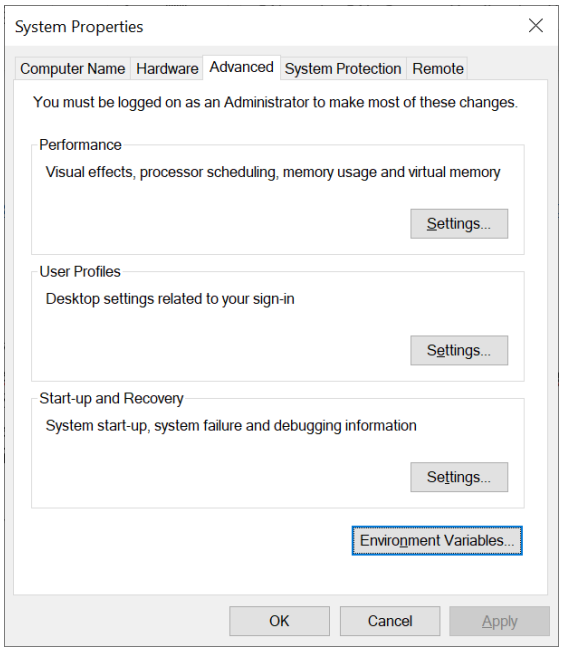
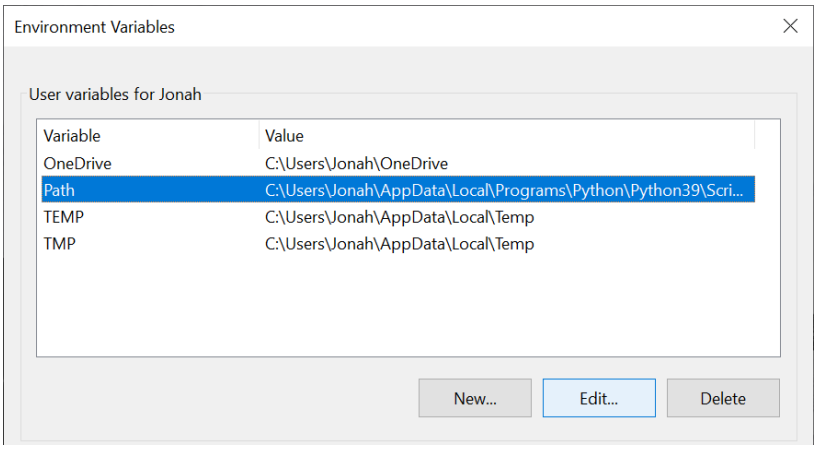
Instructions for the Chat Application

Setting up Secure Socket Communication

Step 1 – Java JDK Setup

- Download and install the latest Java JDK from oracle
- Link - https://www.oracle.com/java/technologies/downloads/#jdk17-windows
- To add the Java JDK to PATH, navigate to System Properties ~ Environment Variables ~ Select 'Path' and then 'Edit…'. Inside of this click new and input the location of your Java SDK\bin. For example, C:\Program Files\Java\jdk-17.0.1\bin





Step 2 – Creating public/private key pair and certificates

Generate a key pair using command prompt:

- C:\> keytool -genkey -alias Cyber -keystore CyberKeyStore.jks -keyalg RSA -sigalg SHA256withRSA
- Choose key store password and fill in the information requested

Create a self-signed certificate in command prompt:

- Create a 'Keys' and 'CA' directory on the C: Drive and use 'cd directoryname' to navigate to these in command prompt
- C:\Keys> keytool -export -alias Cyber -file Cyber.cer -keystore CyberKeyStore.jks
- C:\Keys> keytool -printcert -v -file Cyber.cer

Create a certificate for secure socket communication in command prompt:

- C:\Keys> copy CyberKeyStore.jks ServerKeyStore.jks
- C:\CA> keytool -import -keystore ClientKeyStore.jks -alias testca -file ..\Keys\Cyber.cer

Step 3 - Set key store location and password for personal use

- These variables should be edited in an IDE (IntelliJ recommended) or a software such as Notepad++ according to what the port and host the user wants to connect to as well as their keystore location and password.

```
public class Server {

    //Fields
    public static final String KEYSTORE_LOCATION = "C:\\Keys\\ServerKeyStore.jks";
    public static final String KEYSTORE_PASSWORD = "Coursework^1";
    public static final int TLS_PORT = 43221;
```

```
public class Client {

    //Fields
    public static final int TLS_PORT = 43221;
    public static final String TLS_HOST = "localhost";
    public static final String TRUSTSTORE_LOCATION = "C:\\CA\\ClientKeyStore.jks";
    public static final String TRUSTSTORE_PASSWORD = "Coursework^1";
```

```
public class ClientHandler implements Runnable{

    //Fields
    public static final String ROOM_PASSWORD = "ChatRoom55!";
```

Running the chat application

Running through an IDE (IntelliJ recommended):

- Import the project to the IDE
- Check that multiple instances of the client can be run. In IntelliJ this is done by going to the run configurations of Client.java ~ modify options ~ Allow multiple instances
- Run Server.java first and then Client.java

Running the application through command prompt:

- Navigate to the location of the application. For example, C:\Users\Jonah\IdeaProjects\SNSCoursework\src>
- Compile the application files using C:\Users\Jonah\IdeaProjects\SNSCoursework\src> javac *.java
- Run the server – C:\Users\Jonah\IdeaProjects\SNSCoursework\src> java Server
- Open a new command prompt and run the client - C:\Users\Jonah\IdeaProjects\SNSCoursework\src> java Client