Name: _____ USC ID: _____

Quiz 4: Network File Systems (10 points), 10 minutes (afternoon section)

Consider NFS and assume all the files in the following question reside in a remote server. State the steps for implementing the following system functions (executed in sequence). Be sure to indicate the messages (**including details of RPC calls**) and data sent between client and server; and update to the client-side file-open table. Note that compared to READ, NFSPROC_WRITE(…) has an additional argument (for the data to be written).

1. [6 points] int fd = open("/foo/more/bar.txt", O_**WRONLY**)
   (Assume the file already exists on the server.)

   a. on client's side, send LOOKUP(rootdir FH, "foo")
   b. on server's side, receive LOOKUP request and return foo's FH + attributes

   c. on client's side, receive LOOKUP reply and send LOOKUP(foo FH, "more")
   d. on server's side, receive LOOKUP request and return more's FH + attributes

   e. on client's side, receive LOOKUP reply and send LOOKUP(more FH, "bar.txt")
   f. on server's side, receive LOOKUP request and return bar.txt's FH + attributes

   g. on client's side, receive LOOKUP reply and allocate file descriptor in open-file table
   store bar.txt's FH and current file position (offest)

   h. return file descriptor to client

2. [4 points] int ret_out = **write**(fd, buffer, 4096)

   a. on client's side, look up bar.txt's FH and current offset from the file-open table via file descriptor
   then send WRITE(bar.txt FH, offset, count = 4096, data) where data is in the buffer

   b. on server's side, receive WRITE request then write data using offset and return attributes

   c. on client's side, receive WRITE reply and update current file position in open-file table