



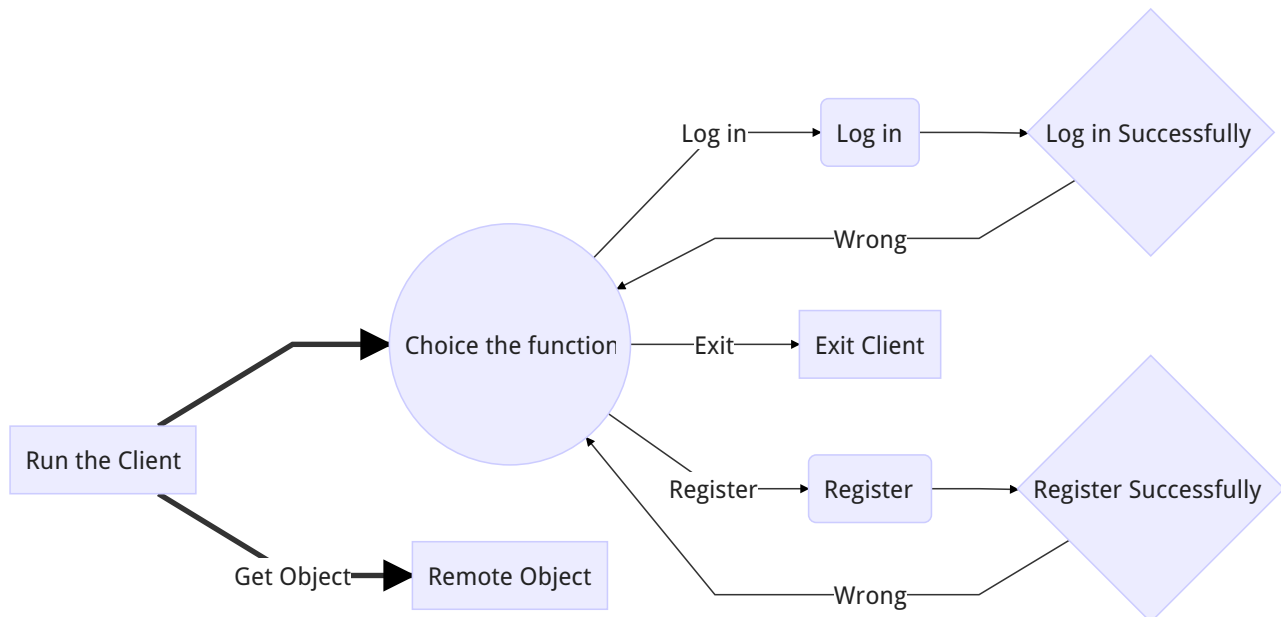
南方科技大学
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Cloud Computing Lab 1

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Design

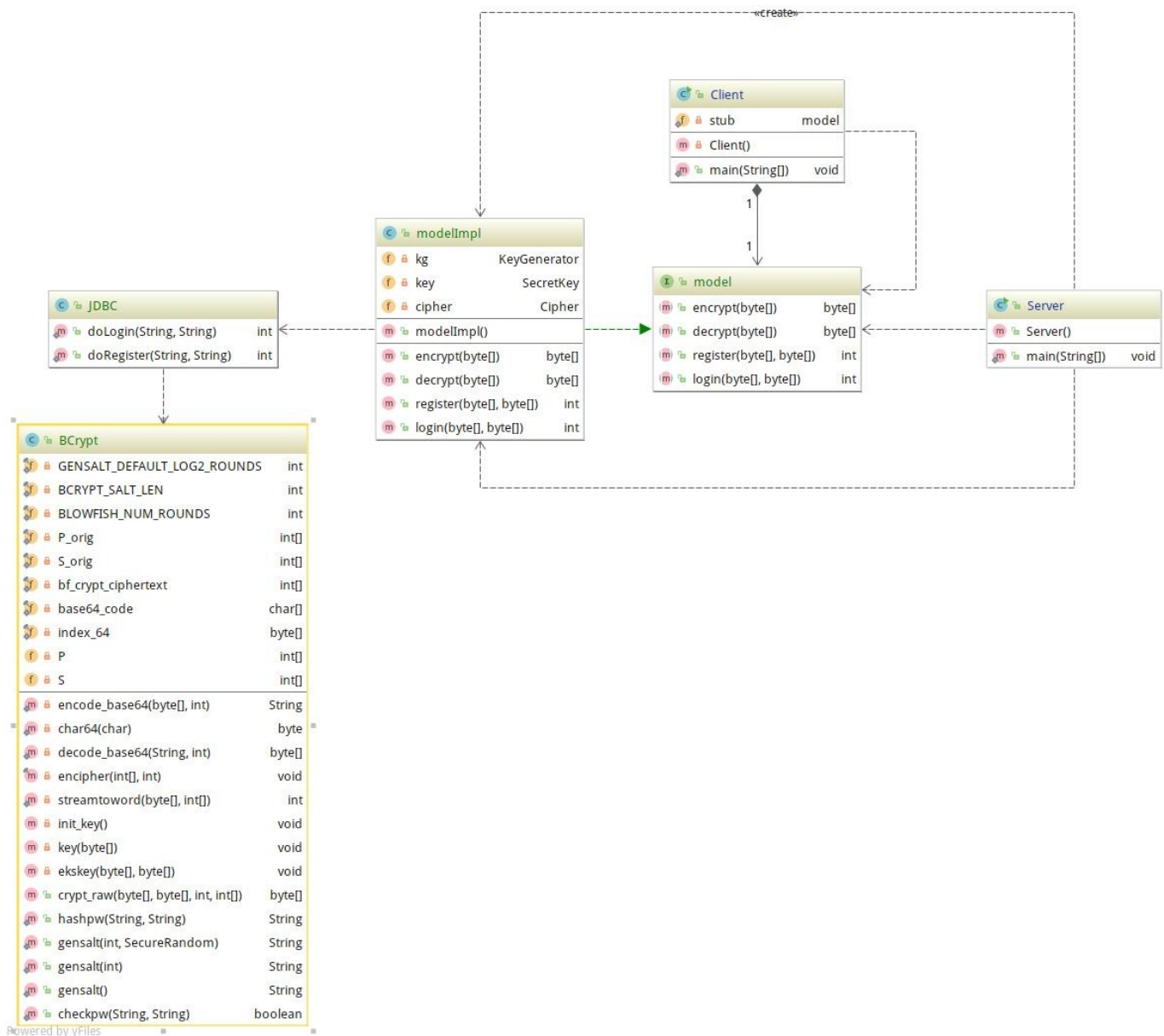
Module Design:



- Server Part
 - In the Server part, I have design an interface and three classes. They will bind the server to the port we want and provide the class that the Client need.
- Client Part:
 - In the Client part, it just have a class Client to connect to the server and do the operation about login and register.
 - First, it will get a object from server.
 - Then, it will enter a loop and need to choice the function
 - If choice login, you need input username and password, then use the method of the remote object and get the result.

- If choice register, you need input username and password, then use the method of the remote object to register and get the result.
- If choice exit, will exit the Client.

Class Design:



lab1_class_diagrams

- Server Part
 - The interface is the model, which will be transferred remotely by the client.
 - One class is Server, it was used to bind the Server to one port and create an instance of the model used to be transferred by the client.
 - One class is modelImpl, an implementation of the model. It will process the client input and translate it to the Clear text or Ciphertext.
 - The last class is JDBC, it including all the operation detail to the database, and it will encrypt the password before store it into the database.
 - And I also use a class called BCrypt which written by Damien Miller, it was used to encrypt the password and check the password.
- Client part:
 - In the Client part, there is just a class called Client, it just used to do the process for the logic of the operation on the client and get the remote object from server.

Problem

- When I work for the password encrypting, I found that the byte[] after encrypting can't be coded to a string whether I use AES or RSA, it won't be a big problem when I transfer the data from client to server, I can transfer the byte array, but the byte array can't be stored in the database, and if I storage the password in the database as clear text, it's so dangerous.
 - Solution: I found a new way to encode the password, it was the class that I have mentioned above, the BCrypt. BCrypt is a Java™ implementation of OpenBSD's Blowfish password hashing code, it can transfer the translate the password to a Ciphertext.
- When I run all the program, the server didn't work and it will throws NoClassDefException
 - Solution: Set the ClassPath, add the path of lib jar of jdk and jar into the ClassPath, add the path of Mysql driver jar into the Classpath

Result

- Start the Server:

```
/usr/share/java/jdk-11.0.1/bin/java -javaagent:/home/metaron/.loca
Mortgage Server is ready to listen... metaron-pc
```

- Start the Client:

```
/usr/share/java/jdk-11.0.1/bin/java -javaagent:/home/metaron/.loca
Please Input your option, login, register or exit
```

- Register:

```
Please Input your option, login, register or exit
register
Please input username
www
Please input password
12345678
Register Successfully
Please Input your option, login, register or exit
|
```

```
Not a Book
MariaDB [cc_lab1]> select * from user_pass;
+-----+-----+-----+
| id | username | password |
+-----+-----+-----+
| 7 | www | $2a$12$Z5fMgtmjIGWseznvS9v60aKK8.FUPLM4j/a7c0XlYOMeSzNypn0 |
+-----+-----+-----+
1 row in set (0.001 sec)
```

- Try this name again:

```
www
Please input password
12345678
Register Successfully
Please Input your option, login, register or exit
register
Please input username
www
Please input password
233
This username has been used, please try a new one
Please Input your option, login, register or exit
|
```

- Login Successfully:

```
www
Please input password
233
This username has been used, please try a new one
Please Input your option, login, register or exit
login
Please input username
www
Please input password
12345678
Login Successfully
Please Input your option, login, register or exit
```

- Login with wrong password:

```
12345678
Login Successfully
Please Input your option, login, register or exit
login
Please input username
www
Please input password
122
Password Wrong
Please Input your option, login, register or exit
```

- Login with a username that don't exist:

```
Password Wrong
Please Input your option, login, register or exit
login
Please input username
122
Please input password
111
User not exist
Please Input your option, login, register or exit
```