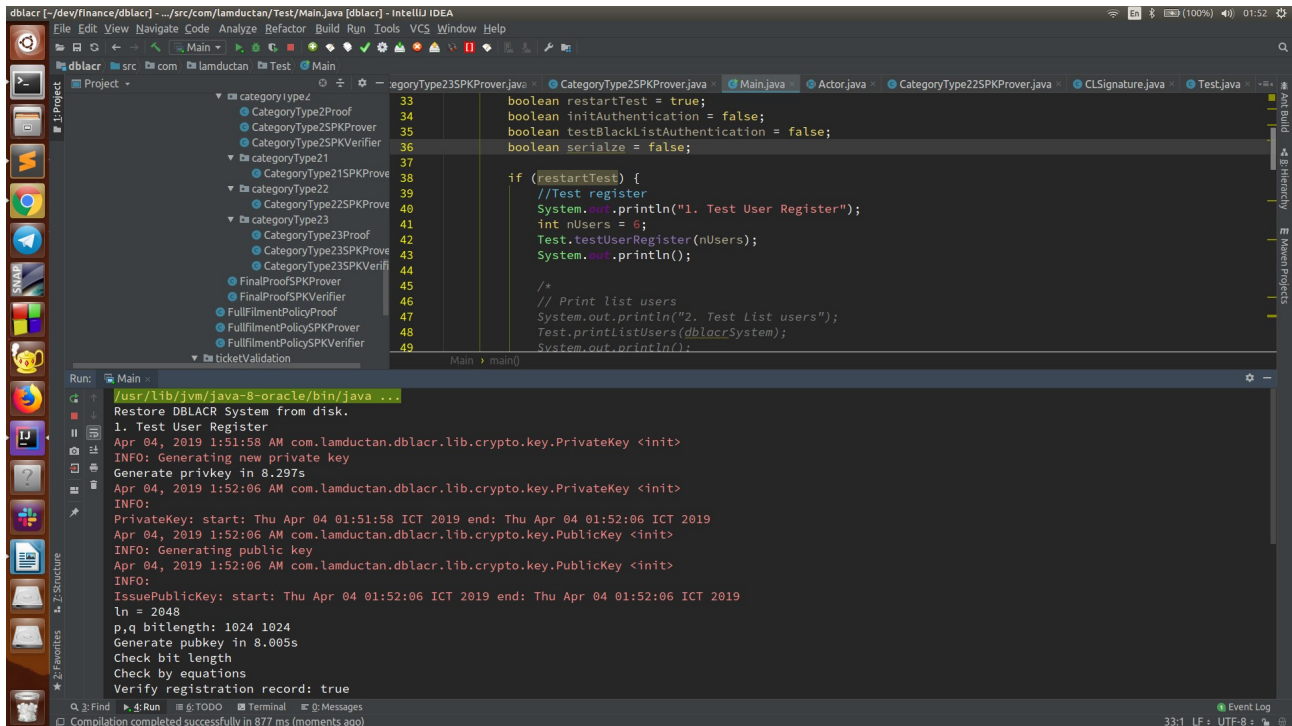


DBLACR

1. Test User register



```
boolean restartTest = true;
boolean initAuthentication = false;
boolean testBlackListAuthentication = false;
boolean serialize = false;

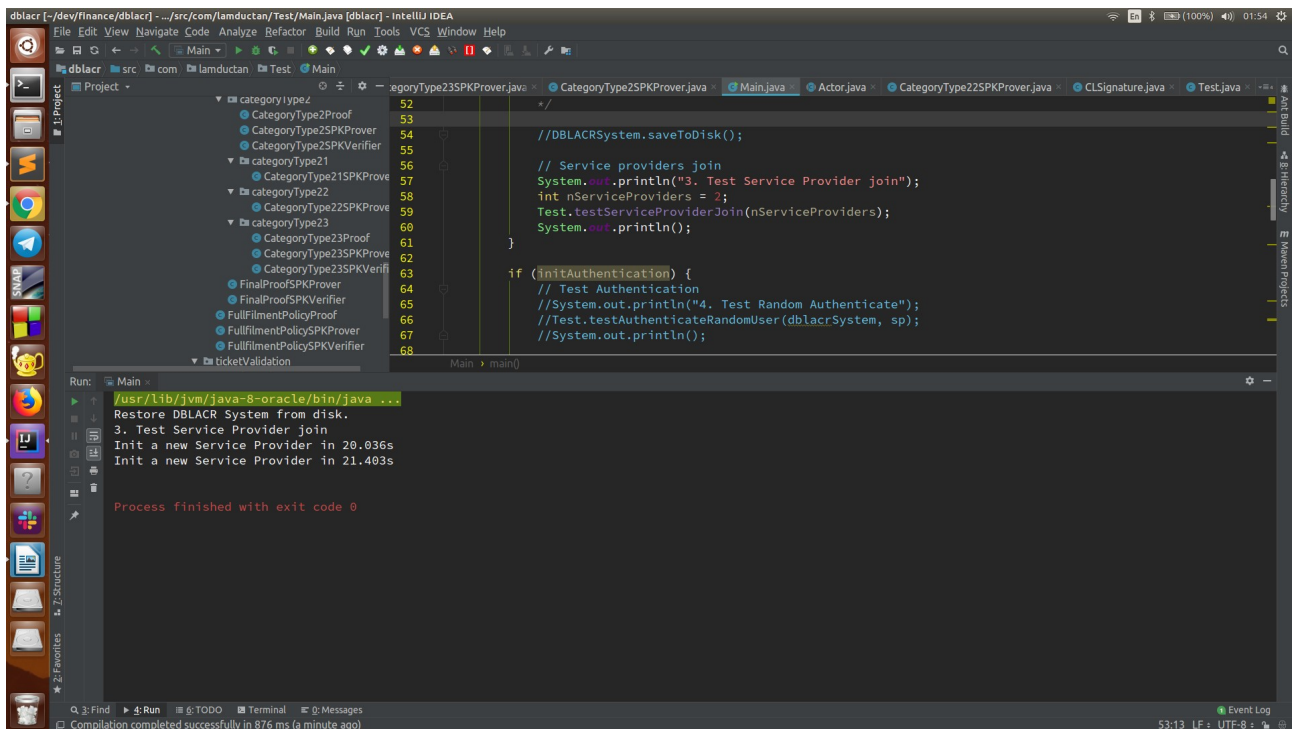
if (restartTest) {
    //Test register
    System.out.println("1. Test User Register");
    int nUsers = 6;
    Test.testUserRegister(nUsers);
    System.out.println();
}

// Print list users
System.out.println("2. Test List users");
Test.printListUsers(dblacrSystem);
System.out.println();
```

Run: Main

```
/usr/lib/jvm/java-8-oracle/bin/java ...
Restore DBLACR System from disk.
1. Test User Register
Apr 04, 2019 1:51:58 AM com.lamductan.dblacr.lib.crypto.key.PrivateKey <init>
INFO: Generating new private key
Generate privkey in 8.297s
Apr 04, 2019 1:52:06 AM com.lamductan.dblacr.lib.crypto.key.PrivateKey <init>
INFO:
PrivateKey: start: Thu Apr 04 01:51:58 ICT 2019 end: Thu Apr 04 01:52:06 ICT 2019
Apr 04, 2019 1:52:06 AM com.lamductan.dblacr.lib.crypto.key.PublicKey <init>
INFO: Generating public key
Apr 04, 2019 1:52:06 AM com.lamductan.dblacr.lib.crypto.key.PublicKey <init>
INFO:
IssuePublicKey: start: Thu Apr 04 01:52:06 ICT 2019 end: Thu Apr 04 01:52:06 ICT 2019
ln = 2048
p,q bitlength: 1024 1024
Generate pubkey in 8.005s
Check bit length
Check by equations
Verify registration record: true
```

2. Test create new Service Provider



```
//
//DBLACRSystem.saveToDisk();

// Service providers join
System.out.println("3. Test Service Provider join");
int nServiceProviders = 2;
Test.testServiceProvidersJoin(nServiceProviders);
System.out.println();

if (initAuthentication) {
    // Test Authentication
    //System.out.println("4. Test Random Authenticate");
    //Test.testAuthenticateRandomUser(dblacrSystem, sp);
    //System.out.println();
}
```

Run: Main

```
/usr/lib/jvm/java-8-oracle/bin/java ...
Restore DBLACR System from disk.
3. Test Service Provider join
Init a new Service Provider in 20.036s
Init a new Service Provider in 21.403s

Process finished with exit code 0
```

3. Test User authenticates without blacklist

The screenshot shows the IntelliJ IDEA interface for a project named 'dblacr'. The main editor displays the 'Main.java' file, which contains a test method 'testAuthenticateUser' that calls 'Test.testAuthenticateUser(0, dblacrSystem)'. The Run window at the bottom shows the test execution results, indicating that the test passed successfully with an exit code of 0. The test output includes the following text:

```
Check bit length
Check by equations
Proof BlackList
score 0
type1
Type1 true: t_i != b_i^x
Check bit length
Check by equations
Check bit length
Check by equations
Final Proof True
Verify fulfillment policy: [true, true]
Verify Authenticate Proof in 1.895s
User 2 authenticates ServiceProvider 0, result: true
Process finished with exit code 0
```

4. Test User authenticates with blacklist

The screenshot shows the IntelliJ IDEA interface for the same 'dblacr' project. The main editor displays the 'Main.java' file, which contains a test method 'testAuthenticateUser' that calls 'Test.testAuthenticateUser(0, dblacrSystem)'. The Run window at the bottom shows the test execution results, indicating that the test failed with an exit code of 1. The test output includes the following text:

```
Check bit length
Check by equations
Proof BlackList
score 0
type1
Type1 true: t_i != b_i^x
Check bit length
Check by equations
Check bit length
Check by equations
Final Proof True
Verify fulfillment policy: [false, true]
Verify Authenticate Proof in 2.186s
User 0 authenticates ServiceProvider 0, result: true
Process finished with exit code 1
```