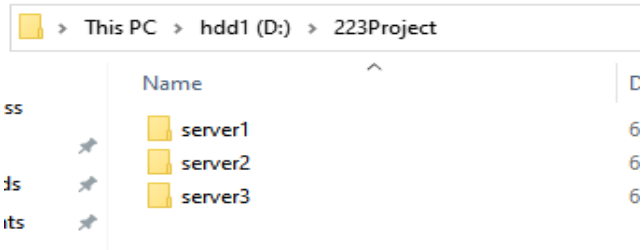
Compile Instructions for CS223 Project

Group 11

1. The source code is in “sourcecode -> src”.
2. Make sure you have installed PostgreSQL from

   https://www.postgresql.org/download/
3. For Windows OS, you need to manually add PostgreSQL to PATH::
   PATH add: C:\Program Files\PostgreSQL\14\bin
4. Create 3 new folders for each server under D:/ (or any directory you like)



5. The default port is 5432. But on Windows usually, it is occupied already. To avoid any conflicts, change ports to 5500, 5501, and 5502 by editing the configuration files with the following changes:

   Server 1: D:\223Project\server1\postgresql.conf
   Change #listen_addresses = 'localhost' to listen_addresses = '*'.
   Change #port = 5432 to port = 5500 (or other ports you like)
   Remember to delete the “#” otherwise it will be commented.
   Server 2: D:\223Project\server1\postgresql.conf
   Change #listen_addresses = 'localhost' to listen_addresses = '*'.
   Change #port = 5432 to port = 5501 (or other ports you like).
   Remember to delete the “#” otherwise it will be commented.
   Server 3: D:\223Project\server1\postgresql.conf
   Change #listen_addresses = 'localhost' to listen_addresses = '*'.
   Change #port = 5432 to port = 5502 (or other ports you like)
   Remember to delete the “#” otherwise it will be commented.

   Also change the files D:\223Project\server1\pg_hba.conf, D:\223Project\server2\pg_hba.conf and D:\223Project\server3\pg_hba.conf by adding the following sentence: *host all all 0.0.0.0/0 trust*

```
# IPv4 local connections:
#host    all             all             127.0.0.1/32            trust
host    all             all             0.0.0.0/0               trust
# IPv6 local connections:
#host    all             all             ::1/128                 trust
# Allow replication connections from localhost, by a user with the
# replication privilege.
local   replication     all                                     trust
#host    replication     all             127.0.0.1/32            trust
#host    replication     all             0.0.0.0/0 trust
#host    replication     all             ::1/128                 trust
```

6. Now we cleared all the conflicts and are ready to initialize the servers. Run the following commands:

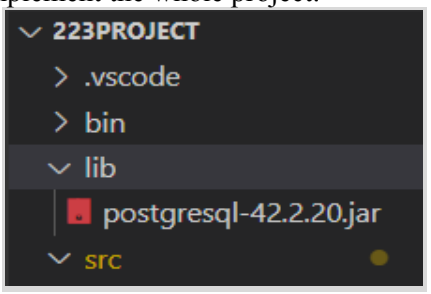
   initdb -D D:\223Project\server1
   initdb -D D:\223Project\server2
   initdb -D D:\223Project\server3
7. If you encountered any error, check the port availability using the following command and repeat step 5 until you assigned unique ports to each server.
   netsh int ipv4 show excludedportrange protocol=tcp

```
C:\WINDOWS\system32>netsh int ipv4 show excludedportrange protocol=tcp

Protocol tcp Port Exclusion Ranges

Start Port    End Port
----------    --------
      5357        5357
      5426        5426
     54235       54235
     54236       54236

* - Administered port exclusions.
```

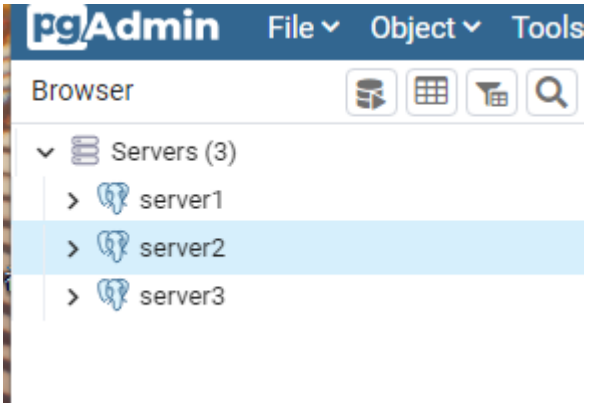
8. Now you can start the servers. Run the following commands to start each server:
   pg_ctl start -D D:\223Project\server1
   pg_ctl start -D D:\223Project\server2
   pg_ctl start -D D:\223Project\server3
9. Check your JDK version as the following figure has shown, and download the corresponding **PostgreSQL JDBC** based on your version.
   URL: https://jdbc.postgresql.org/download/postgresql-42.2.20.jar

```
C:\Users\Administrator.WIN-2EPKD7D6018>javac -version
javac 18.0.1.1
```

10. Put the downloaded .jar package into /lib so VScode will recognize it. We used JAVA within VScode IDE to implement the whole project.



11. Install **pgAdmin**. This is a database management tool with a friendly GUI so that we can easily manage the database. You can directly check out the table values and see the output. URL: https://www.pgadmin.org/download/
12. Connect the 3 servers to pgAdmin. You need to use the username while initializing the databases to log in. By default, it is the username that you use to log into Windows.



13. Now the environment setup is done. You can now run the main method in main.java. Instructions for testing will be provided in the project report.