

Computer Networking (BBK_BUCI036H5_1920) Coursework Assignment Description

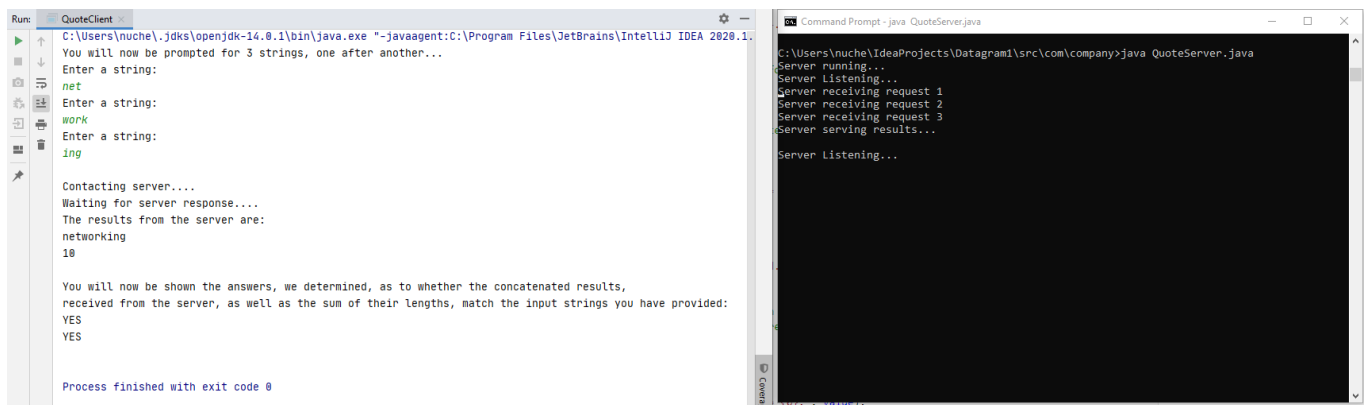
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The code in this assignment is based on and modified from this link: <https://www.codejava.net/java-se/networking/java-udp-client-server-program-example> which in turn is based on this link: <https://docs.oracle.com/javase/tutorial/networking/datagrams/clientServer.html>.

The server is first run via CMD on windows and its main() instantiates a Server object on port 8014, the default port for UDP protocol. The Server's method Service() is then invoked and this starts a demon while loop that waits for three consecutive 'sends' from the client. While the sends are received, the concatenation is processed alongside it and later, the length is calculated. They are both then sent back respectively, to the client, on the address gotten from the datagram packet, with which the client sent its request. After that, the server goes back to its listening state.

When the client is instantiated, its main method, requests from the user three strings, processes them to get the data needed for verification later, gets the address from the local host and sends a byte array of the 3 strings, one after another, to the server on port 8014. After that, it waits for 1 second, to "give the server time" to process them. Then it does a 'receive' on the socket twice, to get the results processed by the server. It then verifies the results against its own recorded data and, based on that, outputs the answers to the user.

In image #1: The three strings -> net, work and ing are sent. The right-hand side being the server and the left hand side the client.



```
Run: QuoteClient
C:\Users\nuche\jdk\openjdk-14.0.1\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2020.1...
You will now be prompted for 3 strings, one after another...
Enter a string:
net
Enter a string:
work
Enter a string:
ing

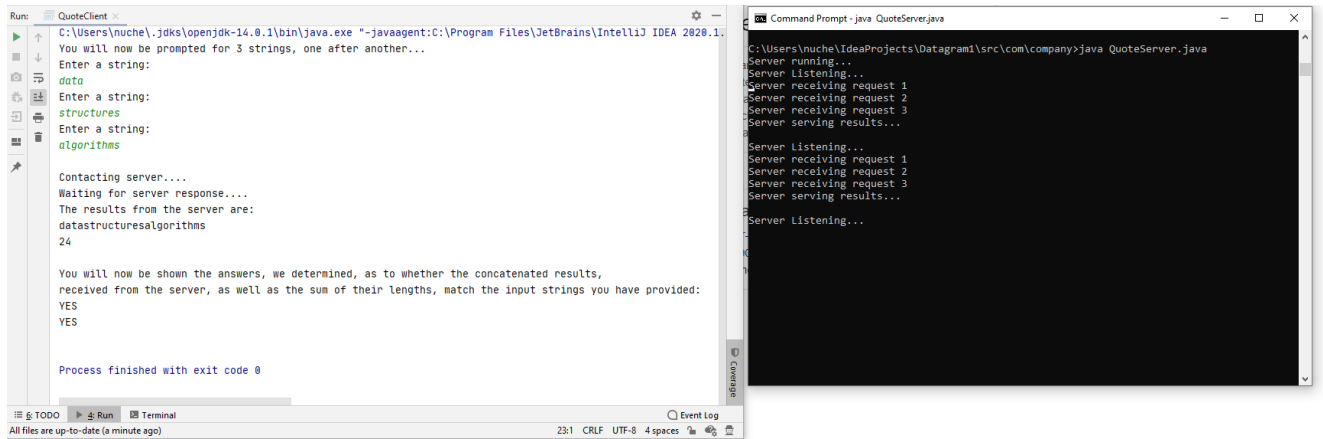
Contacting server....
Waiting for server response....
The results from the server are:
networking
10

You will now be shown the answers, we determined, as to whether the concatenated results,
received from the server, as well as the sum of their lengths, match the input strings you have provided:
YES
YES

Process finished with exit code 0
```

```
Command Prompt - java QuoteServer.java
C:\Users\nuche\IdeaProjects\Datagram1\src\com\company>java QuoteServer.java
Server running...
Server listening...
Server receiving request 1
Server receiving request 2
Server receiving request 3
Server serving results...
Server listening...
```

In image #2: The three strings -> data, structures and algorithms are sent.



The image shows a screenshot of an IDE with two windows. The left window, titled 'QuoteClient', shows the execution of a Java program. The user is prompted to enter three strings: 'data', 'structures', and 'algorithms'. The program then contacts a server, receives a response 'datastructuresalgorithms', and displays the result. The right window, titled 'Command Prompt - java QuoteServer.java', shows the server's output, which includes 'Server running...', 'Server listening...', and three requests received, each followed by 'Server serving results...'. The IDE's status bar at the bottom indicates 'All files are up-to-date (a minute ago)' and '23:1 CRLF UTF-8 4 spaces'.

```
Run: QuoteClient
C:\Users\nuche\.jdk\openjdk-14.0.1\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2020.1\lib\idea_rt.jar=6025:C:\Program Files\JetBrains\IntelliJ IDEA 2020.1\bin" -jar C:\Users\nuche\IdeaProjects\Datagram1\src\com\company\java\QuoteClient.jar
You will now be prompted for 3 strings, one after another...
Enter a string:
data
Enter a string:
structures
Enter a string:
algorithms

Contacting server....
Waiting for server response....
The results from the server are:
datastructuresalgorithms
24

You will now be shown the answers, we determined, as to whether the concatenated results,
received from the server, as well as the sum of their lengths, match the input strings you have provided:
YES
YES

Process finished with exit code 0

Command Prompt - java QuoteServer.java
C:\Users\nuche\IdeaProjects\Datagram1\src\com\company>java QuoteServer.java
Server running...
Server listening...
Server receiving request 1
Server receiving request 2
Server receiving request 3
Server serving results...

Server listening...
Server receiving request 1
Server receiving request 2
Server receiving request 3
Server serving results...

Server listening...
```