

4. write down short notes on:-

i) WWW :-  $\rightarrow$  WWW stands for World wide web.

- $\rightarrow$  WWW is a collection of information which is accessed with the help of Internet.
- $\rightarrow$  WWW is collection of text pages, digital photographs, music files, videos & animations you can access over the Internet.
- $\rightarrow$  WWW is a system of Internet servers that support specially formatted documents (web pages).
- $\rightarrow$  Users access the WWW facilities with the help of web browsers, which provides transparent access to the WWW servers.

ii) FTP :-  $\rightarrow$  FTP stands for File Transfer Protocol.

- $\rightarrow$  FTP is a network protocol for transmitting files between computers over TCP/IP connections.
- $\rightarrow$  The process works when one party allows another to send or receive files over the Internet.
- $\rightarrow$  FTP may be used by a business or individual to transfer files from one computer system to another or by websites to upload or download files from their servers.
- $\rightarrow$  Users require an Internet connection in order to execute FTP transfers.

iii) Telnet :- Telnet is a network protocol used to virtually access a computer and to provide a two-way, collaborative and text-based communication channel between two machines.

It follows a user Command Transmission Control protocol / Internet protocol (TCP/IP) networking

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protocol for creating remote sessions. on the web, Hypertext Transfer protocol (HTTP) and File Transfer protocol (FTP) simply enable users to request specific files from remote computers, while, through Telnet, users can log on as a regular user with the privileges they are granted to the specific applications and data on that computer.

iv) Gopher: Gopher is an Internet application that allows you to browse many different kinds of resources by looking at menus or listings of information available. Its function is easy to remember because of its name: You use Gopher to "go for" information that is on other computers all over the world.

Gopher is an application-layer protocol that provides the ability to extract and view a web documents stored on remote web servers.

Gopher was conceived in 1991 as one of the Internet's first data/file access protocols to run on top of a TCP/IP network.

v) Search Engines: A Search engine is a software program that helps people find the information they are looking for online using keywords or phrases.

Search engines are able to return results quickly - even with millions of websites online - by scanning the Internet continuously and indexing every page they find.



Q.3 Web Browser:- A web browser is application software for accessing websites.

When a user requests a web page from a particular website, the browser retrieves its files from a web server and then displays the page on the user's screen. Browsers are used on a range of devices, including desktops, laptops, tablets, and smartphones. In 2020 an estimated 4.9 billion people used a browser.

The most used browser is Google Chrome with a 65% global market share on all devices, followed by Safari with 18%.

Q.5 Discuss E-mail architecture with diagram.

Electronic Mail (e-mail) is one of most widely used services of Internet. This service allows an Internet user to send a message in formatted manner (mail) to the other Internet user in any part of world. Message in mail not only contain text, but it also contains images, audio and videos data.

The person who is sending mail is called sender and person who receives mail is called recipient. It is just like postal mail service. Components of E-mail system: The basic components of an email system are: User Agent (UA), Message Transfer Agent (MTA), Mail Box, and Spool file.

These are explained as following below.

(i) User Agent (UA): The UA is normally a program

which is used to send and receive mail. Sometimes, it is called as mail reader.

2. Message Transfer Agent (MTA):- MTA is actually responsible for transfer of mail from one system to another. To send a mail, a system must have client MTA and system MTA. It transfer mail to mailboxes of recipients if they are connected in the same machine.

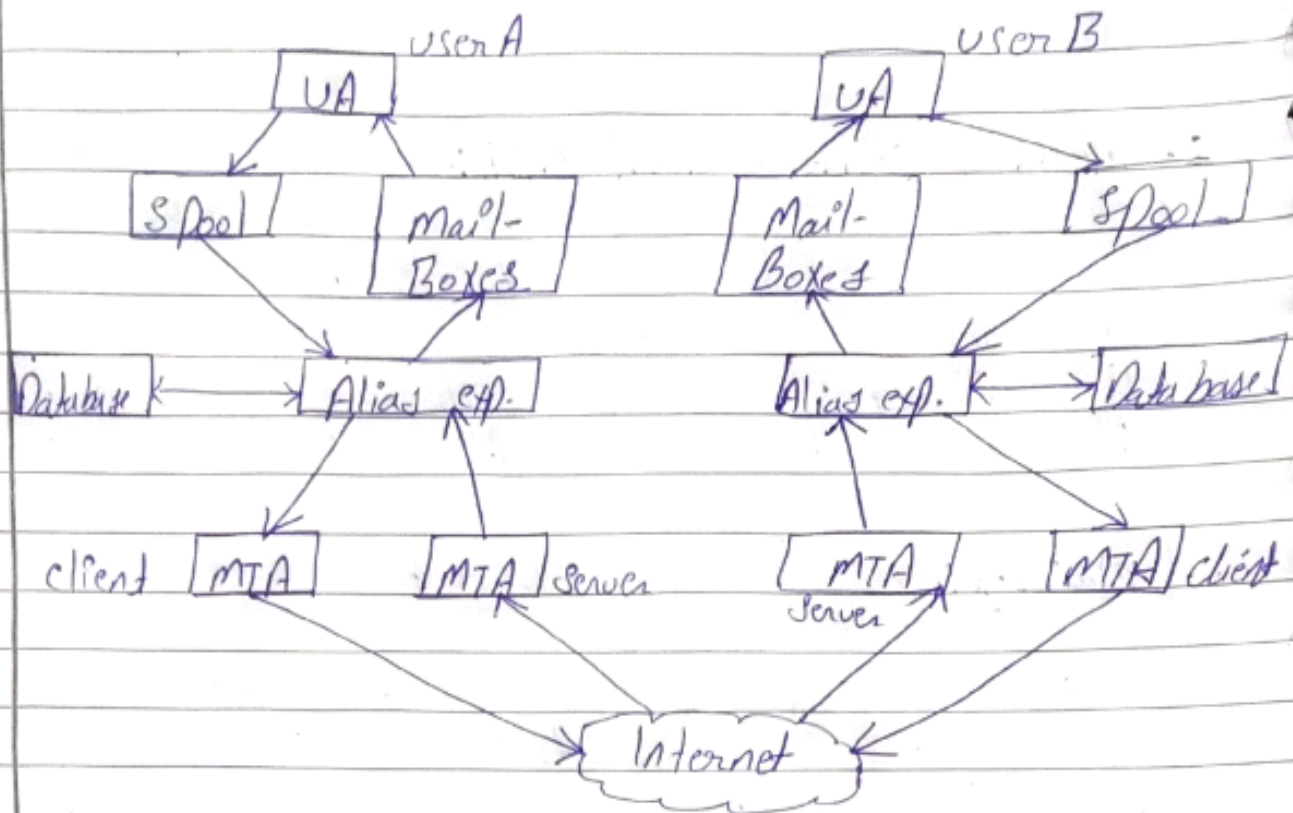
3. Mail box:- It is a file on local hard drive to collect mails. Delivered mails are present in this file. The user can read it delete it according to his/her requirement. To use e-mail system each user must have a mailbox.

4. Spool file:- This file contains mails that are to be sent. User agent appends outgoing mails in this file using SMTP. MTA extracts pending mail from spool file for their delivery. E-mail allows one name, an alias, to represent several different e-mail addresses.

Services provided by E-mail system:-

- Composition
- Transfer
- Reposting
- Displaying
- Disposition





Q6 what is IoT? Discuss various application areas of IoT.

The Internet of Things (IoT) describes the network of physical objects - "things" - that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.

These devices range from ordinary household objects to sophisticated industrial tools. With more than 7 billion connected IoT devices today, experts are expecting this number to grow to 10 billion by 2020 and 22 billion by 2025. Oracle has a network of device partners.

## Top Applications of IoT :-

- ① IoT Applications in Agriculture:- For indoor planting, IoT makes monitoring and management of micro-climate conditions a reality, which in turn increases production.
- ② IoT applications in Consumer use:- For the private citizen, IoT devices in the form of wearables and smart homes make life easier. wearables cover accessories such as Fitbit, smartphone, Apple watches, health monitors, to name a few.
- ③ IoT Applications in Healthcare:- First and foremost, wearable IoT devices let hospitals monitor their patients' health at home, thereby reducing hospital stays while still providing up to the minute real-time info. that could save lives.
- ④ IoT Applications in Insurance:- Even the insurance industry can benefit from the IoT revolution. Insurance companies can offer their policyholders discounts for IoT wearables, such as Fitbit.
- ⑤ IoT Applications in Manufacturing:- The world of manufacturing and industrial automation is another big winner in the IoT Sweepstakes.

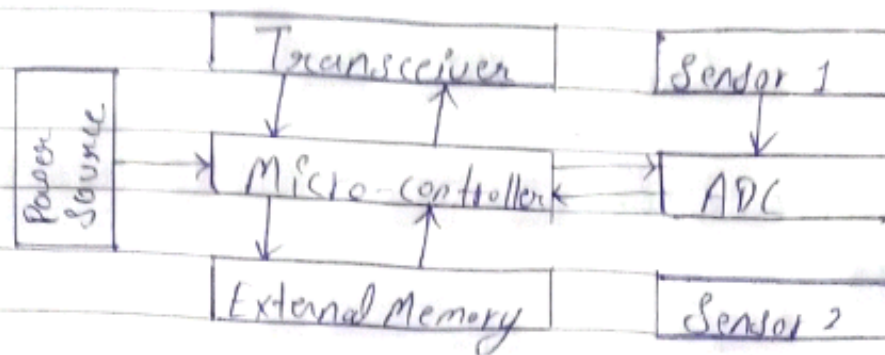


### Other applications:-

- ① Creating better enterprise solutions
- ② Integrating smarter homes
- ③ Innovating agriculture
- ④ Building smarter cities
- ⑤ Upgrading supply chain management
- ⑥ Transforming healthcare
- ⑦ Installing smart grids
- ⑧ Revolutionizing wearables
- ⑨ Integrating connected factories
- ⑩ Reshaping hospitality

Q.1 List out various types of sensor nodes and features.

A sensor node, also known as a mote (chiefly in North America), is a node in a sensor network that is capable of performing some processing, gathering sensory information and communicating with other connected nodes in the network. A mote is a node but a node is not always a mote.



Components:- The main components of a sensor node are a microcontroller, transceiver, external memory, power source and one or more sensors.

- > Sensors are classified into three categories: Passive, omnidirectional sensors; Passive, narrower beam sensors; and active sensors.
- > Passive sensors sense the data without actually manipulating the environment by active probing. They are self powered; that is energy is needed only to amplify their analog signal.
- > The controller performs tasks, processes data and controls the functionality of other components in the sensor node. While the most common controller is a microcontroller, other alternatives that can be used as a controller are: a general purpose desktop microprocessor, digital signal processors, FPGAs and ASICs.
- > Sensors are used by wireless sensor nodes to capture data from their environment.