Assignment 3: BitTorrent Part 3

Due date: *Sunday, 6 April 2025 at 22:00*

This is an individual assignment. You may discuss it with others, but your code and documentation must be written on your own. In particular, do not use automated code-generation tools such as ChatGPT or GitHub copilot.

This is a continuation of the first and the second assignments in which you are required to implement a BitTorrent client[1] using the C programming language. The tests for the second assignment are disabled, so you are not required to have a fully working solution for the second assignment to solve this assignment. However, you are required to have a fully functional second assignment to have a final working BitTorrent client. In particular, the tests related to the tracker connection and the listener for new connecting peers have been removed. For this third part of the assignment, you must complete the implementation of the peer protocol that is used to download and also serve pieces of the file. As in the first two assignments, you have to provide implementations for a number of functions that are already declared for you in a template source package available on iCorsi. Additionally, for this assignment we have provided step-by-step instructions, marked with a *TODO* tag in code comments, that specify exactly what you need to do to complete the implementation of the peer protocol.

Optional Main Program: If you have a working solution for the second assignment, you may want to complete the whole BitTorrent client by adding a definition for the `main` function, and by integrating the peer protocol with the code you have from the previous assignments. The `main.c` file contains instructions on how to complete the `main` function. Also, based on your solution for the second assignment, you have to add the actual handling of the peer connection using the functions you implement for this assignment. This part is optional and therefore not required to obtain full credit for this assignment.

Submission Instructions

You must write your code in the `peer.c`, `metainfo.c`, and `client.c` source files provided within the source package available on iCorsi. If you decide to complete the client, which means that you must have a working solution, you may also submit the `main.c` file.

Submit those completed files through the iCorsi system. Do not submit other files. Add comments to your code to explain sections of the code that might not be clear. You must also add comments at the beginning of the source file to properly acknowledge any and all external sources of information you may have used, including code, suggestions, and comments from other students. If your implementation has limitations and errors you are aware of (and were unable to fix), then list those as well in the initial comments.

You may use an integrated development environment (IDE) of your choice. However, *do not submit any IDE-specific file,* such as project description files.

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[1] https://www.bittorrent.org/beps/bep_0003.html