(1)

MeetingRoomClient.java – uses private key to encrypt session key

MeetingRoomServer.java – uses public key to decrypt session key

LoginCreds.txt – Server checks this file for authorized logins

MeetingTimes.txt – Server checks this file for timeslots

PublicKey.txt – generated from Lab 3 program, 2048 bit key

PrivateKey.txt – generated from Lab 3 program, 2048 bit key

(2)

a. Protocol Message Format

Client generates a 128 bit session key

Client uses private key to encrypt the session key

Client sends "You are ready to reserve the room" special acknowledgement message to server

Client sends OAEP encrypted session key to server

Server receives special acknowledgement message

Server decrypts the encrypted session key using the public key

Server encrypts special acknowledgment message using session key

Server sends encrypted special acknowledgement key to client

Client receives encrypted special acknowledgement

Client decrypts special acknowledgement message using session key

Client matches the created special acknowledgement message to the message received from server

If match, then the key exchange is successful, and client is prompted to login

Client is able to log in and communicate with the server to reserve timeslots

If there is no match, acknowledgement fails and the program exits

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b.

Successful key exchange screenshots:

Client View:

Server View:

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| Section | Company | Comp
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The key exchange was successful and the client program is able to login.

Lab 4

Gunnar Yonker

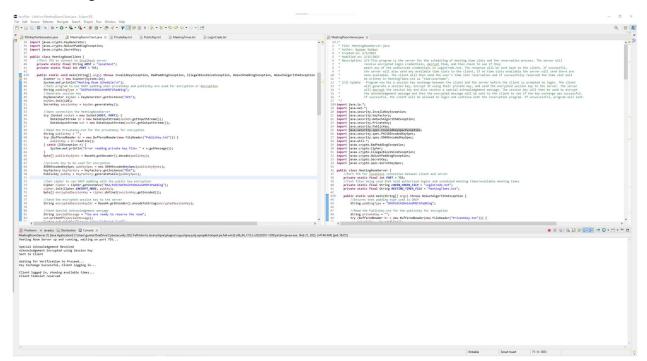
Successful login and reserve Client View:

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                                                                                          ablic class PeetingRoonCifeet {
//Port 755 to connect to localheat server
private static final String MOST = "localheat";
private static final int PORT = 755;
                                                                                      priose static final in 7007 = 755.

mallic vatic und scientification of home headldeytroption, teduddingterption, illegaldincististic forms of the first scientific forms of the first sci
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                                                                                                       //Open connection the NeetingBoonGarver
try (Socket socket = new Socket(MST, PORT)) {
    DataToputStream in = now DataInputStream(ocket.getInputStream());
    DataOutputStream out = new DataDoutputStream(socket.getOutputStream());

                                                                         Distribujustivem oir - emo Distribujustivem(colorit_githotujustivem()))
//dead the Privatempt.in for the planutemp for enception
foreign publicary - "";
// the first publicary - "";
// condition - ""
// condition 
                                                                                              //private key to be used for encryption
%30%TocodedKeySpec pubKeySpec = new %30%TocodedKeySpec(publick
KeyFattory keyFattory = KeyFattory,getInstance("K&A");
PublicKey pubKey = keyFattory.generatePublic(pubKeySpec);
                                                                                                   //Set cipher to use OAIP padding with the public key encryption 
Cipher cipher = Cipher.getDastonce("MSA/ECE/OAEPwithSHAIAndHGFIPadding"); 
cipher.indtc(piher.MEMPT/MEMP.public); 
byte() encryptedSessionKey = cipher.doPinal(sessionKey.getIncoded());
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      public static void main(String[] args) throws NoSuchAlgorithmException (
    //Ensures that padding type used is OAEP
    String paddingType = "OAEPwithSHAlAndWGFlPadding";
                                                                                                       //Send the encrypted session key to the server
String encryptedSessionKeyStr = Base64.getEncoder().encodeToString(encrypt
                                                                                              //Send Special Acknowledgment message
String special/message = "You are ready to reserve the room";
out.writeUTF(special/message);
                     * X X X 3 9 9 8 2 0 - 13 - 2 0
                     Server Acknowledgment Sent
Encrypted Session Key Sent to Server
                     Server Acknowledgment Suc
Exchange Successful
Proceed to login...
Inter username: gunnar
Enter password: student
Login successful
                     Enter desired meeting time: 9xm 
Meeting time slot reserved at 9xm for gunnar 
Do you want to make another reservation (y/n)?
```

Successful login and reserve Server View:



Lab 4 Gunnar Yonker

The program now works with the client using their private key to encrypt the session key, the server decrypts the session key using the public key, then the key exchange using the special acknowledgment and session key as encryption/decryption is verified before the client and server continue on with login and reservation functions.

The only part that I could not get to work was using the OAEP padding type, I was running to errors trying to encrypt the session key using OAEP padding. The program uses PKCS1 padding to encrypt and decrypt the session key as I was able to get that padding type to function properly.