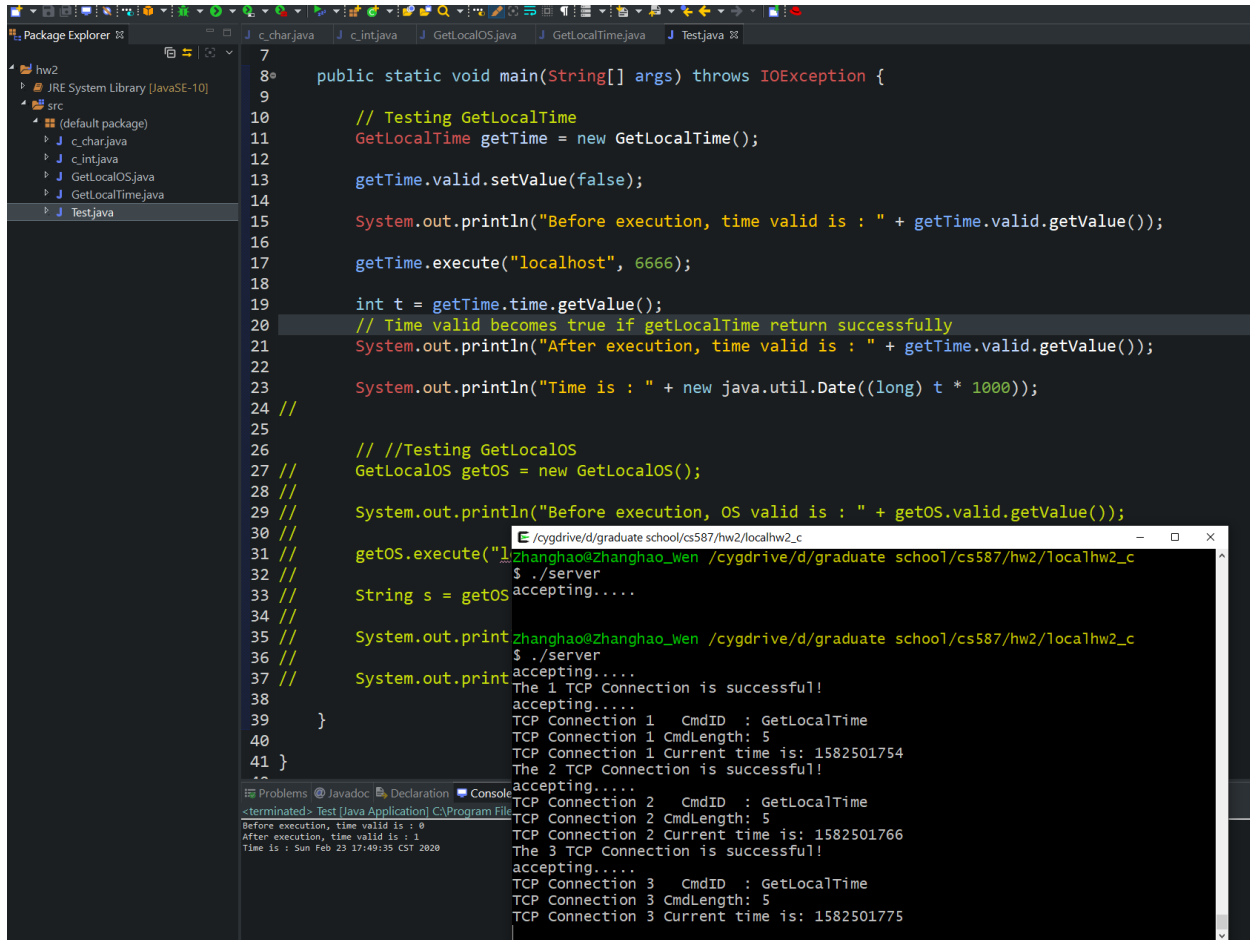


Screenshots and demonstration:

Run the server.c first: compile: gcc -o server server.c in cygwin run the program: ./server

Uncomment the GetLocalTime part in Test.java, run the program in eclipse to test GetLocalTime function.

Uncomment the GetLocalOS part in Test.java, run the program in eclipse to test GetLocalOS function.



```
7
8* public static void main(String[] args) throws IOException {
9
10     // Testing GetLocalTime
11     GetLocalTime getTime = new GetLocalTime();
12
13     getTime.valid.setValue(false);
14
15     System.out.println("Before execution, time valid is : " + getTime.valid.getValue());
16
17     getTime.execute("localhost", 6666);
18
19     int t = getTime.time.getValue();
20     // Time valid becomes true if GetLocalTime return successfully
21     System.out.println("After execution, time valid is : " + getTime.valid.getValue());
22
23     System.out.println("Time is : " + new java.util.Date((long) t * 1000));
24 //
25
26     // //Testing GetLocalOS
27 //
28 //
29 //
30 //
31 //
32 //
33 //
34 //
35 //
36 //
37 //
38 }
39
40
41 }
```

Console Output:

```
Before execution, time valid is : 0
After execution, time valid is : 1
Time is : Sun Feb 23 17:49:35 CST 2020

accepting.....
The 1 TCP Connection is successful!
accepting.....
TCP Connection 1 CmdID : GetLocalTime
TCP Connection 1 CmdLength: 5
TCP Connection 1 Current time is: 1582501754
The 2 TCP Connection is successful!
accepting.....
TCP Connection 2 CmdID : GetLocalTime
TCP Connection 2 CmdLength: 5
TCP Connection 2 Current time is: 1582501766
The 3 TCP Connection is successful!
accepting.....
TCP Connection 3 CmdID : GetLocalTime
TCP Connection 3 CmdLength: 5
TCP Connection 3 Current time is: 1582501775
```

```

24 //
25
26 // Testing GetLocalOS
27 GetLocalOS getOS = new GetLocalOS();
28
29 System.out.println("Before execution, OS valid is : " + getOS.valid.getValue());
30
31 getOS.execute("localhost", 6666);
32
33 String s = getOS.getOSText();
34
35 System.out.println("After execution, OS valid is : " + getOS.valid.getValue());
36
37 System.out.println("Operating System is : " + s);
38
39 }
40
41 }
42

```

```

Zhanghao@Zhanghao_wen /cygdrive/d/graduate school/cs587/h
$ ./server
accepting.....
The 1 TCP Connection is successful!
accepting.....
TCP Connection 1 CmdID : GetLocalTime
TCP Connection 1 CmdLength: 5
TCP Connection 1 Current time is: 1582501754
The 2 TCP Connection is successful!
accepting.....
TCP Connection 2 CmdID : GetLocalTime
TCP Connection 2 CmdLength: 5
TCP Connection 2 Current time is: 1582501766
The 3 TCP Connection is successful!
accepting.....
TCP Connection 3 CmdID : GetLocalTime
TCP Connection 3 CmdLength: 5
TCP Connection 3 Current time is: 1582501775
The 4 TCP Connection is successful!
accepting.....
TCP Connection 4 CmdID : GetLocalOS
TCP Connection 4 CmdLength: 17
TCP Connection 4 Current OS is: CYGWIN_NT-10.0-11
The 5 TCP Connection is successful!
accepting.....
TCP Connection 5 CmdID : GetLocalOS
TCP Connection 5 CmdLength: 17
TCP Connection 5 Current OS is: CYGWIN_NT-10.0-11
The 6 TCP Connection is successful!
accepting.....
TCP Connection 6 CmdID : GetLocalOS
TCP Connection 6 CmdLength: 17
TCP Connection 6 Current OS is: CYGWIN_NT-10.0-11

```

The first screenshot is to test GetLocalTime and the second is GetLocalOS. Everytime you run the java program, server will build TCP connection and return the results as client asked by CmdID. The results will be print out in java console.

- As last assignment, C program used pthread to create multiple thread based upon TCP connection.
- Program can be tested and run successfully in Cygwin and Eclipse IDE. server.c file cannot run properly (segmentation fault (core dump)) in pyrite for unknown reason.
- The change from last assignment is that this time TCP socket data transfer use byte array instead of string or char array. So there is a lot of data type format transformation.
- In this assignment, server always return valid value true (assume function return value successfully) back to the java as it was set false in java.
- CmdProcessor in PPT instruction ➔ TCPReceiver in server.c file.
- Check eclipse java console for java side output and terminal for c output.