

CSE471: DATA COMMUNICATIONS AND COMPUTER NETWORKS

YEDITEPE UNIVERSITY

FALL 2024

TERM PROJECT – DUE DATE JANUARY 6TH, 2025

As term project you are expected to develop a peer-2-peer (P2P) file sharing application. The application should not use the centralized server model. P2P nodes should be able to UDP flood the network to locate other overlay network users. However, your application should not overwhelm the network and bring on to a crash state. To prevent this, you should consider capping the number of packets by implementing limited scope flooding.

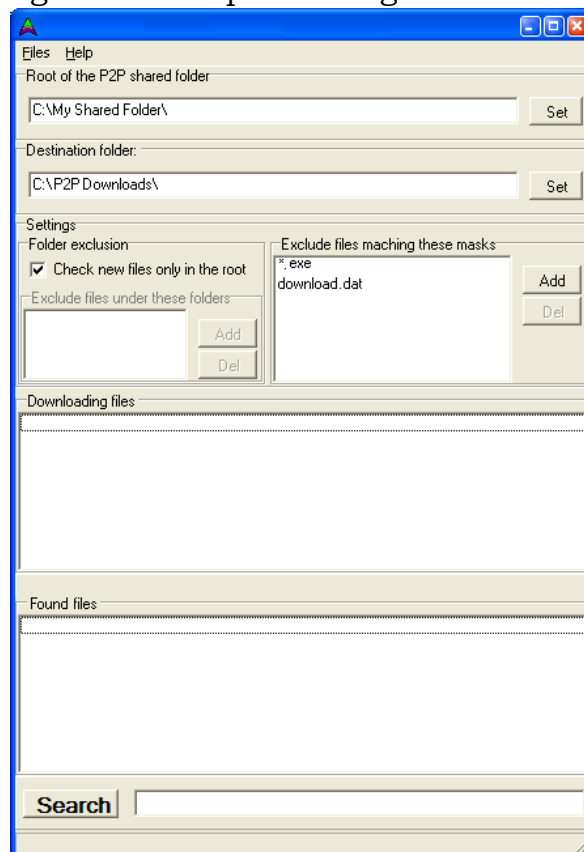


Fig. 1: P2P file sharing application

You can use the following statements and figures as a guideline:

- For usability purposes, you are required to implement a graphical user interface (GUI) for your application (Figure 1).
- The application should have two menus called *Files* and *Help*. The user should be able to connect and disconnect from the overlay network by clicking the *Connect* (in *Files* -> *Connect* menu) and *Disconnect* (in *Files* -> *Disconnect* menu) item.

- User should be able to exit the P2P application by pressing the Exit menu item (in *Files* -> *Exit*).
- The *Help* menu should contain information about the developer of the application.
- The users should be able to locate the folder that they would like to share with other P2P users by setting a *Root of the P2P shared folder*.
- Also an option should be given to set their *destination folder*, where the downloaded files will be saved.
- All shared files should be transferred among peers in 256KB chunks.
- The application should be able to download different pieces of the same file from different users and re-assemble the downloaded pieces to create a concrete file.
- The P2P application should be able to distinguish same files with different names (e.g. GNR-November_Rain.mp3 and Guns'n'Roses-November_Rain.mp3)
- The application should be able to list all active downloads and indicate the download percentages.
- [BONUS] You can implement the overlay network using multiple low memory footprint Linux OS (such as Q4OS) or containerized solutions (docker compose).
- [BONUS 10points] Users shall be able to exclude from share some of the child folders within the shared *Root of the P2P shared folder*.
- [BONUS 10points] Users shall be able to set filenames or file masks for exclusion from download.

You should export your Eclipse project folder (for other IDEs please see how you can export) and submit your term project as a single zip file through the YULEARN (<https://yulearn.yeditepe.edu.tr/>) latest by the end of Monday, January 6th, 2025.