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## Annexure I

**Micro Project Proposal**

# protocols in data communication

## Aims/Benefits of the Micro-Project:

* + Avoiding the data bridges in the data when data communication occurs.
  + Implementing the suitable protocols by recognizing which type of data communication takes place in the computer networks.
  + Protocols are some constraint which must be get applied on the networks for better transfer in data through the exchange of data on the networks.
  + FTP for file transfer over the connected computer networks.

## Course Outcome Addressed:

* CO-1: Able to apply sufficient protocol on the type of which the data communication is get done.
* CO-2: Understanding the work of protocols in data communication.
* CO-3: Types of Protocols and their key features.

## Proposed Methodology:

Protocols are the set of rules which governs the Date Communication. Protocols are basically used for filtering and providing some restrictions on the data in which manner it flows. Protocols are basically some constraint and rules applied on transferring or receiving of data.

1. **Action Plan:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr.**  **No.** | **Details of Activity** | **Planned**  **Start date** | **Planned**  **Finish date** | **Name of Responsible**  **Team Members** |
| 1 | Search the information of  database | 10-02-2023  3:30 – 5:30 PM | 17-02-2023  3:30 – 5:30 PM | Akshay Dashrath Gitte |
| 2 | Collect the information of  trigger | 03-03-2023  3:30 – 5:30 PM | 04-03-2023  3:30 – 5:30 PM |
| 3 | Analysis of different  information | 10-03-2023  3:30 – 5:30 PM | 11-03-2023  3:30 – 5:30 PM |
| 4 | Analysis of information | 17-03-2023  3:30 – 5:30 PM | 18-03-2023  3:30 – 5:30 PM | Harsh Moreshwar  Kale  Kunal Nitin  Nalwade |
| 5 | Compression of Database | 24-03-2023  3:30 – 5:30 PM | 25-03-2023  3:30 – 5:30 PM |
| 6 | Features of Database | 31-03-2023  3:30 – 5:30 PM | 01-04-2023  3:30 – 5:30 PM |
| 7 | Advantages and drawback  of trigger | 07-04-2023  3:30 – 5:30 PM | 08-04-2023  3:30 – 5:30 PM |
| 8 | Final report of project | 08-04-2023  3:30 – 5:30 PM | 21-04-2023  3:30 – 5:30 PM |

1. **Resources Required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No**  **.** | **Name of resource / material** | **Specification** | **Quantity** | **Remarks** |
| 1 | Computer | WINDOWS 11,8GB  RAM | 1 |  |
| 2 | Operating System | WINDOWS 11 | 1 |  |
| 3 | Software | Oracle Database 10G | 1 |  |
| 4 | Browser | Google Chrome | 1 |  |

## Names of Team Members with Roll No.’s:

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.**  **No.** | **Enrollment No.** | **Name of Team Member** | **Roll No.** |
| 1 | 2110950049 | Akshay Dashrath Gitte | 01 |
| 2 | 2110950051 | Harsh Moreshwar Kale | 03 |
| 3 | 2110950099 | Kunal Nitin Nalwade | 49 |

**Mr. Omkare R. S.**

## Name and Signature of the Teacher

**Annexure – II**

**Micro-Project Report**

# TRIGGER ON GIVEN DATABASE

## Rationale:

Data communication are the exchange of data between two nodes via some form of link (transmission medium) such as cable. Now these Data are exchanged in three ways

1. Simplex

2. Half Duplex

3. Full Duplex

## Aims/Benefits of the Micro-Project:

* + Protocols in data communication are a set of rules that determine how data is transmitted over a network. They provide rules that define how a message is transmitted across a network.
  + Protocols are just agreed-upon ways to ensure that two or more communication entities connected together can recognize and talk to each other.
  + The main aim of protocols in data communication is to ensure that data is transmitted accurately and efficiently between devices. They provide a standard way of communicating between devices, which makes it easier for different devices to communicate with each other.

Some benefits of protocols include enabling different devices to communicate with each other regardless of their software and hardware differences, ensuring that data is transmitted accurately and efficiently between devices, and providing a secure way of transmitting data.

## Course Outcomes Achieved:

* CO-1: Protocols are useful to handle the flow of data.
* CO-2: Protocols reduces the time and space complexity between the series of bits.
* CO-3: Protocols gives three types for better data communication i.e. Syntax, Scemantics, Timing

## Literature Review:

Protocols is a set of rules that governs data communication. Protocol defines what is communicated, how it is communicated and when it is communicated. In Computer networks communication occurs between entities in different systems.

The key element of the protocol are syntax, scemantics and timing.

1. **Syntax (What is to be communicated?)**

The Term syntax referred to the structure or format of the data, meaning of the order in which they are presented.

For ex. The simple protocol might be expect the first 8-bit of data to be addressed of sender, the second 8-bit to be addressed at the receiver and the remaining stream to be message itself.

1. **Scemantics (How is to be communicated?)**

The Word Scemantics refers to the meaning of each section of bits. How Is a particular pattern to be interpreted and what action is to be taken based on that interpretation.

For ex. Does an address identify the route to be taken or the final destination of message.

1. **Timing (When is to be communicated?)**

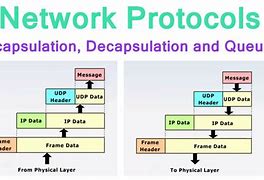
The Term timing refers to the two characteristics when data should be send and how fast they can be send.

For ex. If a Sender produces data at 100 Mbps but the receiver can process data at only 1 Mbps, the transmission will overload the receiver and data will be lost.

* ****

## Actual Methodology followed

* 1. **Following Image Shows Importance of Protocols in Data Communication:**



## Protocols:

Human beings are the only creatures on the earth who are able to communicate with each other through the medium of language. But humans take this gift to another extent. Distance, time, and physical existence of the person don’t matter in communication these days because they build a communication system through which they can communicate or share data like images, videos, text, files, etc with their loved ones anytime anywhere. Communication is defined as a process in which more than one computer transfers information, instructions to each other and for sharing resources. Or in other words, communication is a process or act in which we can send or receive data. A network of computers is defined as an interconnected collection of autonomous computers. Autonomous means no computer can start, stop or control another computer.

Components of Data Communication

A communication system is made up of the following components:

Message: A message is a piece of information that is to be transmitted from one person to another. It could be a text file, an audio file, a video file, etc.

Sender: It is simply a device that sends data messages. It can be a computer, mobile, telephone, laptop, video camera, or workstation, etc.

Receiver: It is a device that receives messages. It can be a computer, telephone mobile, workstation, etc.

Transmission Medium / Communication Channels: Communication channels are the medium that connect two or more workstations. Workstations can be connected by either wired media or wireless media.

Set of rules (Protocol): When someone sends the data (The sender), it should be understandable to the receiver also otherwise it is meaningless. For example, Sonali sends a message to Chetan. If Sonali writes in Hindi and Chetan cannot understand Hindi, it is a meaningless conversation.

1. The direction of communication Simplex mode is a uni-directional communication. Half Duplex mode is a two-way directional communication but one at a time. Full Duplex mode is a two-way directional communication simultaneously.

2. Sender and Receiver In simplex mode, Sender can send the data but that sender can’t receive the data. In Half Duplex mode, Sender can send the data and also can receive the data but one at a time. In Full Duplex mode, Sender can send the data and also can receive the data simultaneously.

3. Channel usage Usage of one channel for the transmission of data. Usage of one channel for the transmission of data. Usage of two channels for the transmission of data.

4. Performance The simplex mode provides less performance than half duplex and full duplex. The Half Duplex mode provides less performance than full duplex. Full Duplex provides better performance than simplex and half duplex mode.

5. Bandwidth Utilization Simplex utilizes the maximum of a single bandwidth. The Half-Duplex involves lesser utilization of single bandwidth at the time of transmission. The Full-Duplex doubles the utilization of transmission bandwidth.

6. Suitable for It is suitable for those transmissions when there is requirement of full bandwidth for delivering data. It is suitable for those transmissions when there is requirement of sending data in both directions, but not at the same time. It is suitable for those transmissions when there is requirement of sending and receiving data simultaneously in both directions.

7. Examples Example of simplex mode are: Keyboard and monitor. Example of half duplex mode is: Walkie-Talkies. Example of full duplex mode is: Telephone.

## Actual Resources Used:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr.**  **No.** | **Name of resource / material** | **Specification** | **Quantity** | **Remarks** |
| 1 | Computer | WINDOWS 11,8 GB  RAM | 1 |  |
| 2 | Operating System | WINDOWS 11 | 1 |  |
| 3 | Software | Oracle Database 10G | 1 |  |
| 4 | Browser | Google Chrome | 1 |  |

1. **Outputs of Micro-Projects:**

When we talking about the outputs of the protocols in data communication is simply the transparent flow in the exchange of data within the global computer network interference.

It provides us some rule and constraints upon the data that we can manage it or handle it when we are transferring data from one end to another end in any computer network.

The Protocols provides us the filters that are filter the data and remove unwanted and unnecessary of data to make the transfer reliable and efficient.

These constraint and rules help us the user a good data fetching experience also data bridges and data loss is decreased.

FTP (file transfer protocol) allows the transfer of files. It establishes a connection to a remote client and transfers the files until completed, and then it disconnects. The connection can be in an internal network or over the Internet. Developed in 1971, this protocol served as one of the objectives for the development of the Internet.

The Internet Message Access Protocol (IMAP) allows an e-mail client to access e-mail messages on a remote e-mail server.

IMAP supports two modes of operation: online and offline. In online mode, e-mail clients using IMAP leave the e-mail messages on the server until the user purposely deletes them. In offline mode, the e-mail is downloaded and then deleted. This characteristic of the IMAP operation allows multiple clients to manage the same mailbox. The upshot is that the mail stays on the server automatically until deleted.

**8. Skill developed / Learning out of this Micro-Project:**

* + We learnt how these techniques works like Hypertext Transfer Protocol aka HTTP is one of the most widely used application protocol.
  + HTTP lies at the heart of World Wide Web (www). HTTPS is a communication Protocol for Secure connection commonly used by banking sectors and other financial companies.
  + It has shown a growth in demand by nearly 16% in the last quarter. It stands rock solid at position number two.

## Applications of this Micro-Project:

Protocols which are used by users. For email for example, E-Mail. Protocols which help and support protocols used by users. For example DNS. Also protocols give advantages like File Transfer Protocol, Simple File transfer & Domain Name System.