

COMPSCI 711 A2 report

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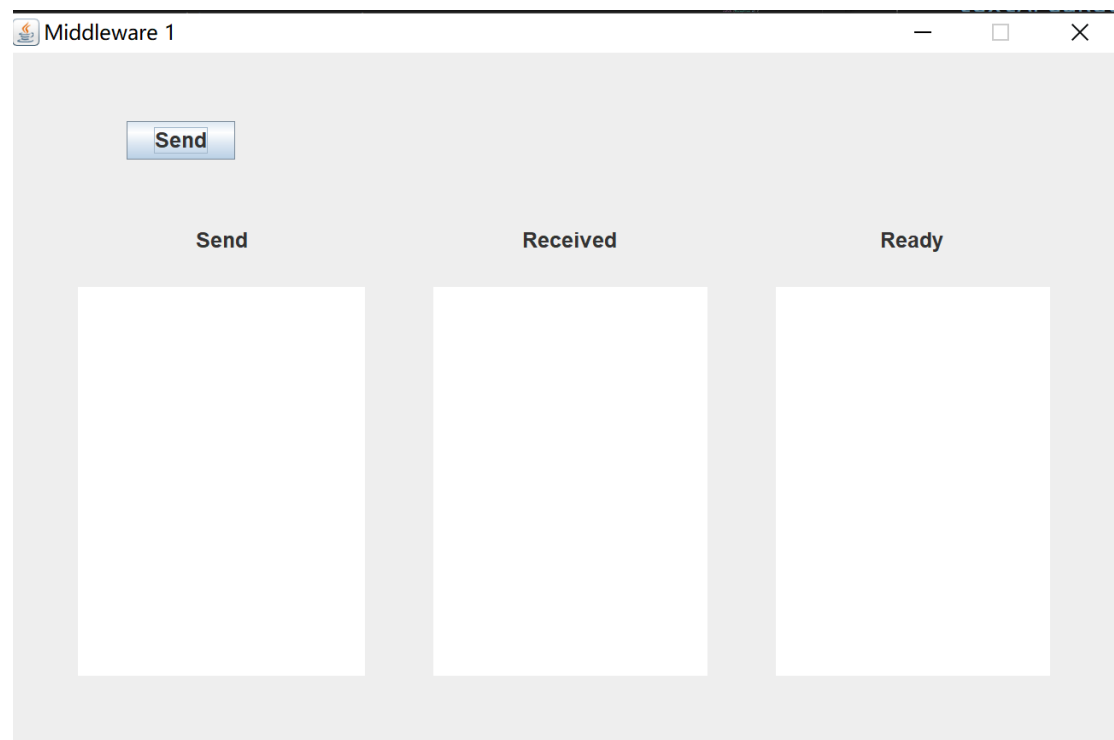
There are 2 way that can run the program.

1. Double click to run the run.bat file
2. Open 5 separate IDEs and run each of them, also the Network.exe which is not included in the zip file.

Here are some points need to be noticed:

1. My code for the Ready list part does use the total ordering of multicast, although it is not reflected clearly in the GUI.
That is, when the middleware receives the message sent from the Network, it assigns a current received message number (timestamp) to the message and saves it to the holding queue, and then sends the timestamp to the sender, that is, another middleware such as M1. M1 gets M2-M5' timestamps for the current message to obtain a maximum value, integrates the current message with the maximum value into an "agreed timestamp message" and sends it to M2-M5. Then M1-M5 updates the current message in the holding queue to the "agreed timestamp message. If the first index of the holding queue is an updated message, it is added to the Ready list and removed from the holding queue.
2. Please be patient. In order to ensure that the time when each middleware sends the timestamp is after the time when the message is received, I added Thread.sleep(20000) in the sender part; otherwise some middleware will appear "SocketException: Connection reset by peer: socket write error"
3. After clicking the Send button of M1 normally, please wait for the operation to complete and then click the next event. This works fine. But please do not try to click M2 immediately after clicking M1, it will cause the program to get stuck

The initial GUI for each middleware looks like:

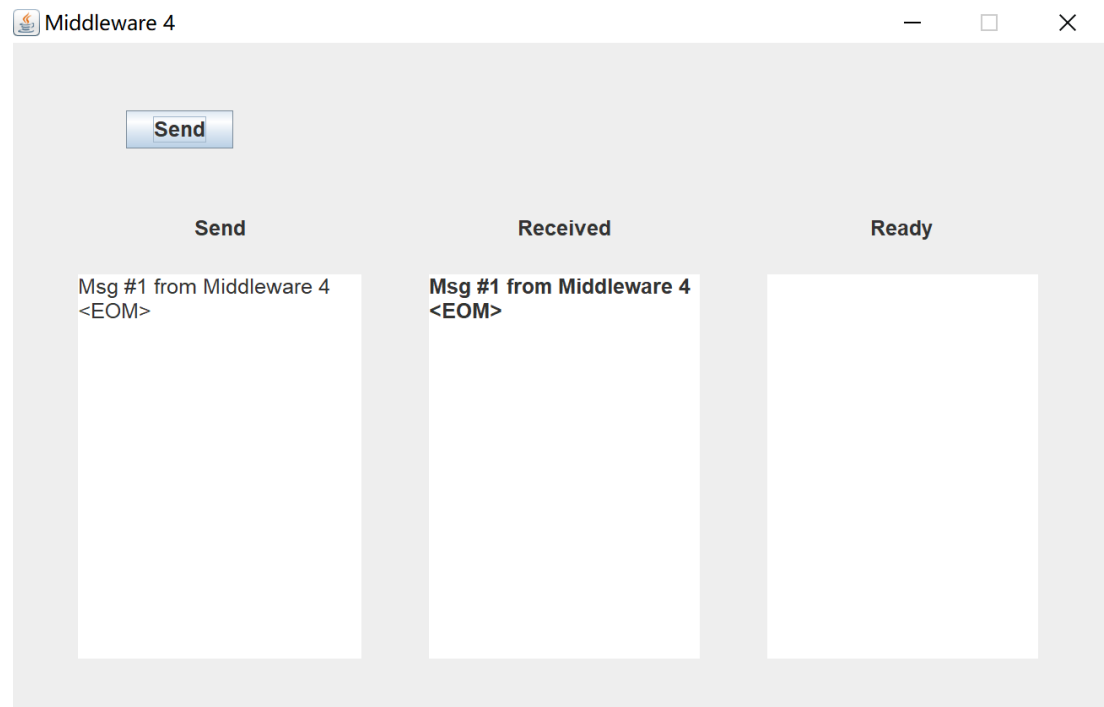


Once click the Send button on Middleware 4

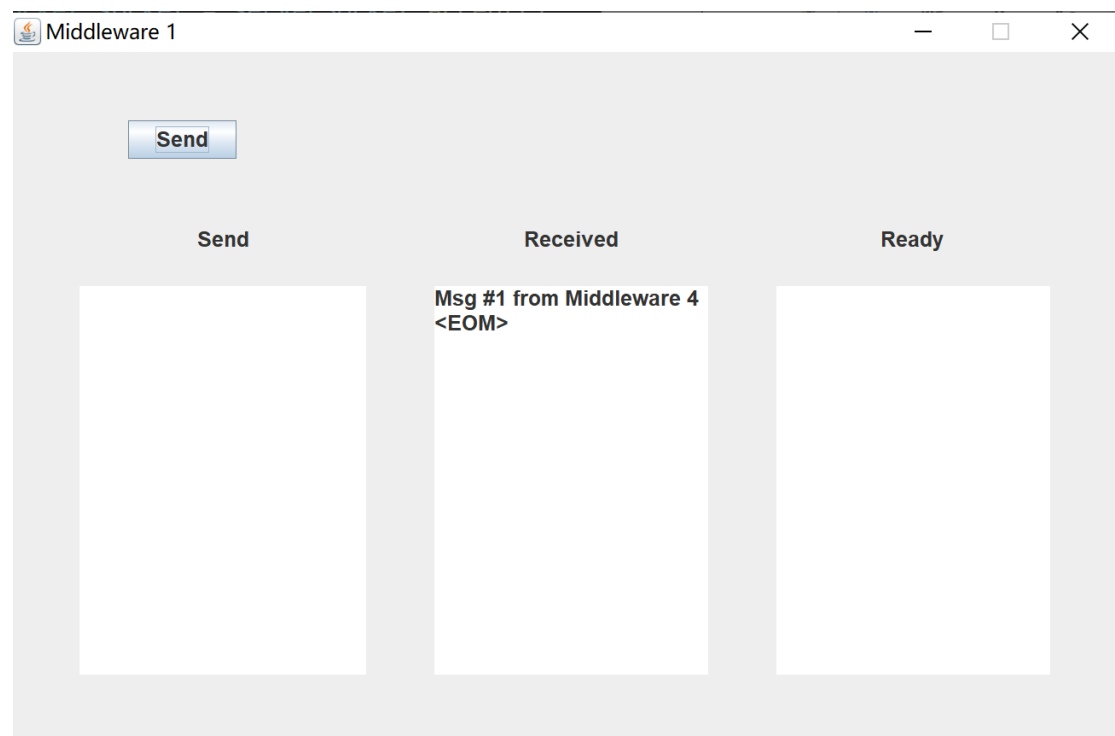
The Network.exe will show

```
C:\Users\josie2018\Desktop\UOA 7S2\CS 711\Assignment\asg2examples\Network\Network.exe
Waiting for a connection...
Press ENTER to terminate...
Message received: [Msg #1 from Middleware 4 <EOM>delay time for 8082 is 6302
delay time for 8083 is 14318
delay time for 8084 is 15074
delay time for 8085 is 295
delay time for 8086 is 13620
Waiting for a connection...
```

The M4 GUI will show



The M1 – M3 and M5 GUI will show



After times, the Ready list will show words:

The image displays two windows from a software application, likely a network or messaging simulator. The top window is titled "Middleware 4" and the bottom window is titled "Middleware 2". Both windows have a light gray background and a standard window title bar with minimize, maximize, and close buttons.

Middleware 4 Window:

- At the top left, there is a blue button labeled "Send".
- Below the button, there are three columns labeled "Send", "Received", and "Ready".
- Under the "Send" column, the text "Msg #1 from Middleware 4 <EOM>" is displayed.
- Under the "Received" column, the text "Msg #1 from Middleware 4 <EOM>" is displayed.
- Under the "Ready" column, the text "Msg #1 from Middleware 4 timestamp 1 <EOM>*" is displayed.

Middleware 2 Window:

- At the top left, there is a blue button labeled "Send".
- Below the button, there are three columns labeled "Send", "Received", and "Ready".
- Under the "Send" column, the area is empty.
- Under the "Received" column, the text "Msg #1 from Middleware 4 <EOM>" is displayed.
- Under the "Ready" column, the text "Msg #1 from Middleware 4 timestamp 1 <EOM>*" is displayed.