
Test File

for

Hug the Rail IoT

Version 1.0

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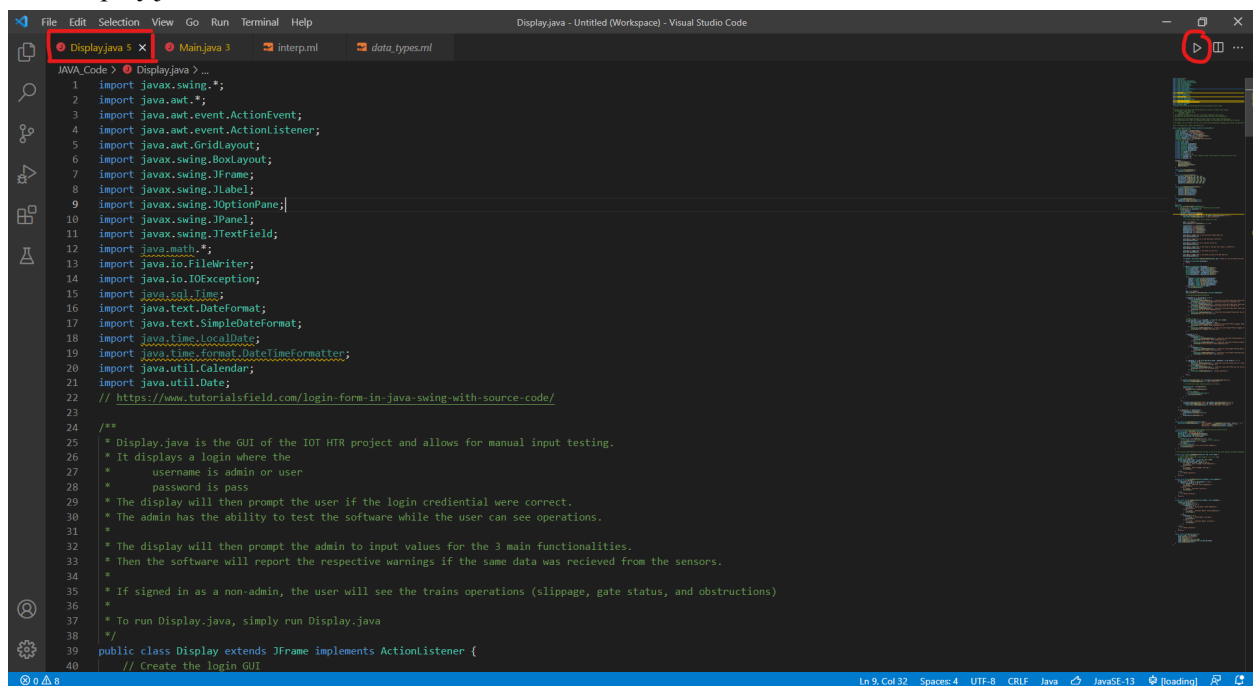
Test File

Note: For testing the operations of IoT HTR, our software does not specifically read from a file but instead asks a user with admin privileges to manually input data via configurations. Therefore to test, the user must (1) turn on IoT HTR, (2) have admin privileges, (3) and successfully login. Refer to the User Guide: 3 Admin Manual Input Testing for more information.

Major and minor refer to the danger level of a detection and indict the type (color) of the warning.

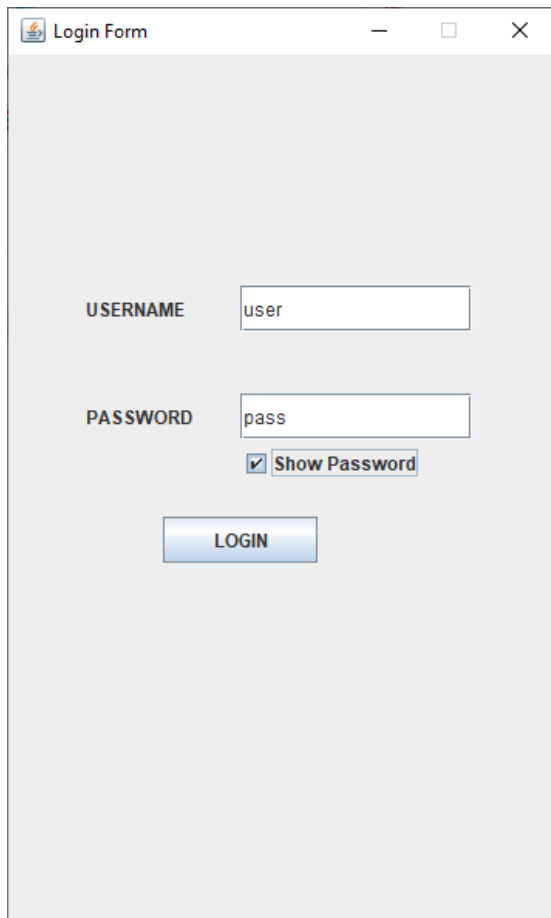
Test 1 Turn on/on admin/off - screenshots

Run Display.java



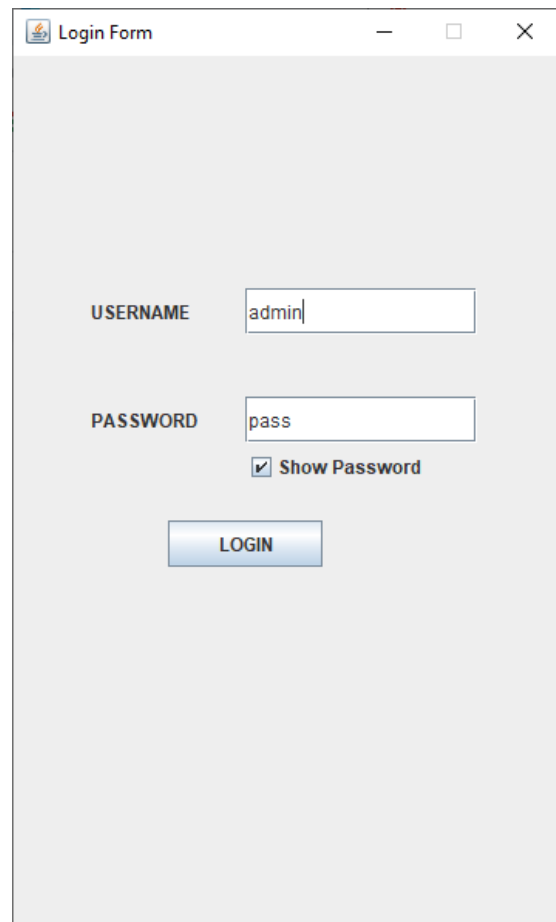
```
1  import javax.swing.*;
2  import java.awt.*;
3  import java.awt.event.ActionEvent;
4  import java.awt.event.ActionListener;
5  import java.awt.GridLayout;
6  import javax.swing.BoxLayout;
7  import javax.swing.JFrame;
8  import javax.swing.JLabel;
9  import javax.swing.JOptionPane;
10 import javax.swing.JPanel;
11 import javax.swing.JTextField;
12 import java.math.*;
13 import java.io.FileWriter;
14 import java.io.IOException;
15 import java.sql.Time;
16 import java.text.DateFormat;
17 import java.text.SimpleDateFormat;
18 import java.time.LocalDate;
19 import java.time.format.DateTimeFormatter;
20 import java.util.Calendar;
21 import java.util.Date;
22 // https://www.tutorialspoint.com/login-form-in-java-swing-with-source-code/
23
24 /**
25  * Display.java is the GUI of the IOT HTR project and allows for manual input testing.
26  * It displays a login where the
27  *   username is admin or user
28  *   password is pass
29  * The display will then prompt the user if the login credential were correct.
30  * The admin has the ability to test the software while the user can see operations.
31  *
32  * The display will then prompt the admin to input values for the 3 main functionalities.
33  * Then the software will report the respective warnings if the same data was recieved from the sensors.
34  *
35  * If signed in as a non-admin, the user will see the trains operations (slippage, gate status, and obstructions)
36  *
37  * To run Display.java, simply run Display.java
38  */
39 public class Display extends JFrame implements ActionListener {
40     // Create the login GUI
```

Login in as non-admin



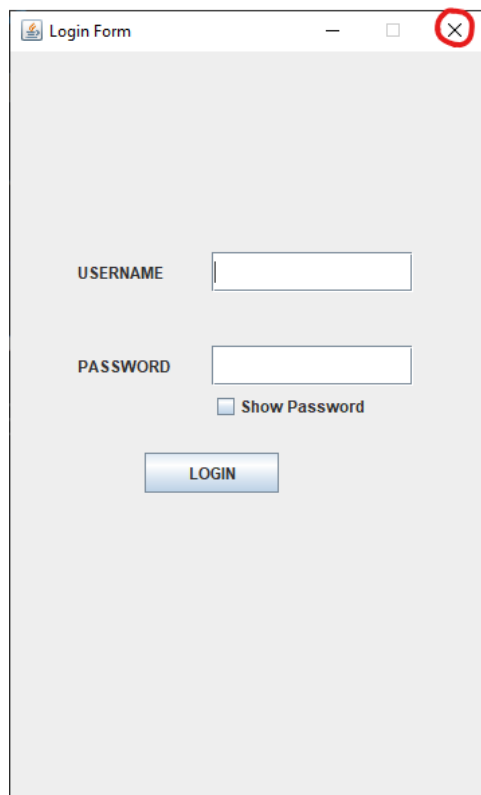
A screenshot of a web browser window titled "Login Form". The window has a light gray background. It contains two text input fields: "USERNAME" with the value "user" and "PASSWORD" with the value "pass". Below the password field is a checkbox labeled "Show Password" which is checked. At the bottom center is a blue "LOGIN" button.

Login as admin



A screenshot of a web browser window titled "Login Form". The window has a light gray background. It contains two text input fields: "USERNAME" with the value "admin" and "PASSWORD" with the value "pass". Below the password field is a checkbox labeled "Show Password" which is checked. At the bottom center is a blue "LOGIN" button.

Turn off



A screenshot of a web browser window titled "Login Form". The window has a light gray background. It contains two text input fields: "USERNAME" and "PASSWORD", both of which are empty. Below the password field is a checkbox labeled "Show Password" which is unchecked. At the bottom center is a blue "LOGIN" button. The close button (X) in the window's title bar is circled in red.

Test 2: Obstruction Detection

Normal:

Obstruction speed = 0
Obstruction distance = 5
Gate distance = 5
Gate status = 0
Wheel rpm = 0
Train speed = 0

Minor stationary object:

Obstruction speed = 0
Obstruction distance = 2
Gate distance = 5
Gate status = 0
Wheel rpm = 0
Train speed = 0

Major stationary object:

Obstruction speed = 0
Obstruction distance = 1
Gate distance = 5
Gate status = 0
Wheel rpm = 0
Train speed = 0

Minor moving object:

Obstruction speed = 1
Obstruction distance = 2
Gate distance = 5
Gate status = 0
Wheel rpm = 0
Train speed = 0

Major moving object:

Obstruction speed = 1
Obstruction distance = 1
Gate distance = 5
Gate status = 0
Wheel rpm = 0
Train speed = 0

Test 3: Gate Crossing Detection

Normal:

Obstruction speed = 0
Obstruction distance = 5
Gate distance = 5

Gate status = 0

Wheel rpm = 0

Train speed = 0

Minor gate:

Obstruction speed = 0

Obstruction distance = 5

Gate distance = 2

Gate status = 1

Wheel rpm = 0

Train speed = 0

Major gate at 1 mile:

Obstruction speed = 0

Obstruction distance = 5

Gate distance = 1

Gate status = 1

Wheel rpm = 0

Train speed = 0

Major gate:

Obstruction speed = 0

Obstruction distance = 5

Gate distance = 0.5

Gate status = 1

Wheel rpm = 0

Train speed = 0

Major gate at 0 miles:

Obstruction speed = 0

Obstruction distance = 5

Gate distance = 0

Gate status = 1

Wheel rpm = 0

Train speed = 0

Test 4: Slippage Detection

Normal:

Obstruction speed = 0

Obstruction distance = 5

Gate distance = 5

Gate status = 0

Wheel rpm = 0

Train speed = 0

Minor slippage:

Obstruction speed = 0

Obstruction distance = 5

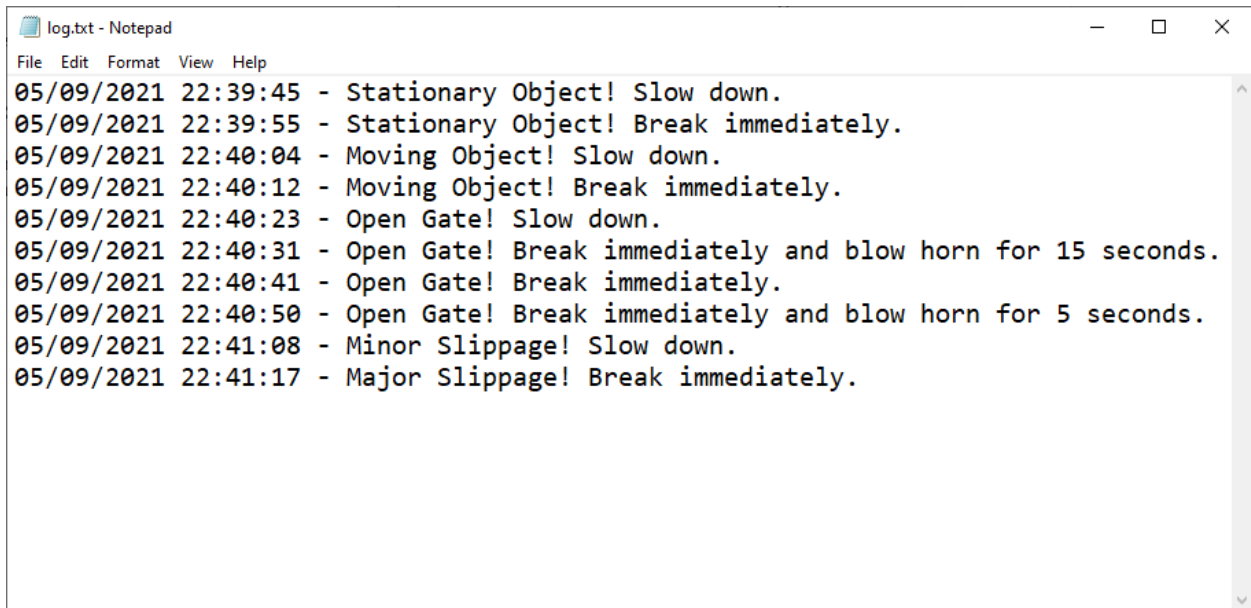
Gate distance = 5
Gate status = 1
Wheel rpm = 18000
Train speed = 60

Major slippage:

Obstruction speed = 0
Obstruction distance = 5
Gate distance = 5
Gate status = 1
Wheel rpm = 1500
Train speed = 60

Test 5: Open the Log

After completing Test 1-3, any manual input that would generate warnings, or successfully login into a non-admin account open log.txt to view the log. Below are the results from running Test 1-3.



```
log.txt - Notepad
File Edit Format View Help
05/09/2021 22:39:45 - Stationary Object! Slow down.
05/09/2021 22:39:55 - Stationary Object! Break immediately.
05/09/2021 22:40:04 - Moving Object! Slow down.
05/09/2021 22:40:12 - Moving Object! Break immediately.
05/09/2021 22:40:23 - Open Gate! Slow down.
05/09/2021 22:40:31 - Open Gate! Break immediately and blow horn for 15 seconds.
05/09/2021 22:40:41 - Open Gate! Break immediately.
05/09/2021 22:40:50 - Open Gate! Break immediately and blow horn for 5 seconds.
05/09/2021 22:41:08 - Minor Slippage! Slow down.
05/09/2021 22:41:17 - Major Slippage! Break immediately.
```