



# Project Documentation: Network Intrusion Detection Log System (Java GUI)

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## 1. Project Overview

A GUI-based system to log and monitor network activity using Java Swing and MySQL. Designed for beginners learning network logging, GUI development, and JDBC database interaction.

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## 2. Technologies Used

- Java (with Swing for GUI)
  - MySQL (Database backend)
  - JDBC (MySQL Connector/J)
  - IntelliJ IDEA (or any Java IDE)
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## 3. Project Modules

### ► Create (Log Activity)

- Form to input: IP Address, Port, and Action
- Data is inserted into the network\_logs table in MySQL

### ► Read (View Logs)

- Display stored logs using a JTable
  - Shows log ID, IP, Port, Action, and Timestamp
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## 4. Database Schema

Database: network\_security

Table: network\_logs

Column	Type	Description
log_id	INT, PK	Auto-incremented ID
ip_address	VARCHAR(50)	IP address of the source

port	INT	Port number
action	VARCHAR(50)	Description of activity
log_time	TIMESTAMP	Auto timestamp on insert

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## 5. Sample SQL Setup

```
```CREATE DATABASE network_security;
```

```
USE network_security;
```

```
CREATE TABLE network_logs (
    log_id INT AUTO_INCREMENT PRIMARY KEY,
    ip_address VARCHAR(50),
    port INT,
    action VARCHAR(50),
    log_time TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);```
```

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## 6. Sample Data for Demonstration

```
INSERT INTO network_logs (ip_address, port, action) VALUES
('192.168.1.10', 22, 'login_attempt'),
('203.0.113.55', 443, 'login_failed'),
('203.0.113.55', 443, 'login_failed'),
('203.0.113.55', 443, 'login_failed'),
('10.0.0.5', 80, 'access_granted'),
('192.0.2.99', 21, 'ftp_access'),
('198.51.100.77', 3389, 'remote_login');
```

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## 7. How to Run (Using IntelliJ IDEA)

1. Download MySQL Connector/J from the official MySQL site.
  2. Open the project in IntelliJ.
  3. Add the JDBC .jar file to **Project Structure > Libraries**.
  4. Edit database credentials in DatabaseUtil.java.
  5. Compile all files.
  6. Run MainGUI.java.
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## 8. Team Members

- **Vipul Madavi**
  - **Manoj Deshmukh**
  - **Gitesh Pradhan**
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## 9. Future Enhancements

- Blacklist management via GUI
- Alert generation for repeated suspicious actions
- Export logs to CSV
- User authentication for admin panel