

# Project 2

## Application Level Protocol

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### I. Introduction

This project includes two Java programs that demonstrate client and server communication through a simple application level protocol. The server program runs first and listens on a port selected by the user. Then the client program is executed and the client creates a socket connection to the server on the same port.

The protocol used here is a simple one. Once the connection is established and the client receives the “ready” message from the server the client can begin by first sending one of the following commands:

1. Uppercase
2. Lowercase
3. Reverse
4. Exit

If the command entered by the client is valid the server will respond with a “200 OK” message. Now the client can begin sending the message. When the server encounters a “.” it knows that this is the end of the message and begins to manipulate the message and converts it all to uppercase, lowercase, or reverse depending on the command issued by the client.

The server responds with the formatted message and gets ready for the next command. On the “Exit” command the client and server will close the connection.

### II. Implementation

Java version 1.6 was used to write the programs.

### III. Compile and Execution Instructions

For ease, move ServerSocket.java and ClientSocket.java to a new directory or to a directory with no other .java files. On the command line type:

“javac ServerSocket.java ClientSocket.java” or “javac \*.java”.

Next, execute ServerSocket.

Input a port number. *If you are not running the program as root you will need to use a port number greater than 1024.*

Finally, run ClientSocket.

Input the same port number that the ServerSocket is listening on.

### IV. Screen Shots

*Compile and run Server*

```
pablosettecase@Pablos-MacBook-Air ~/desktop/project2 $ javac *.java
pablosettecase@Pablos-MacBook-Air ~/desktop/project2 $ java Server
Please enter a port number
Use a port number > 1024 if you are not the admin/root
1025
Server listening on port 1025
```

*On mac, I started a new tab in the terminal to run Client*

```
Last login: Fri Dec 12 13:37:06 on ttys001
pablosettecase@Pablos-MacBook-Air ~/desktop/project2 $ java Client
Please enter the port number
1025
Server: Got connection from client 172.56.40.23 on port 1025
Server: Ready
```

Start using the program. Use *exit* as the command when finished.

```
root@server: /home/ps/photography ... bash
uppercase
Server: 200 OK
Server: 172.56.40.23 sends UPPERCASE
hi!
Client: hi!
Transform this sentence to uppercase
Client: Transform this sentence to uppercase
thanks.
Client: thanks.
.
Client: .
Server: HI!
Server: TRANSFORM THIS SENTENCE TO UPPERCASE
Server: THANKS.
Server: Ready
lowercase
Server: 200 OK
Server: 172.56.40.23 sends LOWERCASE
THIS should be
Client: THIS should be
transFORMED TO LowerCAsE
Client: transFORMED TO LowerCAsE
OK
Client: OK
.
Client: .
Server: this should be
Server: transformed to lowercase
Server: ok
Server: Ready
reverse
Server: 400: Invalid Command
Server: Ready
reverse
Server: 200 OK
Server: 172.56.40.23 sends REVERSE
reverse this sentence
Client: reverse this sentence
please
Client: please
racecar
Client: racecar
.
Client: .
Server: ecnetnes siht esrever
Server: esaelp
Server: racecar
Server: Ready
exit
Client: sending EXIT command and exiting...
pablosettecase@Pablos-MacBook-Air ~/desktop/project2 $
```

V. Contribution:

Will Klein 50%, Pablo Settecase 50%