Project: The TFTP Protocol

1. Goal

TFTP (Trivial File Transfer Protocol) is a simple protocol used to transfer files running on top of UDP. The protocol can read and write files from/to a remote server, but cannot list directories or provide user authentication. In this project, you will implement even more simplified TFTP as an application protocol using Java, C++ or C.

2. Overview

Any transfer begins with a request to read or write a file, which also serves to request a connection. The file is sent in fixed length blocks of 512 bytes, and each data packet (one block) is acknowledged by an ack packet before the next packet can be sent. A data packet less than 512 bytes indicates termination of a transfer. One typical initiation for write a file is following:

1. Host A sends a WRQ to host B with source = A's TID, dest = 69.
2. Host B sends an ACK (with block number = 0) to host A with source = B's TID and destination = A's TID.

In the example, WRQ means write reqeust and TID is the end host's ID also used as a UDP port. Read RFC 1350 for details. You can also check TFTP on Wikipedia. You need to implement both TFTP client and server working on an arbitrary port number (from the ephemeral port range). You do not have to implement the TO and retransmission mechanisms.

3. Commands

You are to implement the following commands in TFTP:

```
tftp> ?
Commands may be abbreviated.  Commands are:

connect         connect to remote tftp
put             send file
get             receive file
quit            exit tftp
?               print help information
```

4. Another Option

You can build your own FTP client and server programs that support the commands described in Section 3.

5. Turning in the Project

When you complete, turn your program in as follows:

1. Be sure that everything is compiled and run correctly.
2. Put all the source files, header files, and `Makefile` (if there is any) into your `proj` directory.
3. Be sure to include `README` to explain how to compile, run, and any other useful information.
4. In the parent directory of your `proj` directory, type the following command:

```
%submit -v jmk-grd dcn2proj1 proj
```