Project Report - CNT4007C [Spring 2018]
Programming Assignment #1

Sidharth Shridhar
UFID: 28183997 ***sshridhar@ufl.edu***

Compilation and running instructions:

There are two file namely:

- server.java
- client.java

Environment:

The provided code can be tested on UNIX/Linux systems.

Compilation:

Both files needs to compiled before the execution. The compilation can be done on different system as:

server_sys> javac server.java

client_sys> javac client.java

Execution:

After successful compilation, both files needs to be executed.

server.java accepts one arguments as port number which can be any number other than reserved port numbers. For sake, take the port number as the last 4 digits of my UFID.

server_sys> java server <port_number_last_4_ digit_UFID> *(Port number to be used: 3997)*

client.java accepts two arguments that are server address and port number where, as mentioned, port number should be last 4 digits of my UFID i.e *3997*.

client_sys> java client <server IP/URL> <port_number_last_4_ digit_UFID>

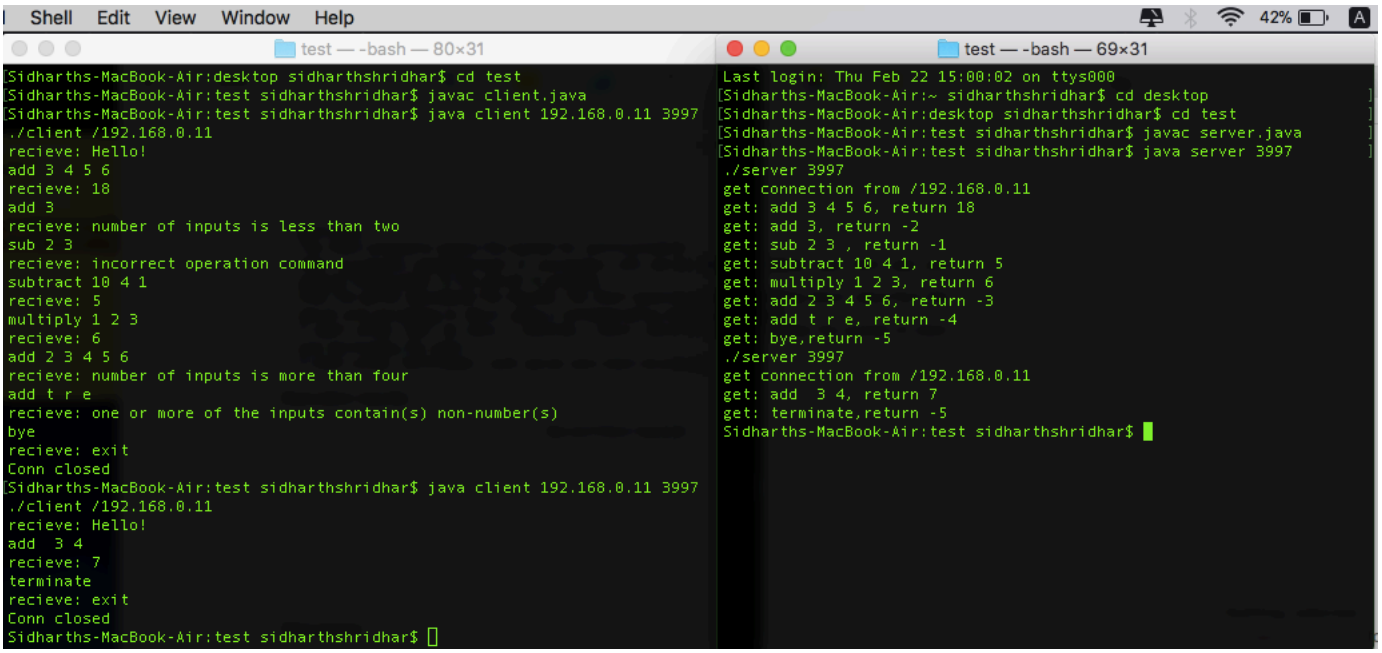
Description:

- **server.java:-**
  - The server program creates a socket connection.
  - After successful establishment of connection with client, the server receives the input (equation) from the client side and verifies the equation is in valid format and processes the result and return a corresponding value.
  - If there is any kind of error in the equation, the server returns a corresponding value to client.
  - If upon receiving the "bye" message the server closes the connection from the client and keeps on running to accept the incoming connections.
  - Upon receiving the "terminate" message the server terminates all the connections and shutdowns.

- **client.java:-**
  - The client programs opens the socket for communication.
  - After successful establishment of connection with server, the client takes input from user and passes the equation to the server to process.
  - After the server processes the request, the client receives a corresponding return value from the server and according to return value a corresponding result is displayed.

- If client writes “bye” as input, it receives a return value of -5 which closes the socket of client and terminates the client.
- If client writes “terminates”, both server and client shutdown.

Execution results:



Client-Server System

Discussion(Server Side):

java server 3997
./server 3997

- Here server opens the socket at port no. 3997

get connection from /192.168.0.11

- Here server establishes the connection with client having IP 192.168.0.11

get: add 3 4 5 6, return 18
get: subtract 10 4 1, return 5
get: multiply 1 2 3, return 6

- Here server performs the correct calculations.

get: add 3, return -2
get: sub 2 3 , return -1
get: add 2 3 4 5 6, return -3
get: add t r e, return -4
get: bye,return -5
get: terminate,return -5

- Here server returns corresponding exception values to client. The exceptions values corresponds to following values

-1: incorrect operation command.
-2: number of inputs is less than two.
-3: number of inputs is more than four.
-4: one or more of the inputs contain(s) non-number(s).
-5: exit.

Discussion(Client Side):

java client 192.168.0.11 3997
./client /192.168.0.11
recieve: Hello!

- Here client is welcomed by server by Hello message.

add 3 4 5 6
recieve: 18

- Here the client receives the result from the for the corresponding equation.

add 3
recieve: number of inputs is less than two
sub 2 3
recieve: incorrect operation command
add 2 3 4 5 6
recieve: number of inputs is more than four
add t r e
recieve: one or more of the inputs contain(s) non-number(s)

- Here the client receives the corresponding error messages for exception handling.

Limitations:

The above program is limited to perform calculations for integer type values.

Additional Comment:

While executing the program, the user must pass the required argument(s) or else the program will shutdown with some exception error.

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