

hw4 exchange system danger log

Danger log:

1. When we are dealing with the xml request, the client should send the xml request which has the right format, which is specified in the assignment explanation. It should be noted that the client also has to send just one xml at a time(which contains only one root node of <create> or <transaciton>). For example, this is valid:

First send

```
95
<?xml version="1.0" encoding="UTF-8"?>
<create>
|   <account id="555555" balance="10000"/>
</create>
```

Then send

```
129
<?xml version="1.0" encoding="UTF-8"?>
<transactions id="010101">
|   <order sym="GGG" amount="-10" limit="990"/>
</transactions>
```

The server will work perfectly when client giving right requests.

But this is not valid:

The client send two request all together at once

95

```
<?xml version="1.0" encoding="UTF-8"?>
<create>
|   <account id="555555" balance="10000"/>
</create>
```

129

```
<?xml version="1.0" encoding="UTF-8"?>
<transactions id="010101">
|   <order sym="GGG" amount="-10" limit="990"/>
</transactions>
```

The second case will not give the result we want because the tinyXML2 library cannot parse one section of text that has two xml together(it is also not a valid XML request).

2. We have found that there is a limitation of the number of clients we can have at the same time, but there is no limitation of the number of requests a client send to our server. That is because the database we use, which is Postgresl. Postgresql can only give us 100 connection at the same time.

```
ibmcloudodb=> SHOW max_connections;
max_connections
-----
115
(1 row)
```

PostgreSQL Connection Limits

At provision, Databases for PostgreSQL sets the maximum number of connections to your PostgreSQL database to 115. 15 connections are reserved for the superuser to maintain the state and integrity of your database, and **100 connections are available for you and your applications.**

Trying to establish more connections to database could cause postgres error below:

```
db_1 | 2022-04-01 23:26:46.760 UTC [109] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.760 UTC [108] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.760 UTC [95] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.760 UTC [110] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.761 UTC [54] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.762 UTC [91] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.762 UTC [101] LOG: unexpected EOF on client connection  
with an open transaction  
db_1 | 2022-04-01 23:26:46.781 UTC [194] LOG: could not receive data from client:  
Connection reset by peer
```

Through our test, since it's not possible for us to init 100 clients establishing postgres database connecting exactly at the sametime, the practical number we get is around 150 clients concurrently, with each client holding a connection to database.