

**COMPUTER NETWORKS  
PROJECT REPORT**

Group Messenger Using UDP and FTP

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Section-A

* Objective:

Our objective is to create such an application which can be used as quick chat and to transfer file(.txt) using unified datagram protocol and file transfer protocol using socket programming.

* Platform used:

NetBeans (JAVA) and JavaFX for UI with the concept of socket programming (Mutli cast sockets) and Multi-threading is used for development.

* Why used:

To practically apply the theoretical concepts taught in the course.

* Functionalities:

This app can be used as a platform for multiple clients where they can chat to each other using single group, and multiple groups can be created for multiple clients and other clients can also join any group using the 4-digit group code (port no) for the group.

* Implementation:
  + Initially multicastSocket object is created in GroupChat Class with user specific port
  + Next the user is connected to the particular group chat via predefined multicast IP
  + Now the thread is created to receive data from different user connected to the same port and group
  + The receiving thread is initialized in input/sender thread.
  + The user message is converted into bytes.
  + The bytes then encapsulated in packet using built-in DatagramPacket Class.
  + For the receiving part, the DatagramPacket is then decapsulated and the message is displayed.
  + In case of file(.txt), as the file object is received the respective file is downloaded at the defined path in code.
* Limitations and Restrictions:
* In FTP, only ‘.txt’ file can be transferred
* The receiving buffer is of 2000 bytes
* Group number can only be 4-digit string
* How to Use:
  + First, user enter the group code (port number) to join the specific chat
  + User then enters its username to join the chat
  + The application then checks if the group code is of correct length (4), else the respective exception will be thrown
  + The application checks if username is given, else the respective exception is thrown
  + If the user correctly enters the group code as well as the username then the user is directed to the main chat screen UI.
  + Here, multiple user can send messages and text files to each other over UDP protocol
  + They can also send file to each user who is the member of this chat.





