**Assignment 3**

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**Branch**: CSE(LEET) **Section/Group:** 807/B

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**Subject Name**: Computer Networks **Subject Code:** 20CSP-256

**Q1. Which services are provided by application layer? Give two applications of any three services.**

**Consider different activities related to email.**

**m1:**

**Send an email from a mail client to a mail server**

**m2:**

**Download an email from mailbox server to a mail client**

**m3:**

**Checking email in a web browser**

**Answer:**

**Services of Application Layers**

* **Network Virtual terminal:** An application layer allows a user to log on to a remote host. To do so, the application creates a software emulation of a terminal at the remote host. The user’s computer talks to the software terminal, which in turn, talks to the host. The remote host thinks that it is communicating with one of its own terminals, so it allows the user to log on.
* **File Transfer, Access, and Management (FTAM):** An application allows a user to access files in a remote computer, to retrieve files from a computer and to manage files in a remote computer. FTAM defines a hierarchical virtual file in terms of file structure, file attributes and the kind of operations performed on the files and their attributes.

* **Addressing:** To obtain communication between client and server, there is a need for addressing. When a client made a request to the server, the request contains the server address and its own address. The server response to the client request, the request contains the destination address, i.e., client address. To achieve this kind of addressing, DNS is used.

* **Mail Services:** An application layer provides Email forwarding and storage.

* **Directory Services:** An application contains a distributed database that provides access for global information about various objects and services.

Authentication: It authenticates the sender or receiver’s message or both.

**m1: Send an email from a mail client to a mail server:**

**-> SMTP:**

• SMTP stands for Simple Mail Transfer Protocol and it is an application layer protocol.

. SMTP is used to send an email from a mail client to a mail server.

• SMTP uses port 25.

**m2: Download an email from mailbox server to a mail client:**

**–> POP:**

• POP stands for Post Office Protocol and it is also an application layer protocol.

• POP allows an email client to download an email from an email server.

Post Office Protocol (POP) is a type of computer networking and Internet standard protocol that extracts and retrieves email from a remote mail server for access by the host machine. POP is an application layer protocol in the OSI model that provides end users the ability to fetch and receive email.

**m3: Checking email in a web browser:**

**–> HTTP:**

The Hypertext Transfer Protocol (HTTP) is an Application Layer protocol and is used to check email in a web browser.

HTTP is an application layer protocol designed to transfer information between networked devices and runs on top of other layers of the network protocol stack. A typical flow over HTTP involves a client machine making a request to a server, which then sends a response message.

**Q2. Differentiate between a process-to-process and host-to-host delivery?**

**Answer:**

**Host to Host Delivery:**

* Host to host delivery or source to destination delivery in Network Layer.
* In this packets are delivered directly from source to destination using IP address to the sender and receiver device.
* For optimal best path routing is used that determines the best optimal path out of the multiple paths from source to destination.
* Host to host delivery is handled by the network layer by means of IP address.
* Host to host communication is the one which takes place between one host and the other host(computer). IP protocol is used.

Delivering packets between arbitrary hosts connected to Internet

• Routing protocols

• IP best effort delivery model

• Scalability and robustness through hierarchy and soft state

**Process to Process Delivery:**

* Process to Process communication between two processes on the hosts.
* UDP protocol is used to deliver the message from the host to the process.
* Thus, UDP and IP protocols play a major role in the delivery of the message to the particular process.
* Process to Process communication refers to the communication between two processes on the hosts.
* The difference being IP delivers the message to the destination host.
* UDP delivers the message from the host to the process that is in the host.

Transition to arbitrary processes communicating together

• One goal: provide illusion that all processes located on one large computer.

• Can address (name) and reliably communicate with any process.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

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| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
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