

# Submission Worksheet

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IT114-004-S2024 - [IT114] Sockets Part 1-3-Checkpoint

## Submissions:

Submission Selection

1 Submission [active] 2/19/2024 7:04:37 AM

## Instructions

^ COLLAPSE ^

Create a new branch for this assignment

Go through the socket lessons and get each part implemented (parts 1-3)

You'll probably want to put them into their own separate folders/packages (i.e., Part1, Part2, Part3) These are for your reference

Part 3, below, is what's necessary for this HW

<https://github.com/MattToegel/IT114/tree/Module4/Module4/Part3>

Create a new folder called Part3HW (copy of Part3)

Make sure you have all the necessary files from Part3 copied here and fix the package references at the top of each file

Add/commit/push the branch

Create a pull request to main and keep it open

Implement **two** of the following **server-side** activities for all connected clients (majority of the logic should be processed server-side and broadcasted/sent to all clients if/when applicable)

Simple number guesser where all clients can attempt to guess while the game is active

Have a /start command that activates the game allowing guesses to be interpreted

Have a /stop command that deactivates the game, guesses will be treated as regular messages (i.e., guess messages are ignored)

Have a guess command that include a value that is processed to see if it matches the hidden number (i.e., /guess 5)

Guess should only be considered when the game is active

The response should include who guessed, what they guessed, and whether or not it was correct (i.e., Bob guessed 5 but it was not correct)

No need to implement complexities like strikes

Coin toss command (random heads or tails)

Command should be something logical like /flip or /toss or /coin or similar

The result should mention *who* did *what* and got what *result* (i.e., Bob Flipped a coin and got heads)

Dice roller given a command and text format of "/roll #d#" (i.e., roll 2d6)

Command should be in the format of /roll #d# (i.e., roll 1d10)

The result should mention *who* did *what* and got what *result* (i.e., Bob rolled 1d10 and got 7)

Math game (server outputs a basic equation, first person to guess it correctly gets congratulated and a new equation is given)

Have a /start command that activates the game allowing equation to be answered

Have a /stop command that deactivates the game, answers will be treated as regular messages (i.e., any game related commands when stopped will be ignored)

Have an answer command that include a value that is processed to see if it matches the hidden number (i.e., answer 15)

the hidden number (i.e., /answer 15)  
 The response should include who answered, what they answered, and whether or not it was correct (i.e., Bob answered 5 but it was not correct)  
 Private message (a client can send a message targeting another client where only the two can see the messages)  
 Command can be /pm, /dm followed by the user's name or an @ preceding the users name (clearly note which)  
 The server should properly check the target audience and send the response to the original sender and to the receiver (no one else should get the message)  
 Alternatively (make note if you do this and show evidence) you can add support to private message multiple people at once. Evidence should show a larger number of clients than the target list of the private message to show it works. Note to grader: if this is accomplished add 0.5 to total final grade on Canvas  
 Message shuffler (randomizes the order of the characters of the given message)  
 Command should be /shuffle or /randomize (clearly mention what you chose) followed by the message to shuffle (i.e., /shuffle hello everybody)  
 The message should be sent to all clients showing it's from the user but randomized  
 Example: Bob types /command hello and everyone receives Bob: lleho  
 Fill in the below deliverables  
 Save the submission and generated output PDF  
 Add the PDF to the Part3HW folder (local)  
 Add/commit/push your changes  
 Merge the pull request  
 Upload the same PDF to Canvas

Branch name: M4-Sockets3-Homework


Tasks: 7 Points: 10.00

Baseline (2 pts.)

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Task #1 - Points: 1

Text: Demonstrate Baseline Code Working

 Details:

This can be a single screenshot if everything fits, or can be multiple screenshots

#### Checklist

\*The checkboxes are for your own tracking

#	Points	Details
<input type="checkbox"/> #1	1	Server terminal/instance is clearly shown/noted
<input type="checkbox"/> #2	1	At least 3 client terminals should be visible and noted
<input type="checkbox"/> #3	1	Each client should correctly receive all broadcasted/shared messages
<input type="checkbox"/> #4	1	Captions clearly explain what each screenshot is showing
<input type="checkbox"/> #5	1	Include a screenshot showing you grabbed Parts 1-3 correctly and have them in your repository alongside Part3HW

Small

Medium

Large

The screenshots show a chat application interface with a terminal window. The interface includes a header bar with the title 'room - open in game' and a list of users: 'User0', 'User1', 'User2', 'User3', 'User4', 'Jordyn', and 'Jayne'. The terminal window displays the chat logs and the list of users. The 'Small' view shows the chat logs and the list of users. The 'Medium' view shows the chat logs and the list of users. The 'Large' view shows the chat logs and the list of users.

each of the users are able to send broadcast messages, receive the shared broadcast messages – and of course have multiple clients connecting to the same server

## Checklist Items (0)

## Feature 1 (3 pts.)

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## Task #1 - Points: 1

^COLLAPSE ^

Text: What feature did you pick? Briefly explain how you implemented it

## Checklist

\*The checkboxes are for your own tracking

#	Points	Details
<input type="checkbox"/> #1	1	Feature is clearly stated (best to copy/paste it from above)
<input type="checkbox"/> #2	1	Explanation sufficiently and concisely describes implementation (should be aligned with code snippets in related task)

Response:

## Feature:

Private message (a client can send a message targetting another client where only the two can see the messages)

Command can be /pm, /dm followed by the user's name or an @ preceding the users name (clearly note which)

The server should properly check the target audience and send the response to the original sender and to the receiver (no one else should get the message)

Alternatively (make note if you do this and show evidence) you can add support to private message multiple people at once. Evidence should show a larger number of clients than the target list of the private message to show it works. Note to grader: if this is accomplished add 0.5 to total final grade on Canvas

## Implementation:

I used the command /pm to indicate a private message as well as the format of @[username] to target other user(s) following the use of the /pm command.

To accommodate the targeting of multiple users, I first removed the '/pm ' from the input string, and then split the string on every " ". I also made a list of targets (to be populated later) and a stringbuilder for the private message. I then looped through the splat'd string and added any string that began with a "@" to the targets arraylist (without the '@') and appended anything that didnt begin with a '@' to the private message string builder. (in retrospect, a user might want to include a @ in their message, so should have it auto-detect the change and then break from the loop or otherwise add everything else from that point to the string builder).

I then perform a series of relatively trivial checks on the data to ensure that it is valid, and then I loop through all the targets. I then call a helper method to get the ServerThread for each client (just loops through and compares username) -- and if it is not null I perform another series of checks on the resulting serverThread. Then, if its going to just one person, it sends the message directly to that ServerThread with some additional formatting to let them know it was a private message. If it was sent to multiple people, it includes a newline, a header listing all the people, and then the message on the preceding line.



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### Task #2 - Points: 1

Text: Add screenshot(s) showing the implemented feature working (code and output)

### Details:

Add screenshots of the relevant code changes AND relevant output during runtime

### Checklist

\*The checkboxes are for your own tracking

#	Points	Details
<input type="checkbox"/> #1	1	Output is clearly shown and captioned
<input type="checkbox"/> #2	1	Code shows relevant snippets that accomplish feature, UCID and date are present in all



```
File Edit Selection View Go Run Terminal Help
C:\Program Files\Microsoft Visual Studio\2019\Community\VC\Tools\MSVC\14.22.25328\bin\Hostx64\x64\cl.exe /c /nologo /Ox /W3 /fp:precise /Zi /analyze- /Gy /Gd /Gm- /MD /EHsc /wd4048 /wd4049 /wd4050 /wd4051 /wd4052 /wd4053 /wd4054 /wd4055 /wd4056 /wd4057 /wd4058 /wd4059 /wd4060 /wd4061 /wd4062 /wd4063 /wd4064 /wd4065 /wd4066 /wd4067 /wd4068 /wd4069 /wd4070 /wd4071 /wd4072 /wd4073 /wd4074 /wd4075 /wd4076 /wd4077 /wd4078 /wd4079 /wd4080 /wd4081 /wd4082 /wd4083 /wd4084 /wd4085 /wd4086 /wd4087 /wd4088 /wd4089 /wd4090 /wd4091 /wd4092 /wd4093 /wd4094 /wd4095 /wd4096 /wd4097 /wd4098 /wd4099 /wd4100 /wd4101 /wd4102 /wd4103 /wd4104 /wd4105 /wd4106 /wd4107 /wd4108 /wd4109 /wd4110 /wd4111 /wd4112 /wd4113 /wd4114 /wd4115 /wd4116 /wd4117 /wd4118 /wd4119 /wd4120 /wd4121 /wd4122 /wd4123 /wd4124 /wd4125 /wd4126 /wd4127 /wd4128 /wd4129 /wd4130 /wd4131 /wd4132 /wd4133 /wd4134 /wd4135 /wd4136 /wd4137 /wd4138 /wd4139 /wd4140 /wd4141 /wd4142 /wd4143 /wd4144 /wd4145 /wd4146 /wd4147 /wd4148 /wd4149 /wd4150 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implementation of private messaging for handling multiple users

Checklist Items (0)

Feature 2 (3 pts.)

^COLLAPSE ^

Task #1 - Points: 1

Text: What feature did you pick? Briefly explain how you implemented it

Checklist			*The checkboxes are for your own tracking
#	Points	Details	
<input type="checkbox"/> #1	1	Feature is clearly stated (best to copy/paste it from above)	
<input type="checkbox"/> #2	1	Explanation sufficiently and concisely describes implementation (should be aligned with code snippets in related task)	

Response:

Feature:

Message shuffler (randomizes the order of the characters of the given message)

Command should be /shuffle or /randomize (clearly mention what you chose) followed by the message to shuffle (i.e., /shuffle hello everybody)

The message should be sent to all clients showing it's from the user but randomized

Example: Bob types /command hello and everyone receives Bob: lleho

Implementation:

takes the passed string, removes the initial command section (the '/shuffle ' part) as well as creating an arraylist and string builder. It then has a short circuit logic check to ensure that it actually can be shuffled (should also have checked that there are enough *unique* characters but oh well). It then splits all the characters present in the input string into the arraylist. The code then appends a random character from that arraylist to the string builder and removes it from the arraylist. This new, shuffled, string is then returned both to the client as an alert as well as broadcast to the rest of the users.

**i** Details:

**Add screenshots of the relevant code changes AND relevant output during runtime**

## Checklist

**\*The checkboxes are for your own tracking**

#	Points	Details
<input type="checkbox"/> #1	1	Output is clearly shown and captioned
<input type="checkbox"/> #2	1	Code shows relevant snippets that accomplish feature, UCID and date are present in all code screenshots. Relevant captions are included for each screenshot of the code.

### Task Screenshots:

Gallery Style: Large View

Small

## Medium

## Large

```

/clear
Console cleared
/users
Server: strawberry, blueberry, banana, julianagr
, hannah_rho
/pn @hannah_rho @blueberry @hannah secrets secre
ts -- super super secrets :)
/clear
Console cleared
hey guys wanna see a trick
banana: sure
okay okay... get ready
/shuffle I THINK I NEED HELP AAAAAA!!
Server: your shuffled message: NP AA4IETNE!KLE!
HAH A I IDA
blueberry: oh my!
julianagr: thats... something? did you have a st
roke??
no no no -- loop in the help menu -- there's now
a /shuffle command you can use on your messages
hannah_rho: cotsa:halt
/clear

Thread[User1]: Received from client: I'm doing p
retty well!
Thread[User4]: Received from client: /rename jay
ne
Thread[jayne]: Received from client: Hey guys do
n't forget to login :)
Thread[User5]: Received from client: /rename Jar
dyn
Thread[Jordyn]: Received from client: right -- t
hanks!
Thread[User2]: Received from client: /users
Thread[User6]: Received from client: /rename Jay
den
Thread[User1]: Received from client: /rename Jac
kson
Thread[Jackson]: Received from client: So, how i
s everyone doing?
Thread[User2]: Received from client: pretty good
-- just a lot of work
Thread[Jackson]: Received from client: yeah... I
know what you mean

Server: Users renamed to hannah_rho
banana: oooooh its hannah that makes sense!
hi hannah!
strawberry: hey hannah :)
/clear
Console cleared
Private message from strawberry: secrets secrets
-- super super secrets :)
/clear
Console cleared
strawberry: hey guys wanna see a trick
banana: sure
strawberry: okay okay... get ready
strawberry: NP AA4IETNE!KLE! HAH A I IDA
oh my!
julianagr: thats... something? did you have a st
roke??
strawberry: no no no -- loop in the help menu --
there's now a /shuffle command you can use on y
our messages
hannah_rho: cotsa:halt
/clear

Server: Users renamed to hannah_rho
banana: oooooh its hannah that makes sense!
blueberry: hi hannah!
strawberry: hey hannah :)
/clear
Console cleared
Private message from strawberry: secrets secrets --
super super secrets :)
/clear
Console cleared
strawberry: hey guys wanna see a trick
sure
strawberry: okay okay... get ready
strawberry: NP AA4IETNE!KLE! HAH A I IDA
blueberry: oh my!
julianagr: thats... something? did you have a stroke
??
strawberry: no no no -- loop in the help menu -- the
re's now a /shuffle command you can use on your mess
ages
hannah_rho: cotsa:halt
/clear

Thread[User1]: Received from client: I'm doing p
retty well!
Thread[User4]: Received from client: /rename jay
ne
Thread[jayne]: Received from client: Hey guys do
n't forget to login :)
Thread[User5]: Received from client: /rename Jar
dyn
Thread[Jordyn]: Received from client: right -- t
hanks!
Thread[User2]: Received from client: /users
Thread[User6]: Received from client: /rename Jay
den
Thread[User1]: Received from client: /rename Jac
kson
Thread[Jackson]: Received from client: So, how i
s everyone doing?
Thread[User2]: Received from client: pretty good
-- just a lot of work
Thread[Jackson]: Received from client: yeah... I
know what you mean

strawberry: hey guys wanna see a trick
banana: sure
strawberry: okay okay... get ready
strawberry: NP AA4IETNE!KLE! HAH A I IDA
blueberry: oh my!
thats... something? did you have a stroke??
strawberry: no no no -- loop in the help menu --
there's now a /shuffle command you can use on y
our messages
/help
/connect [ip address]:[port] - Connect to a serv
er
/connect localhost:[port] - Connect to a server
on localhost
/disconnect - Disconnect from the server
/rename [username] - Change username
/users - list users in the chat
/pn @[username] ... @[username] [message] - Send
a private message
/shuffle [message] - randomize the order of char
acters in a message
/clear - Clear the console

Server: Renamed to hannah_rho
banana: oooooh its hannah that makes sense!
blueberry: hi hannah!
strawberry: hey hannah :)
/clear
Console cleared
Private message from strawberry: secrets secrets --
super super secrets :)
/clear
Console cleared
strawberry: hey guys wanna see a trick
banana: sure
strawberry: okay okay... get ready
strawberry: NP AA4IETNE!KLE! HAH A I IDA
blueberry: oh my!
julianagr: thats... something? did you have a stroke
??
strawberry: no no no -- loop in the help menu -- the
re's now a /shuffle command you can use on your mess
ages
/shuffle thats cool!
Server: your shuffled message: cotsa:halt

```

Shows multiple users using the /shuffle command to randomize the order of characters in the strings of the messages they send

### Checklist Items (0)

[illegible]

```

public ServerThread getServer(String ipAddress) {
    for (ServerThread client : clients) {
        if (client.getClientName().equals(ipAddress)) {
            return client;
        }
    }
    return null;
}

// 30-77 private ServerThread getClient(String username) {
private boolean processCommand(String message, String username) {
    ServerThread client = getClient(username);

    if (message.equals("/connect") || message.equals("/disconnect") || message.equals("/status") || message.equals("/help")) {
        // ...
    } else if (message.toLowerCase().startsWith("/name ")) {
        // ...
    } else if (message.toLowerCase().startsWith("/pass ")) {
        // ...
    } else if (message.toLowerCase().startsWith("/shuffle ")) {
        // ...
    }

    String input = message.substring(1);
    System.out.println("Input: " + input);
    List<Character> chars = new ArrayList<>();
    for (char c : input.toCharArray()) {
        chars.add(c);
    }

    while (chars.size() > 0) {
        int rand = (int) (Math.random() * chars.size());
        output.append(chars.remove(rand));
    }

    client.send("Server: your shuffled message: " + output.toString());
    broadcast(output.toString(), username);
    return true;
}

// 30-77 private boolean processCommand(String message, String username) {
// ...
}

// 30-77 public void main(String[] args) {
// ...
}

```

## implementation of /shuffle

### Checklist Items (0)

#### Misc (2 pts.)

^COLLAPSE ^

#### Task #1 - Points: 1

Text: Reflection: Did you have an issues and how did you resolve them? If no issues, what did you learn during this assignment that you found interesting?

#### Checklist

\*The checkboxes are for your own tracking

#	Points	Details
<input type="checkbox"/> #1	1	An issue or learning is clearly stated
<input type="checkbox"/> #2	1	Response is a few reasonable sentences

#### Response:

I didn't really encounter any error or issues -- everything implemented was rather trivial and while there may have been a couple things that didn't work immediately, I never had more than a simple type or bounds error that was just overlooking a line and was solved relatively immediately.

#### Task #2 - Points: 1

Text: Pull request link



**i Details:**

URL should end with /pull/# and be related to this assignment

URL #1

<https://github.com/GarrettGR/IT114/pull/5>

End of Assignment