

Information Technology Foundations

Q. What is an enterprise application?

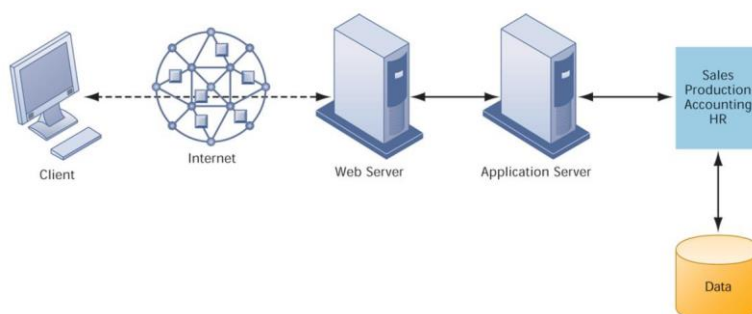
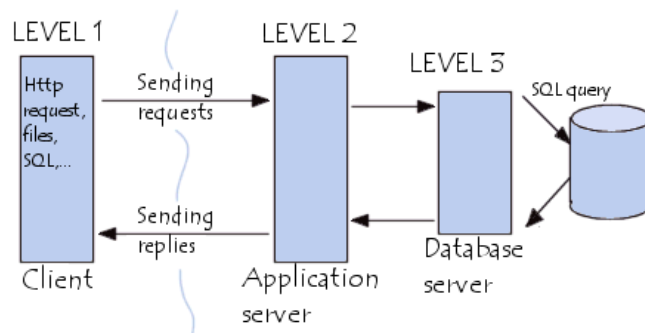
An enterprise application is typically combination of 3 tier infrastructure where tier-1 is known as front-end, tier-2 is known as middleware and tier-3 is known as back-end.

The front-end is mostly the web server that hosts the web layer of the application. The middleware consists of the application server where the application logic executes and the back-end server is the database server.

A client, the computer or a browser which requests the resources through http protocol to web server and web server responds html response.

The application server whose task it is to provide the requested resources, but by calling database server.

The data server, which provides the application server with the data it requires.



Q. What can be typed in the Run/Search to open the following windows features/utility?

- a) Command line window=>**cmd**
- b) System information windows=> **msinfo32**
- c) System Properties Windows=> **sysdm.cpl**
- d) Event log Windows=>**eventvwr**
- e) Windows registry=>**regedit**
- f) Performance Monitor => **perfmon**
- g) Task Manager=>**taskmgr**
- h) Device Manager =>**devmgmt.msc**
- i) Disk Management > **diskmgmt.msc**

Q. How to open Computer Management

- a) Right Click on My Computer, then Click on **Manage**
- b) Start > Run>type **compmgmt.msc**

Q. What is the functions of the following Windows Utility?

- **Computer Management:** Computer Management is a collection of Windows administrative tools that you can use to manage a local or remote computer. The tools are organized into a single console, which makes it easy to view administrative properties and to gain access to the tools that are necessary to perform computer-management tasks.

To launch Windows Computer Management

Click Start, click in the Start Search box, type **compmgmt.msc**, and press ENTER.

- **Event Viewer:** Event Viewer tool is used to manage and view events that are recorded in the Application, Security, and System logs. We can monitor the logs to track security events and to identify possible software, hardware, and system problems.

To launch Windows Event Viewer

Click Start, click in the Start Search box, type **eventvwr**, and press ENTER.

- **Task Manager:** Task Manager provides information about programs and processes running on computer. It also displays the most commonly used performance measures for processes.

we can use Task Manager to monitor key indicators of computer's performance.

To launch Windows Task Manager

Click Start, click in the Start Search box, type **taskmgr**, and press ENTER.

- **Performance Monitor:** Performance Monitor is used to Monitor application and hardware performance in real time, customize what data we want to collect in logs, define thresholds for alerts and automatic actions, generate reports, and view past performance data in a variety of ways.

To launch Windows Performance Monitor

Click Start, click in the Start Search box, type **perfmon**, and press ENTER.

- **Registry:** Windows registry is a database repository for information about a computer's configuration. The registry contains information that Windows continually references during operation, such as:
 - Profiles for each user.
 - The programs installed on the computer and the types of documents each can create.
 - Property settings for folders and program icons.
 - What hardware exists on the system.
 - Which ports are being used.
 -

To launch Windows Registry

Click Start, click in the Start Search box, type **regedit**, and press ENTER

Q. What is IP address? What is the command to display IP Address of a computer ?

Network IP address is used to identify a host (PC or any network device) in a network. IP is a 32 bit binary number divided into 4 octet groups, each octet giving a maximum of 255 in decimal. For easier addressing of these IP address octet, they are written as dotted decimals.

```
C:\> ipconfig /all
```

```

Command Prompt
C:\Users>ipconfig
Windows IP Configuration

PPP adapter Nokia        classic USB Modem (OTA):
Connection-specific DNS Suffix . . . . . : 
IPv4 Address. . . . . : 14.177.194.177
Subnet mask . . . . . : 255.255.255.255
Default Gateway . . . . . : 0.0.0.0
    
```

Q. How to open Network TCP/IP Properties

- a) Start > Run > type **ncpa.cpl**
- b) Right Click on **Local Area Connection**, then click on **Properties**
- c) Then Choose **TCP/IP** and then **Properties**

Q. What is the difference between IP address and MAC address?

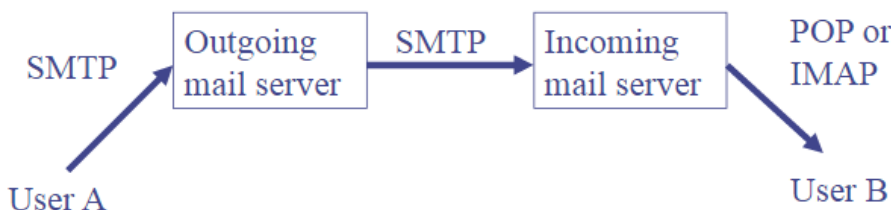
- IP address is a 32-bit logical address whereas MAC address is 48 bit physical address
- MAC address is assigned by the device’s manufacturers whereas IP address is assigned by User/administrator, DHCP, or ISP Source.

Q. What is the function of the following Protocol?

- a) SMTP b) POP/IPAM c) HTTP d) SSL e) FTP f) Telnet

IMAP: Internet Message Access Protocol - A protocol for receiving e-mail messages from mail server

SMTP: Simple Mail Transfer Protocol - A protocol for sending e-mail messages on the Internet



HTTP: Hypertext Transfer Protocol - An Internet-based protocol for sending and receiving webpages

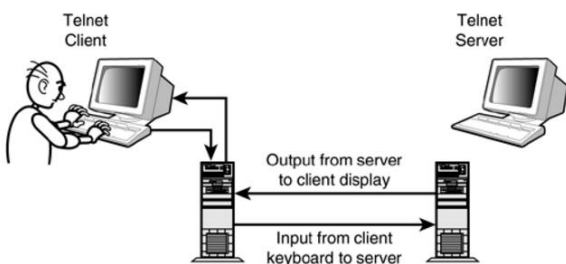
HTTPS: Secure HTTP



FTP: File Transfer Protocol is used to send or receive file from one organization to another organization.



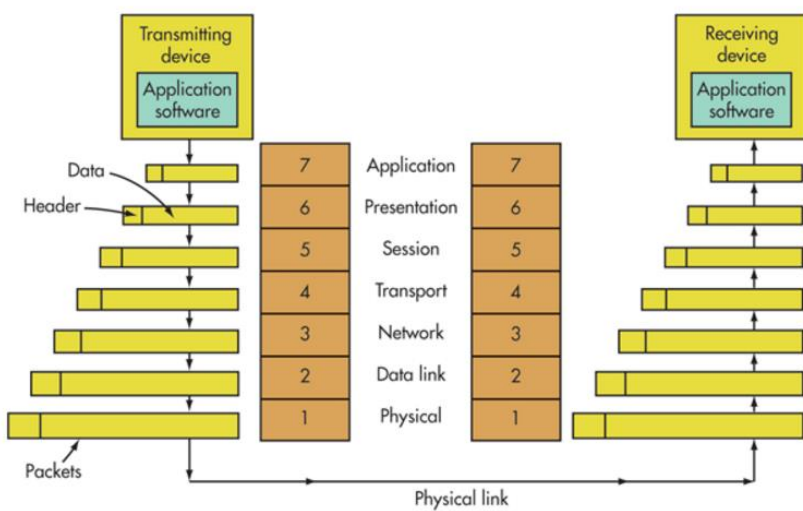
Telnet: Telnet is a set of components that provide terminal-like access to a remote computer. A Telnet session requires a Telnet client that will serve as the remote terminal and a Telnet server, which receives the connection request and allows the connection.



Q. What is the port number of the following Protocol?

Protocol	Port Number
SMTP	25
IMAP/POP	110
HTTP	80
HTTPs	443
DNS	53
FTP	21
TEMLNET	23

Q. Write down seven layers name of OSI model.



Q. How to test the connectivity/heartbeat of a server?

C:\> Ping ip_address

```

Command Prompt
>ping www.google.com

ping www.l.google.com [74.125.224.17] with 32 bytes of data:
ly from 74.125.224.17: bytes=32 time=14ms TTL=52
ly from 74.125.224.17: bytes=32 time=23ms TTL=52
ly from 74.125.224.17: bytes=32 time=13ms TTL=52
ly from 74.125.224.17: bytes=32 time=16ms TTL=52

Ping statistics for 74.125.224.17:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    approximate round trip times in milli-seconds:
        Minimum = 13ms, Maximum = 23ms, Average = 17ms
>
    
```

Q. What is a Domain?

A Domain is a group of computers and devices on a network that are administered as a unit with common rules and procedures. Within the Internet, domains are defined by the IP address. All devices sharing a common part of the IP address are said to be in the same domain.

A domain name is a way to identify and locate computers and resources connected to the Internet. No two organizations can have the same domain name.

Every company or organization that wants to be on the internet will register a domain name for use as their on-line identity or name that clients will use to access on-line services such as the organization's website or email system.

For example, People N Tech registered the domain name Digitalpoint.tech, so users on the internet can access their website at WWW.Digitalpoint.tech and send email to People N Tech employees at username@Digitalpoint.tech

Q. What is Active Directory?

Active Directory (AD) is a database of a windows domain where it keeps and tracks of network objects information. These Network objects are servers, computers, printers, users, services, applications etc.

Active Directory automatically manages the communications between domain controllers to ensure the network remains viable. Users can access all resources on the network for which they are authorized through a single sign-on. All resources in the network are protected by a robust security mechanism that verifies the identity of users and the authorizations of resources on each access.

Q. What is Domain controller?

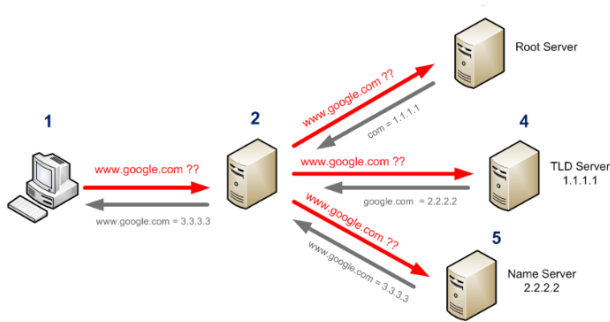
Domain Controller (DC) is Server where Active directory Service is installed.

Q. What is DNS?

DNS is a database of a network system, where it keeps all network objects name and their associated IP Address. When a client is looking for a server name or URL name, it first asks DNS server to provide its IP address.

DNS = Domain Name System or Service or Server

DNS resolves/maps a Name to an IP address



25. What is DHCP?

DHCP is a network server service where it provides IP address, DNS address to a client automatically



IT Foundations

Quiz

1. The primary output device for computers is a

A) Video monitor. B) Printer. C) Keyboard. D) Mouse.

2. The hardware device commonly referred to as the "brain" of the computer is the

A) RAM chip. B) Printer C) CPU. D) Secondary storage.

3. CPU stands for

A) Central production unit. B) Central processing unit.

C) Computer processing unit. D) Central printing unit.

4. The CPU is also known as the

A) Microprocessor. B) Random access memory.

C) Primary storage D) micro unit.

5. The primary difference between RAM and secondary storage devices is

A) The length of time data is stored. B) RAM is permanent, and secondary storage is temporary.

C) RAM accepts input; secondary storage devices do not. D) The type of data that is stored in them.

6. Primary storage is more commonly referred to as

A) ROM. B) CPU C) Digital D) RAM

7. If a user needs information instantly available to the CPU, it should be stored

A) In the CPU. B) In RAM. C) In secondary storage. D) On a USB device.

8. The smallest unit of information a computer can understand and process is known as a

A) digit. B) Byte. C) Bit. D) Kilobyte.

9. A bit can have two values:

A) bit and byte. **B) 0 and 1** C) 2 and 4 D) 1 and 2.

10. Binary means

A) There are two possibilities, on and off. B) The same as a byte, 8 bits.

C) There are three options; 0, 1, and 2. D) That computers really need to have three or more options.

11. A group of 8 bits is known as a

A) Kilobyte. B) Binary digit. **C) Byte.** D) Megabit.

12. Approximately 1,024 megabytes is a

A) Terabyte. B) Kilobyte. C) Petabyte. **D) Gigabyte.**

13. The term for the largest storage value is

A) Kilobytes. B) Terabytes. C) Gigabytes. **D) Petabytes.**

14. A computer's clock speed is measured in

A) Gigabytes. B) Bits. C) Megahertz. **D) Gigahertz**

15. A Quad core CPU with Hyper-Threading option enabled can process number of thread in parallel is

A) 8 b) 16 C) 4 D) 6

16. Information stored in RAM is considered volatile, which means it is

A) Stored there permanently. **B) Not held permanently, only temporarily.**

C) Stored when the electricity is shut off. D) Stored permanently in the CPU device

17. The memory that stores the computer's date, time, and calendar is the

A) RAM. **B) Flash memory.** C) Register. D) CMOS.

18. A special low-energy kind of RAM that can store small amounts of data for long periods of time on battery power is known as

A) CPU. B) System clock. C) System buses. **D) CMOS.**

19. This type of memory is in the CPU and is used to store data that is likely to be used next:

A) Flash memory. B) Level 1/Level2 cache. C) RAM. D) Virtual storage.

20. Information travels between components on the motherboard through _____.

A) Buses B) transistors C) chips D) microprocessors

21. What is the characteristics of AND gate and OR gate?

AND Gate:

Logic diagram



Truth Table

Inputs		Output
A	B	AB
0	0	0
0	1	0
1	0	0
1	1	1

OR:

Logic diagram



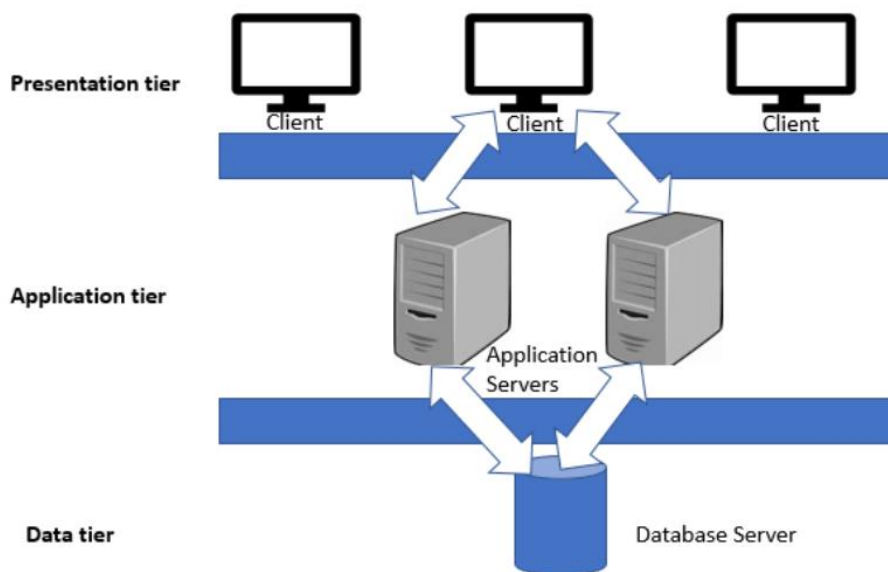
Truth Table

Inputs		Output
A	B	A + B
0	0	0
0	1	1
1	0	1
1	1	1

22. What is the difference between 1mbps and 1MBps?

- **Mbps** means *megabits per second*. Mb is used about **download and upload speeds**. It takes 8 bits of data to equal 1 byte.
- **MBps** stands for *megabytes per second*. MB is used about **file size**, or the **amount of data transferred**.

23. Draw a 3-Tier application network diagram.



24. What is the function of the following Protocol?

a) SMTP b) HTTP c) SSL d) POP e) FTP f) Telnet

Ans:

SMTP: It transfers messages from sender's mail servers to the recipient's mail server by using TCP protocol.

HTTP: It's mainly used to access data on the World Wide Web

SSL: It's used to create a protected link between server and a browser.

POP: It is used to receive and holds mail for hosts

FTP: it is used to copy file from one host to another

Telnet: It is a client server application that allows a user to log onto remote machine

25. What is the port number of the following Protocol?

a) SMTP b) HTTP c) HTTPs d) POP e) FTP f) Telnet

SMTP → 25

HTTP → 80

HTTPs → 443

POP → 110

FTP → 21

Telnet → 23

26. Explain the functions of following services

a) DNS b) DHCP c) Proxy

- **DNS:** The Domain Name System (or DNS) converts human readable domain names (like: www.google.com) into Internet Protocol (IP) addresses (like: 173.194.39.78).
- **DHCP:** *Dynamic Host Configuration Protocol* (DHCP) is a protocol for assigning dynamic IP addresses to devices on a network.
- **Proxy:** A proxy server is a server that acts as a middleman in the flow of your internet traffic, so that your internet activities appear to come from somewhere else

27. What is the command to check server connectivity (heartbeat)?

Ans: ping IP address

```
>ping www.google.com
ping www.l.google.com [74.125.224.17] with 32 bytes of data:
ly from 74.125.224.17: bytes=32 time=14ms TTL=52
ly from 74.125.224.17: bytes=32 time=23ms TTL=52
ly from 74.125.224.17: bytes=32 time=13ms TTL=52
ly from 74.125.224.17: bytes=32 time=18ms TTL=52
y statistics for 74.125.224.17:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
roximate round trip times in milli-seconds:
Minimum = 13ms, Maximum = 23ms, Average = 17ms
>
```

28. What can be typed in the Run/Search to open the following windows features/utility?

a) Command line window → cmd

b) System information windows → msinfo32

c) Event log Windows → eventvwr

d) Windows registry → regedit

e) Computer Management → compmgmt.msc

29. What is the command to view IP address of a computer?

C:\> ipconfig /all

```
C:\>ipconfig

Windows IP Configuration

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . : hitronhub.home
    IPv6 Address . . . . . : 2607:fea8:3d20:949::2a
    IPv6 Address . . . . . : 2607:fea8:3d20:949:fd03:b57e:3676:2037
    IPv6 Address . . . . . : fd00:6477:7d99:6612:fd03:b57e:3676:2037
    Temporary IPv6 Address. . . . . : 2607:fea8:3d20:949:ad4f:576c:5f2b:b1f0
    Temporary IPv6 Address. . . . . : fd00:6477:7d99:6612:ad4f:576c:5f2b:b1f0
    Link-local IPv6 Address . . . . . : fe80::fd03:b57e:3676:2037%8
    IPv4 Address. . . . . : 192.168.0.98
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::6677:7d99:6612%8
    192.168.0.1

Ethernet adapter Bluetooth Network Connection:
```

30. What is “Recycle Bin”?

Ans: It is a directory or folder contains deleted items.