain text email clients – Pine & Mutt.
4. **Explain the functions of SMTP. [Remembering]**
    - System for sending messages to other computer users based on e-mail addresses. SMTP provides mail exchange between users on the same or different computers.
    - User Agent
    - Mail Transfer Agent
    - Multipurpose Internet Mail Extensions

- Post Office Protocol

5. **List the browsers name which can be supported by Linux. [Evaluating]**
    - Mozilla
    - Nautilus
    - Konqueror
    - Galeon
6. **Define POP. [Understanding]**

    POP, short for ***Post Office Protocol***, is used to send email from a mail server to your email client's *inbox*, the place where incoming email is stored. Most ISP email servers use the POP protocol, although some can use the newer IMAP (Internet Message Access Protocol).

7. **Define IMAP. [Remembering]**

    IMAP, short for ***Internet Message Access Protocol***, is a protocol for retrieving email messages from your ISP's email server. IMAP differs from POP in that email from IMAP servers are stored on the server and stays there even as you download and read your mail, whereas POP mail is downloaded to your email client directly and *does not* stay on the server.

8. **What is Squirrel Mail? [Understanding]**
    - **Squirrel Mail** is a web-based email application and written in the PHP scripting language. It can be installed on almost all web servers as long as PHP is present and the web server has access to an IMAP and SMTP server.
    - Squirrel Mail outputs valid HTML 4.0 for its presentation, making it compatible with a majority of current web browsers. Squirrel Mail uses plug-in architecture to accommodate additional features around the core application, and over 200 plug-ins are available on the Squirrel Mail website

9. **What does CGI stand for and what is its function? [Analyzing]**
    - Common Gateway Interface (CGI) is a technology that creates and handles dynamic documents. CGI is not a new language; instead it allows programmers to use any of several languages such as C, C++, Bourne Shell, korn shell, C shell, or perl.
    - The use of common in CGI indicates that the standard defines a set of rules that are common to any language or platform. The term gateway here means that a CGI program is a gateway that can be used to access other resources such as databases and graphic packages.

10. **Write the use of MUA. [Evaluating]**
    - A *Mail User Agent (MUA)* is a program that, at the very least, allows a user to read and compose emailmessages.
    - An MUA is often referred to as an *email client*. Of course, many MUAs help users do morethan that, including retrieving messages via the POP or IMAP protocols, setting up mailboxes to storemessages, or helping present new messages to a Mail Transfer Agent program that will deliver themto their final destination.
    - MUA programs may be graphical, such as **Mozilla Mail**, or have a very simple, text-based interface,such as mutt or pine.
11. **Write the role of MTA.[Applying]**

- MTA is called as Mail Transfer Agent
- It is used to transport the message over the internet
- MTA's are mail servers that use ***SMTP*** to send messages across the internet from one mail server to another, transferring then among subnets

12. Define MDA. [Understanding]

- A *Mail Delivery Agent (MDA)* is utilized by the MTA to deliver email to a particular user's mailbox.
- In many cases, an MDA is actually a ***Local Delivery Agent (LDA),*** such as ***/bin/mail or procmail.***
- However, ***"send mail***" can also play the role of an MDA, such as when it accepts a message for a localuser and appends it to their email spool file.
- MDAs do nottransport messages between systems or interface with the end user.
- Many users do not directly utilize MDAs, because only MTAs and MUAs are necessary to send andreceive email.

13. Write the use of POSTFIX. [Analyzing]

- Postfix is a secure and flexible MTA designed to replace ***"send mail"*** while maintaining as much compatibility as possible.
- It uses many of the same send mail directories and files, and makes use of send mail wrappers, letting send mail clients interact with postfix servers.
- It is also easier to configure, using own configuration file.

14. Define "Loopback interface".[Applying]

- Loopback interface require, when the standalone system send message within itself.
- A loopback interface enables user system to address itself, allowing it to send and receive mail to and from itself
- If the loopback interface configured the /etc/hosts file will be enable.

15. Write about courier mail services. [Analyzing]

- The *Courier* mail transfer agent (MTA) is an integrated mail/groupware server based on open commodity protocols, such as ESMTP, IMAP, POP3, LDAP, SSL, and HTTP.
- *Courier* provides ESMTP, IMAP, POP3, webmail, and mailing list services within a single, consistent, framework.
- The *Courier* mail server now implements basic web-based calendaring and scheduling services integrated in the webmail module.

16. What is squirrel mail? [Understanding]

- SquirrelMail is a standards-based webmail package written in PHP. It includes built-in pure PHP support for the IMAP and SMTP protocols, and all pages render in pure HTML 4.0 (with no JavaScript required) for maximum compatibility across browsers.
- SquirrelMail has all the functionality you would want from an email client, including strong MIME support, address books, and folder manipulation.

17. Write short notes on Apache web server. [Analyzing]

The Apache web server is a full – featured HTTP (web) server developed and maintained by the apache server project. The aim of the project is to provide a reliable, efficient and easily extensible webs server with free open source code.

18. What is "Samba"? [Remembering]

"Samba" is program, which can emulate the SMB (Server Message Block) protocol and connect your Red Hat Network to a Windows network to share filesand printers.

19. What is SWAT? [Remembering]

- SWAT is also called as Samba Web Administration Tool.
- It is network based samba configuration tool.
- It provides a simple webpage interface with buttons, menus and text boxes for configuring samba services.

20. What is the role of NFS? [Analyzing]

NFS (Network File System)exists to allow remote hosts to mount partitions on a particular system anduse them as though they were local filesystems. This allows files to be organized in a central location,while providing the functionality of allowing authorized user's continuous access to them.

21. Write short notes on FTP. [Remembering]

- FTP stands for File Transfer Protocol.
- It is the standard mechanism provided by the Internet for copying a file from one host to another. Transferring files from one computer to another is one of the most common tasks expected from a networking or internetworking environment.

22. What is proxy server? [Understanding]

A proxy server is a computer that keeps copies of responses to recent requests. In the presence if a proxy server the HTTP client sends of request to the proxy server. The proxy server checks its cache. If the response is not stored in the cache, the proxy server sends the request to the corresponding server.

23. Give the use of squid? [Applying]

- Squid is a proxy – caching server for web clients.
- It is designed to speed internet access and provide security controls for web servers.
- It implements a proxy - caching service for web clients that caches web pages as user make requests.
- The web browsers can use the local squid cache as a proxy HTTP server.

UNIT III

1. What is MySQL? [Remembering]

MySQL is a relational database management system which has 11 million installations. It can be used for both Windows and Linux. Managing database includes adding, accessing, and processing data in a database.

2. **Why do so many organizations use MySQL? [Understanding]**

Advantages:

- Highly efficient
- Open source
- Highly secured since All password traffic is encrypted connecting to a server.
- Offers a high scalability in terms of size and connectivity.

3. What is "mysqld"? [Understanding]

Mysqld is a daemon server program typically used to start and stop mysql server. It runsin the background.

4. How can you connect to the MySQL Server? [Analyzing]

In order to connect to the MySQL server, it is required to give the username and password. So this can be done with the following

>MySQL -u root -p

% mysql –h localhost –p –u root

-h localhost to connect to the MySQL server running on the local host

-p to tell mysql to prompt for a password

-u root to connect as the MySQL root user

5. How can you Start MySQL Server? [Applying]

To start the *mysql*program type its name in the command- line prompt. After starting the

mysql program just display a welcome message using the following Syntax:

% **mysql**

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 18427 to server version: 3.23.51-log

Type 'help;' or '\h' for help.Type '\c' to clear the buffer.

mysql>

6. How can you terminate the MySQL Server? [Analyzing]

Typing the following in Command prompt will shut down the server completely as rootuser

% mysqladmin -u root -p shutdown

7. Explain the tools that are available for managing MySQL Server. [Applying]

Following are the tools to manage MySQL server:

• mysqld - MySQL server daemon. It is used to start the mysql server.

• mysqladmin – Used to perform administrative tasks.

• mysql - A command-line interface for end users to manage user data objects.

• mysqlcheck - A command-line interface for administrators to check and repair tables.

• mysqlshow - A command-line interface for end users to see information on tables and columns.

• mysqldump - A command-line interface for administrators or end users to export data from the server to files.

• mysqlimport - A command-line interface for administrators or end users to load data files into tables program tool to load data into tables.

8. What are the capabilities provided by MySQL client APIs? [Understanding]

• Connecting to the MySQL server; selecting a database; disconnecting from the server.

• Checking for errors.

• Issuing queries and retrieving results.

• Using prepared statements and placeholders in queries.

• Including special characters and NULL values in queries.

• Handling NULL values in result sets.

9. What are the three fundamental operations that are common to MySQL Programs? [Remembering]

• Establishing a connection to the MySQL server.

• Selecting a database.

• Disconnecting from the server

10. What is difference between mysql_connect and mysql_pconnect? [Evaluating]

Mysql_connect() opens a new connection to the database while mysql_pconnect() opens a persistent connection to the database. This means that each time the page is loaded

mysql_pconnect() does not open the database. Mysql_close() cannot be used to close the persistent connection. Though it can be used to close mysql_connect().

11. How to create a table in MYSQL? [Creating]

CREATE TABLE table_name(column_name1 column_type1 NOT NULLDEFAULT '0',column_name2 column_type2,...column_nameNcolumn_typeN,PRIMARY KEY (column_name1));

12. What are the categories of SQL Statements? [Applying]

• Statements that do not return a result set. This statement category includes INSERT, DELETE, and UPDATE.

• Statements that return a result set, such as SELECT, SHOW, EXPLAIN, and DESCRIBE.

13. What are the differences between MySQL_fetch_array(), MySQL_fetch_object(), MySQL_fetch_row()? [Analyzing]

Mysql_fetch_object returns the result from the database as objects while mysql_fetch_array returns result as an array. This will allow access to the data by the field names.

E.g. using mysql_fetch_object field can be accessed as $result->name and using mysql_fetch_array field can be accessed as $result->[name].

mysql_fetch_row($result):- where $result is the result resource returned from a successful query executed using the mysql_query() function.

Example:

```
$result = mysql_query("SELECT * from students);
while($row = mysql_fetch_row($result))
{
Some statement;
}
```

14. What are the two types of methods for retrieving rows in Mysql? [Evaluating]

• Fetchone()- Returns the next row as a sequence

• Fetchall()- Returns the entire result set as a sequence of sequences

15. How to retrieve the data by using SELECT statement? [Applying]

mysql> SELECT * FROM [table name];

16. What are the ways of obtaining the connection parameters? [Remembering]

- Hardwire the parameters into the program.
- Ask for the parameters interactively.
- Get the parameters from the command line.
- Get the parameters from the execution environment.
- Get the parameters from a separate file.

• Use a combination of methods.

17. What are the various ways in which SELECT statement can be used for record selection Technology? [Applying]

SELECT gives you control over several aspects of record retrieval:

• Which table to use

• Which columns to display from the table

• What names to give the columns

• Which rows to retrieve from the table

• How to sort the rows

18. What is the keyword which can be used to combine column values? [Analyzing]

Column values may be combined to produce composite output values using the CONCAT() Keyword.

19. How can you map NULL values to other values while display?[Evaluating]

IF( ) and IFNULL( ) keywords are used to do so. They are especially useful for catching divide-by-zero operations and mapping them onto something else.

20. When the LIMIT clause will be used? [Analyzing]

LIMIT is used for the following kinds of problems:
1)Answering questions about first or last, largest or smallest
2) Splitting a result set into sections so that you can process it one piece at a time.

21. What are the advantages of copying records from one table to another? [Understanding]

- When an algorithm that modifies a table is used then it is safer to work with the copy
- When the original table is large then it takes large time to work with so it is better to work with the which takes less time
- The data-loading operations that may be malformed when used with original table can go with the copy to ensure safety
- The summary operations when repeatedly done over the original table are expensive so copy can be used to print the summary which is not expensive as original table.

22. What are the properties of Strings? [Remembering]

• Strings can be case sensitive (or not), which can affect the outcome of string operations.

• You can compare entire strings, or just parts of them by extracting substrings.

• You can apply pattern-matching operations to look for strings that have a certain structure.

23. What are the types of Strings? [Understanding]

• A binary string in MySQL is one that MySQL treats as case sensitive in comparisons.

• A non binary string in MySQL is one that MySQL does not treats as case sensitive in comparisons.

• For binary strings, the characters A and a are considered different. For non-binary strings, they're considered the same.

24. Does the MID() acts the same way as SUBSTRING() ? Justify [Analyzing]

MID() acts the same way as the SUBSTRING() if the third argument of the MID() is omitted.

27. What are the ways provided by MySQL for Pattern Matching? [Understanding]

MySQL provides two kinds of pattern matching.

1) One is based on SQL patterns

2) regular expressions.

25. What are the data types supported by MySQL for Date and Time formats? [Remembering]
MySQL supports a number of date and time column formats: Some of them are

DATE →3 bytes - Displayed in the format YYYY-MM-DD.

DATETIME →8 bytes - Displayed in the format YYYY-MM-DD HH:MM:SS.

TIMESTAMP → 4 bytes- Since MySQL 4.1, can no longer set display size.

Displayed in the same format as DATETIME.

TIME → 3 bytes- Displayed in the format HHH:MM:SS where HHH is a value

from -838 to 838. This allows a TIME value to represent an

elapsed time between two events.

YEAR →1 byte - Displayed in the format YYYY, which is a value from 1901 to

2155. To use an earlier date, you should use a TINYINT type.

26. Give Examples of various type of Date and Time formats. [Analyzing]

It is most common to store dates using a dash (-) as the delimiter a colon (:) as the time delimiter. The Following formats can also be used.

2008-10-23 10:37:22

20081023103722

2008/10/23 10.37.22

2008*10*23*10*37*22

27. Why do you go for sorting your query results? [Understanding]

SQL SELECT command to fetch data from MySQL table. When you select rows, the MySQL server is free to return them in any order, unless you instruct it otherwise by saying how to sort the result. But you sort a result set by adding an ORDER BY clause that names the column or columns you want to sort by.

Mysql> Select attributes from tablename ORDER BY attribute;

Eg: Mysql> Select **name,birth** from **pet** ORDER BY **birth**;

28. Define Aggregate functions and what are aggregate functions supported by the MySQL. [Remembering]

To compute a summary value from a set of individual values, use one of the functions known as aggregate functions. These are so called because they operate on aggregates (groups) of values.

Aggregate functions include COUNT( ), which counts records or values in a query result; MIN( ) and MAX( ), which find smallest and largest values; and SUM( ) and AVG( ), which produce sums and means of values.

29. What are the types of information available in MySQL? [Analyzing]

Information about the result of queries: This includes number of records effected by any SELECT, UPDATE or DELETE statement.

Information about tables and databases: This includes information pertaining to the structure of tables and databases.

Information about the MySQL server: This includes current status of database server, version number etc.

30. Define Sequence handlind in MySQL. [Applying]

A sequence is a set of integers 1, 2, 3, ... that are generated in order on demand. Sequences are frequently used in databases because many applications require each row in a table to contain a unique value, and sequences provide an easy way to generate them

31. Write MYSQL commands to display the table structure and empty the table? [Applying]

mysql> describe [table name];

32. List some most popular RDBMS. [Evaluating]

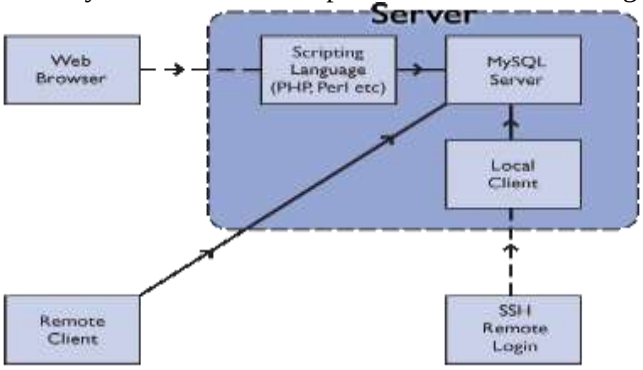
- MySQL
- PostgreSQL
- Firebird
- Oracle
- Informix
- HSQL database
- Cloud Database
- SAP Max database
- Oracle

33. What are the advantages of using databases. [Understanding]

RDBMS	*Advantages*	*Drawbacks*
Oracle	Versatile, stable, and secure.	Potentially high TCO.
MS SQL Server	Stable and secure; Microsoft offers excellent support.	Relatively high TCO; proprietary.
PostgreSQL	Up-and-coming database with low TCO.	Has yet to be widely implemented in large-scale business use.
Informix	Stable; has good support available.	Generally higher TCO.
MySQL	Offers a best-case-scenario database in many ways; low TCO, high stability, high security, and excellent support.	Not all available versions can offer the full range of MySQL capabilities.

34. How does MySQL work? [Remembering]

MySQL is a database server program and as such is installed on one machine, but can 'serve' the database to a variety of locations. To explain look at the following diagram.



A Local Client - a program on the same machine as the server.
A Scripting Language - can pass SQL queries to the server and display the result.
A Remote Client - a programme on a different machine that can connect to the server and run SQL statements.
Remote Login - You may be able to connect to the Server Machine to run one of its local clients.
Web Browser - you can use a web browser and scripts that someone has written.\

35.What are the components present in MySQL? [Remembering]

- Server-side tools: Managing databse executing query, security.
- Client-side tools: Managing MySQL user permissions, retrieve server status information.

36. Define various kinds of data types in MySQL.[Evaluating]

- Numeric type- Integer, smallint, decimal, numeric, float, real, double precision.
- Date and Time type- date, time, datetime, timestamp
- String (character) type- char, varchar, tinytext, text, blob, medium text, longtext, binary, varbinary, enum, set.

37. List some metadata standards.[Evaluating]

- IFLA (The International Federation of Library Associations and Institutions)
- IETF (Internet Engineering Task Force)
- W3C Metadata and Resource Description project groups
- Dublin Core
- Digital Object Identifier (DOI) System
- IEEE Learning Technology Standards Committee (LTSC)
- IMS (Instructional Management System) Learning Resources Metadata Specification
- ISO TC46
- MPEG-7 (Moving Picture Experts Group-7)

38. How to Create a new user in MYSQL database server? [Creating]

To Creating a new user.Login as root. Switch to the MySQL db. Make the user. Update privs.

```
# mysql -u root -p
mysql> use mysql;
mysql> INSERT INTO user (Host,User,Password)
VALUES('%','username',PASSWORD('password'));
mysql> flush privileges;
```

39. What are the types included in metadata? [Understanding]

- Two distinct classes: structural/control metadata and guide metadata
  - **Structural metadata** is used to describe the structure of computer systems such as tables, columns and indexes.
  - **Guide metadata** is used to help humans find specific items and is usually expressed as a set of keywords in a natural language.
    - **Technical metadata** correspond to internal metadata, *business metadata* to external metadata.
  - **Process metadata**. On the other hand, NISO distinguishes between three types of metadata: descriptive, structural and administrative.
    - **Descriptive metadata** is the information used to search and locate an object such as title, author, subjects, keywords, publisher; **structural metadata** gives a description of how the components of the object are organised; and **administrative metadata** refers to the technical information including file type.

UNIT IV

1. What is PHP? [Understanding]

- PHP stands for **P**HP: **H**ypertext **P**reprocessor , Personal Home Page
- PHP is a powerful tool for making dynamic and interactive Web pages.
- PHP is the widely-used, free, and efficient alternative to competitors such as Microsoft's ASP.
- PHP is a server-side scripting language, like ASP
- PHP scripts are executed on the server
- PHP supports many databases (MySQL, Informix, Oracle, Sybase, Solid, PostgreSQL, Generic ODBC, etc.)
- PHP is an open source software
- PHP is free to download and use

2. What can PHP do for you? [Remembering]

PHP offers plenty of possibilities:

- PHP is appropriate whenever you want your pages to be created dynamically when the browser requests the page. For example, you can display date, time, and other information in different ways.
- PHP will make your website more dynamic in content and a heck of a lot easier to update.
- PHP makes it easy to customize a Web page to make it more useful for individual users.
- With PHP you can set cookies, manage authentication, and redirect users.
- One of PHP most powerful features is database access. With PHP it is possible to access over 19 different types of databases and manipulate data within those databases based on input from the user via a web page.

3. Define Variable. [Remembering]

- A variable is a holder for a type of data. So, based on its type, a variable can hold numbers, strings, booleans, objects, resources or it can be NULL.
- In PHP all the variables begin with a dollar sign "$" and the value can be assignes using the "=" operator.
- The dollar sign is not technically part of the variable name, but it is required as the first character for the PHP parser to recognize the variable as such.

4. What are the variable naming conventions in PHP? [Understanding]

- There are a few rules that you need to follow when choosing a name for your PHP variables.
- PHP variables must start with a letter or underscore "_".
- PHP variables may only be comprised of alpha-numeric characters and underscores. a-z, A-Z, 0-9, or _ .
- Variables with more than one word should be separated with underscores:

  $my_variable.
- Variables with more than one word can also be distinguished with capitalization.
- One important thing to note if you are coming from another programming language there is no size limit for variables.

5. What are the scope of variables in PHP? [Understanding]

- The scope of a variable, which is controlled by the location of the variable's declaration, determines those parts of the program that can access it.

  There are various types of variable scope in PHP:

  global - Variables declared outside a function are global. That is, they can be accessed from any part of the program.

  Static - A static variable retains its value between calls to a function but is visible only within that function.

6. Define constant and what is the main difference between the variable and the constant ?[Analyzing]

- Constants just as variables are used to store information.p **changed** in the process of running program.

7. What are the data types available in PHP? [Applying]

- PHP provides eight types of values, or data types.

Four are scalar (single-value) types:

- integers,
- floating-point numbers,
- strings, and
- booleans.

Two are compound (collection) types:

• arrays and
• objects.

The remaining two are special types:

• resource and
• NULL.

8. Define expressions and operators.[Understanding]

- An expression is a bit of PHP that can be evaluated to produce a value. The simplest expressions are literal values and variables.
- A literal value evaluates to itself, while a variable evaluates to the value stored in the variable. More complex expressions can be formed using simple expressions and operators.
- An operator takes some values (the operands) and does something (for instance, adds them together).

9. What are the different types of Operators based on the number of operands it takes?[Remembering]

- Most operators in PHP are **binary operators**; they combine two operands (or expressions) into a single, more complex expression.
- PHP also supports a number of **unary operators**, which convert a single expression into a more complex expression.
- Finally, PHP supports a single **ternary operator** that combines three expressions into a single expression.

10. Define Operator Precedence, operator associativity and casting. [Understanding]

- The order in which operators in an expression are evaluated depends on their relative precedence.
- Associativity defines the order in which operators with the same order of precedence are evaluated.
- The conversion of a value from one type to another is called casting.

11. What are the types of operators available in PHP? [Analyzing]

The conversion of a value from one type to another is called casting.

• Arithmetic Operators
• String Concatenation Operator
• Auto increment and Auto decrement Operators
• Comparison Operators
• Bitwise Operators
• Logical Operators
• Casting Operators
• Assignment Operators and some miscellaneous Operators

12. What are the flow control statements available in PHP and give the syntax of each statement?[Analyzing]

if

```
if (expression)
statement
```

if else

```
if (expression)
statement
else
statement
```

switch

```
switch($name) {
case 'ktatroe':
```

```
    // do something
    break;
    case 'rasmus':
    // do something
    break;}
```

while

```
    while (expression)
    statement
```

do/while

```
      do
      statement
      while (expression)
```

for

```
      for (start; condition; increment)
      statement
```

foreach

```
      foreach ($array as $current) {
      // ...
      }
```

declare

```
      declare (directive)
      statement
```

exit and return

13. Define Function. [Understanding]

- A *function* is a named block of code that performs a specific task, possibly acting upon a set of values given to it, or *parameters*, and possibly returning a single value.

14. Give the syntax to call a function [Creating]

$some_value = *function_name*([*parameter, ...*]);

15. Give the syntax to define a function [Apr/May 2011]

function [&] *function_name*([*parameter* [, ...]])
{
statement list
}

16. What are the types to pass parameters to the function? [Remembering]

There are two different ways of passing parameters to a function.

- The first, and more common, is by value.
- The other is by reference.

17. Define Passing parameters by values and reference. [Understanding]

- When a parameter is passed by value, the compiler passes the actual value to the called procedure.
- When a parameter is passed by value, the called program or procedure can change the value of the parameter, but the caller will never see the changed value.
- Passing parameters by reference to a procedure allows the callee to modify the field passed.

18. What is the Drawback of returning the reference? [Analyzing]

- The drawback of returning the reference is that it is slower than returning the value and relying on the shallow-copy mechanism to ensure that a copy of that data is not made unless it is changed.

19. Define array in PHP [Remembering]

- An array is a special variable, which can store multiple values in one single variable.
- Arrays can be used in many ways to store and organize data quickly and efficiently.
- It is one of the more useful data types available to any programming language.
- Arrays can most easily be described as an ordered list of elements.

20. How can you assign a range of values to the array?[Evaluating]

The range( ) function creates an array of consecutive integer or character valuesbetween the two values you pass to it as arguments. For example:

```
$numbers = range(2, 5); // $numbers = array(2, 3, 4, 5);
$letters = range('a', 'z'); // $letters holds the alphabet
$reversed_numbers = range(5, 2); // $reversed_numbers = array(5, 4, 3, 2);
```

21. How can you get the size of the array? [Analyzing]

- The count( ) and sizeof( ) functions are identical in use and effect. They return the number of elements in the array. There is no stylistic preference about which function you use.

```
$family = array('Fred', 'Wilma', 'Pebbles');
$size = count($family); // $size is 3
```

22. What are the functions available to sort an array? [Understanding]

Sorting numerically indexed arrays

_ The sort() function orders the array element in ascending order.

Sorting associative arrays

_ The asort() function orders the array according to the value of each element in ascending order.

_ we use ksort() function to sort an associative array according to the key in ascending order.

Sorting arrays in the reverse order

_ Rsort() function sorts one-dimensional numerically indexed array by the values in reverse order.

_ Arsort() function sorts one-dimensional associative array by the values in reverse order.

_ Krsort() function sorts one-dimensional associative array by the keys in reverse order.

23. How is connectivity done in a PHP database? [Applying]

Before you can access data in a database, you must create a connection to the database. In PHP, this is done with the mysql_connect() function.

Syntax

mysql_connect(servername,username,password);

Parameter	Description
servername	Optional. Specifies the server to connect to. Default value is "localhost:3306"
username	Optional. Specifies the username to log in with. Default value is the name of the user that owns the server process
password	Optional. Specifies the password to log in with. Default is ""

Note: There are more available parameters, but the ones listed above are the most important. Visit our full PHP MySQL Reference for more details.

Example

In the following example we store the connection in a variable ($con) for later use in the script. The "die" part will be executed if the connection fails:

```
<?php
$con = mysql_connect("localhost","peter","abc123");
if (!$con)
  {
  die('Could not connect: ' . mysql_error());
  }
```

// some code
?>

24. What are the levels of visibility? [Evaluating]

Public: means that a class member is visible and usable / modifiable by everyone
Private: means that a class member is only usable / modifiable by the class itself
Protected: means that a class member is only usable / modifiable by the class itself and eventual sub-classes

25. What are the functions available to search a string? [Understanding]

- strpos() - The way *strpos*works is it takes some string you want to search in as its first argument and another string, which is what you are actually searching for, as the second argument.
  $pos = strpos($mystring, $findme);
- str_replace() - The *str_replace*function is similar to a word processor's "Replace All" command
  ***str_replace(search, replace, originalString)*.**
- substr_replace() - The function *substr_replace*introduces some additional functionality to compliment *str_replace*. *substr_replace*is a more mathematically based replace function, which relies on starting points and lengths to replace parts of strings, as opposed to searching and replacing.
  ***substr_replace*(*original string, replacement string, startingpoint*)**

26. What are the capitalization functions available in PHP? [Understanding]

- PHP has three primary capitalization related functions:
  - strtoupper
  - strtolower and
  - ucwords.
- The function names are pretty self-explanatory

27. Define Regular Expression and what are the regular expressions supported by PHP [Remembering]

_ A regular expression is a string that represents a *pattern*. The regular expression functions compare that pattern to another string and see if any of the string matches the pattern.
_ PHP provides support for two different types of regular expressions:

- POSIX
- Perl compatible.

28. What are the three basic Metacharacters in a regular expression? [Analyzing]

Start and end of text

- **^ character** - "^The": matches any string that starts with "The".
- **$ character** - "^abc$": a string that starts and ends with "abc"

Multiple characters

- **? character (zero or one)** - A pattern such as 'file?.txt' would find the files such as file.txt, file1.txt.
- *** character (zero or more)** - 'file*.txt' matches all of the following: file.txt, file1223.txt
- **+ character (one or more):** "file+.txt" matches all of the following: file12.txt.
- **{n} character** - "ab{2}": matches a string that has a ("abb");
- **{n, } character** - "ab{2,}": there are at least two b's ("abb", "abbbb", etc.);
- **{m,n} character** "ab{3,5}": from three to five b's ("abbb", "abbbb", or "abbbbb").

OR operator

- '|' **character:** "hi|hello": matches a string that has either "hi" or "hello" in it;

Wild character

- **('.') character:** stands for any single character:
  "^.{3}$": a string with exactly 3 characters.

Bracket expressions

- "[ab]": matches a string that has either an a or a b (that's the same as "a|b");

29. Mention the advantages of simple text file system [Understanding]

1) Minimization of cost. Cost of maintaining databases like Oracle are huge, thus files are low cost answer to these databases.
2) Taking back Up of your database is very easy. All you have to do is to copy the file.
3) It much easier to transfer a text file from one OS to another.

30. Mention the disadvantages of simple text file system [Evaluating]

1) Text files do not support SQL Query languages. Thus you will have to code your data retrieval and updation algorithms yourself.
2) It does not use any indexing mechanism , thus searching mechanism is much slower.
3) You cannot use triggers, define primary keys , Foreign Keys etc.

31. How can you open a file? [Applying]

The fopen() function can be used to open any file in the server's file system.

intfopen(string filename, string mode [, string use_include_path])

32. How can you close a file? [Applying]

The fclose() function is used to close an opened file. The argument fp is the file pointer of the file to be closed.

intfclose(intfp)

33. What are the functions available to read a file? [Remembering]

_ stringfread(intfp, int length)
_ stringfgetc(intfp)
_ stringfgets(intfp, int length)
_ stringfgetss(intfp, int length [,string allowable_tags])
_ array file(string filename [,intuse_include_path])

34. What are the functions available to write contents to a file? [Analyzing]

_ intfputs(intfp, string stringtoWrite [,int length]);
_ intfwrite(intfp, string stringtoWrite [,int length]);

35. What are the functions available to copy , rename and delete a file? [Applying]

_ int copy(string source, string destination)
_ int rename(string oldname, string newname)
_ int unlink(string filename)

36. Which components are said to be case sensitive and case insensitive in PHP?[Analyzing]

Case sensitive (both user defined and PHP defined)

- variables
- constants
- array keys
- class properties
- class constants

Case insensitive (both user defined and PHP defined)

- functions
- class constructors
- class methods
- keywords and constructs (if, else, null, foreach, echo etc.)

37. What are the components of LDAP? [Understanding]

- **LDAP data organization**, defines how the data is formatted while in storage and exchange with respect to the communicating LDAP entities, that is, client-server and server-server.

- **LDAP server** is the server that LDAP clients interact with to obtain directory information.
- **LDAP protocol**, is the common language spoken by clients and servers when the clients access the directory
- **LDAP clients** implemented using different vendor APIs and tools on different platforms are able to connect to the LDAP server, as long as they speak the LDAP protocol and handle data in the particular format required by LDAP.

38. List out the characteristics of LDAP [Analyzing]

- Global Directory Service
- Open Standard Interconnectivity
- Customizability and Extensibility
- Heterogeneous Data Store
- Secure and Access Controlled Protocol

39. What are the various PHP's LDAP client functions? [Analyzing]

The various PHP's LDAP client functions:

_ Connection and control functions
_ Search functions
_ Modification functions
_ Error functions

40.What are the different error handling methods in PHP? [Remembering]

The different error handling methods:

• Simple "die()" statements
• Custom errors and error triggers, Error reporting

Give the Importance of PHP Seurity

_ PHP is widely used language for web applications
_ PHP is making headway into enterprise as well as corporate markets
_ Most effective and often overlooked measure to prevent malicious users
_ PHP applications often end up working with sensitive data

41. Define operator precedence. [Understanding]

Highest precedence:
*,/,%
Lowest precedence:
+,-
<, <=,>,>=
=, !=,==
&&,||,XOR

UNIT V:

1. Give some of the rules and certain symbols used with regard to statements in Python. [Remembering]

Hash mark (#) indicates Python comments
NEWLINE (\n) is the standard line separator (one statement per line)
Backslash (\ ) continues a line
Semicolon (;) joins two statements on a line
Colon (:) separates a header line from its suite
Statements (code blocks) grouped as suites
Suites delimited via indentation
Python files organized as "modules"

2. Give the module structure and layout of python programming [Analyzing]

(1) startup line (Unix)

(2) module documentation
(3) module imports
(4) variable declarations
(5) class declarations
(6) function declarations
(7) "main" body

3. Give the characteristics of Python objects. [Remembering]

Identity

Unique identifier that differentiates an object from all others.

Type

An object's type indicates
what kind of values an object can hold,
what operations can be applied to such objects, and
what behavioral rules these objects are subject to.

Value

Data item that is represented by an object.

4. What are the standard types present in python programming? [Understanding]

Numbers (four separate sub-types)
Regular or "Plain" Integer
Boolean
Long Integer
Floating Point Real Number
Complex Number
String
List
Tuple
Dictionary

5. What are the built in types present in python programming? [Remembering]

Some other built in types are
Type
Null object(None)
File
Set/Frozenset
Function/Method
Module
Class

6. What are the internal types present in python programming? [Analyzing]

The following internal types are in python programming
Code
Frame
Traceback
Slice
Ellipsis
Xrange

7. What are the types of numbers present in python? [Remembering]

Python has four types of numbers:
"plain" integers,
long integers,
floating point real numbers, and
complex numbers.

8. How to Create and Assign Numbers (Number Objects)? [Creating]

Creating numbers is as simple as assigning a value to a variable:

```
anInt = 1
aLong = -9999999999999999L
aFloat = 3.14159265358979323846264338327 95
aComplex = 1.23 + 4.56J
```

9. How to Remove Numbers? [Remembering]

- Under normal circumstances, you do not really "remove" a number; you just stop using it! If you really want to delete a reference to a number object, just use the del statement

```
delanInt
delaLong, aFloat, aComplex
```

10. Define sequence [Understanding]

- Sequence types all share the same access model: ordered set with equentially indexed offsets to get to each element.
- The numbering scheme used starts from zero (0) and ends with one less the length of the sequence.

11. How can you access elements using slice operator? [Evaluating]

The syntax for accessing an individual element is:
sequence[index]
The syntax for accessing a group of elements is:
sequence [[starting_index]: [ending_index]]

12. How to Create and Assign Strings ? [Creating]

Creating strings is as simple as assigning a value to a variable:

```
>>>aString = 'Hello World!'
>>> print aString
  Hello World!
>>>aBlankString = ''
>>> print aBlankString   "
```

13. How to Access Values(Characters and Substrings) in Strings? [Creating]

Python does not support a character type; these are treated as strings of length one, thus also considered a substring. To access substrings, use the square brackets for slicing along with the index or indices to obtain your substring: >>>aString = 'Hello World!'

```
>>>aString[0]
    'H'
>>>aString[1:5]
    'ello'
>>>aString[6:]
'World!'
```

14. How to Update Strings? [Applying]

- You can "update" an existing string by (re)assigning a variable to another string. The new Value can be related to its previous value or to a completely different string altogether.

```
>>>aString = aString[:6] + 'Python!'
>>>aString
        'Hello Python!'
```

15. Define raw string operator [Remembering]

- The purpose of raw strings, introduced to Python in version 1.5, is to counteract the behavior of the special escape characters that occur in strings. In raw strings, all characters are taken verbatim with no translation to special or non-printed characters.

- This feature makes raw strings absolutely convenient when such behavior is desired, such as when composing regular expressions

16. How to Create and Assign Lists? [Creating]

- Creating lists is as simple as assigning a value to a variable. You handcraft a list (empty or with elements) and perform the assignment. Lists are delimited by surrounding square brackets ([ ]).

```
>>>aList = [123, 'abc', 4.56, ['inner', 'list'], 7-9j]
>>>printaList
[123, 'abc', 4.56, ['inner', 'list'], (7-9j)]
```

17. How to Update Lists [Applying]

- You can update single or multiple elements of lists by giving the slice on the left-hand side of the assignment operator, and you can add to elements in a list with the append() method:

```
>>>aList
    [123, 'abc', 4.56, ['inner', 'list'], (7-9j)]
>>>aList[2]
    4.56
>>>aList[2] = 'float replacer'
>>>aList
    [123, 'abc', 'float replacer', ['inner', 'list'], (7-9j)]
```

18. How to Create and Assign Tuples? [Creating]

- Creating and assigning lists are practically identical to lists, with the exception of empty tuples. These require a trailing comma (,) enclosed in the tuple delimiting parentheses (( )).

```
>>>aTuple = (123, 'abc', 4.56, ['inner', 'tuple'], 7-9j)
>>> print aTuple
(123, 'abc', 4.56, ['inner', 'tuple'], (7-9j))
```

19. How to Update Tuples? [Applying]

- Like numbers and strings, tuples are immutable which means you cannot update them or change values of tuple elements. >>>aTuple = aTuple[0], aTuple[1], aTuple[-1]

```
>>>aTuple
(123, 'abc', (7-9j))
>>> tup1 = (12, 34.56)
>>> tup2 = ('abc', 'xyz')
>>> tup3 = tup1 + tup2
>>> tup3
(12, 34.56, 'abc', 'xyz')
```

20. How to Create and Assign Dictionaries? [Creating]

Creating dictionaries simply involves assigning a dictionary to a variable, regardless of whether the dictionary has elements or not:

```
>>> dict1 = {}
>>> dict2 = {'name': 'earth', 'port': 80}
>>> dict1, dict2
({}, {'port': 80, 'name': 'earth'})
```

21. How to Access Values in Dictionaries?[Analyzing]

To access dictionary elements, you use the familiar square brackets along with the key to obtain its value:

```
>>>dict2['name']
'earth'
>>>
>>> print 'host %s is running on port %d' % \
... (dict2['name'], dict2['port'])
host earth is running on port 80
```

22. Define dictionary key look up operator [Understanding]

- The only operator specific to dictionaries is the key-lookup operator, which works very similar to the single element slice operator for sequence types.
- For a dictionary, lookups are by key, so that is the argument rather than an index.
- The key- lookup operator is used for both assigning values to and retrieving values from a dictionary:

```
dict[k] = v # set value 'v' in dictionary with key 'k'
dict[k] # lookup value in dictionary with key 'k'
```

23. Define pass statement [Remembering]

- One Python statement not found in C is the pass statement.
- Because Python does not use curly braces to delimit blocks of code, there are places where code is syntactically required.
- We do not have the equivalent empty braces or single semicolon the way C has to indicate "do nothing."
- If you use a Python statement that expects a sub-block of code or suite, and one is not present, you will get a syntax error condition.

24. List the file built in methods. [Remembering]

File methods come in four different categories:

input
output
movement within a file("intra-file motion") and
miscellaneous

25. Define Command line arguments [Understanding]

Command-line arguments are those arguments given to the program in addition to the script name on invocation. Historically, of course, these arguments are so named because they are given on the command-line along with the program name in a textbased environment like a Unix- or DOS-shell.

26. Define Pickling or flattening or serializing or marshelling [Analyzing]

Pickling is the process whereby objects more complex than primitive types can be converted to a binary set of bytes that can be stored or transmitted across the network, then be converted back to their original object forms. Pickling is also known as flattening, serializing, or marshalling.

27. Define exception[Understanding]

Exceptions can best be described as action that is taken outside of the normal flow of control because of errors. This action comes in two distinct phases, the first being the error which causes an exception to occur, and the second being the detection (and possible resolution) phase.

28. What are the various types of errors in python ? [Understanding]

NameError: attempt to access an undeclared variable
ZeroDivisionError: division by any numeric zero
SyntaxError: invalid syntax
IndexError: request for an out-of-range index for sequence

KeyError: request for a non-existent dictionary key
IOError: input/output error
AttributeError: attempt to access an unknown object attribute

29. Define Recursion [Remembering]

- A function is recursive if it contains a call to itself. A procedure is recursive if a new activation can begin before an earlier activation of the same procedure has ended.
- In other words, a new invocation of the same function occurs within that function before it finished.
- Recursion is used extensively in language recognition as well as in mathematical applications that use recursive functions.

30. Define Module. [Understanding]

- A Module allows you to logically organize your pythin code. When code gets to be large the tendency is to break it up into organized pieces that can still interact with one another at a functioning level

31. Define namespace [Remembering]

A namespace is a mapping of names to objects. The process of adding a name to a namespace consists of binding the identifier to the object.

32. Define Rebinding and Unbinding [Understanding]

The process of changing the mapping of a name is called rebinding and the process of removing a name is called unbinding.

33. What are the features of module import? [Remembering]

- Modules "executed not loaded
- Importing versus loading
- Names imported into current namespace
- Names imported into importer's scope
-

34. What are the built in functions present in python for modules? [Understanding]

import( )
Globals and locals
Reload_( )

35. Give the syntax for creating a class [Creating]

class
ClassName:
'class documentation string"
class_suite

PART-B
UNIT I

1. Explain the principle of open source software. **[Understanding]**
2. Explain the need of open source software. **[Remembering]**
3. Discuss the applications of open source software**.[Applying]**
4. Discuss Linux file structure in detail. **[Analyzing]**
5. List out the properties of Linux. **[Understanding]**
6. Compare Linux and windows. **[Remembering]**
7. Explain user mode and kernel mode in detail and write the difference . **[Evaluating]**
8. Write in detail about file related commands in Linux with an example. **[Remembering]**

9. Explain in detail about joining and piping commands**. [Creating]**
10. With suitable examples explain the following **[Remembering]**
    a. Listing files
    b. Copying files
    c. Moving files
    d. Editing files.
    e. Renaming Files
    f. Deleting Files
    g. Listing Files

UNIT II

1. Explain how postfix SMTP server is installed. **[Analyzing]**
2. Write the procedure to install and configure Apache server.
3. With neat diagram explain the architecture of CUPS. **[Understanding]**
4. Describe about the samba file server configuration in Linux.
5. Explain the steps involved in installing the software from source code.
6. Explain about squirrel mail configuration in Linux
7. Write the procedure to send an email with an attachment. **[Analyzing]**
8. Describe in detail about Model Driven Architecture tools. **[Understanding]**
9. List various open source tools available and give the usage.

UNIT III

1. Discuss about mysql database. **[Understanding]**
2. List out the advantages and disadvantages of Mysql. **[Remembering]**
3. Explain about setting up account.**[Creating]**
4. Explain record selection technology with example. . **[Analyzing]**
5. Explain string properties and its types. **[Remembering]**
6. Discuss date and type database. **[Understanding]**
7. Discuss about sorting query results.
8. How will you generate summary. **[Analyzing]**
9. Discuss sequence with example
10. Explain SELECT statement by providing examples for the following. **[Applying]**
    1 Retrieving Individual Columns
    2. Retrieving multiple Columns
    3. Retrieving ALL Columns
    4. Retrieving Distinct Rows
11. Write a MYSQL query for the following using DATE and TIME functions. **[Applying]**
    1. display current date and time.
    2. display time in 10:10:10 format.
    3. display the name of the day of a particular date.
    4. display the date "One Year Ago" from today's date.
12. Describe about MYSQL string function with its syntax and example. **[Analyzing]**

UNIT IV

1. Explain PHP Programming using some examples. **[Understanding]**
2. Explain Variables, Constants, Data types in PHP with example. **[Remembering]**
3. Explain Operators , Statements, Functions and Array in PHP **[Remembering]**
4. Explain String Manipulation and expression in PHP. **[Understanding]**

5. Explain File handling and Data storage.
6. Explain PHP and SQL database **[Remembering]**
7. Explain PHP and LDAP. **[Analyzing]**
8. Describe PHP Connectivity in detail. **[Applying]**
9. How Sending and receiving E-mails can de achieved. **[Analyzing]**
10. Explain in detail Debugging and error handling **[Evaluating]**
11. What is PHP? What does it do? List out its features? **[Understanding]**
12. Mention the scalar data-types provided by PHP? Explain with Examples. **[Remembering]**
13. Define operator associativity in PHP? Evaluate the following expression(4) **[Evaluating]**
    1. (2+4)/2*3
    2. 2+4/2*3
    3. (2+4)/(2*3)
    4. 2+4/(2*3)
14. Write short notes on PHP Shorthand Assignment operator(Assignment with operation). **[Understanding]**

UNIT V

1. Explain about Syntax and Style in python **[Analyzing]**
2. Create an Python Object and explain with an example. **[Creating]**
3. Write and explain Numbers, Sequences and Strings with an example. **[Creating]**
4. Explain Lists , Tuples and Dictionaries with an example. **[Understanding]**
5. Explain Conditionals and Loops **[Remembering]**
6. Exaplin Files –Input/output in python. **[Analyzing]**
7. Explain types Errors and Exceptions in python **[Remembering]**
8. Write a program for Functions and Modules **[Creating]**
9. Explain Classes and OOP with an example. **[Remembering]**
10. Explain Execution Environment **[Evaluating]**
11. a) Write a program for
    1. Create and Assign Lists
    2. Access Values in Lists
    3. Update Lists
    4. Remove List Elements and Lists