Indian Institute of Information Technology, Allahabad
Course: Computer Networks
Batch: M. Tech. (IT) – 1st Semester
Lab Assignment #4
Implementation Date: 29.10.2025
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Note: Implement the programs in C and Python.

1. You need to build a very simple client-server operation using the Unix stream capabilities. You are to build a client and server pair, to implement your own little directory service. Suppose that the server has the following database:

   0 Bob
   3 Anne
   5 Barb
   7 Ray
   9 Denbigh
   10 Terri
   104 John

   This can be in a file that is in read mode. The client is to read a request, which is a numeric address to be sent to the server. The servers look up the matching name and send it back to the client to be printed out. If the address isn't found, the server should send back an error message. For example, "Address not found".

2. Please refer problem 1 mentioned above. In this program, you will convert your previous program. The only logical change you need to make is to implement your exchange of messages as a protocol. The protocol will be structured as follows (note, a string of digits followed by a b means a binary number):

Requests:

Byte Number	Meaning with Code
0	request code, 0000001(b) = name, 00001001(b) = number
1-n	request data
n+1	end-of-request, 00000011(b) (ETX)

Replies:

Byte Number	Meaning with Code
0-n	reply data
n+1	end-of-reply, 00000011(b) (ETX)

Note that the requests allow for both name and number matching, so you need to also be able to match a name. Also note that the character string can contain any type of byte-oriented data, including binary representations of numbers. For example,

short val;
char *message;
message = &val;
send (sock, message, 2, 0);