Documentation

1. Running and Usage

Requirements

- Python 3.10+
- Access to the school PC TCP/IP network
- Standard Python libraries: tkinter, sqlite3, socket, threading, queue, configparser, logging

Running the Application

1. Open a terminal or command prompt.
2. Navigate to the project root folder (where main.py is located).
3. Run the application with:

   python main.py
4. The **P2P Bank Monitoring** window will open, allowing you to control the bank node.

GUI Usage

- **Start Node** - starts the P2P bank node and begins listening on the configured port.
- **Stop Node** - stops the node and closes all active connections.
- **Event Log** - displays incoming/outgoing messages, transactions, and system notifications.
- **Node Status** - indicates whether the node is RUNNING or STOPPED.

Configuration

- The configuration is read from config.ini, section [p2p]:

  [p2p]

  host = 0.0.0.0

  port = 65525
- Port must be in the **65525-65535** range to work on the school network.
- If a value is missing or invalid, the GUI will log a warning.

2. References / Sources

- **Python documentation** - https://docs.python.org/3/

3. Reused Code from Previous Projects

- **Logger and utils** - reused from LibraryApp project:

    - core/logger.py
      https://github.com/tekuprogramming/bank_p2p/blob/main/core/logger.py
    - core/utils.py (IP/port validation, timestamp function)
      https://github.com/tekuprogramming/bank_p2p/blob/main/core/utils.py
- **Tkinter GUI pattern** - configuration reading, scheduled refresh, and message queue processing:
    - gui/monitor.py (parts of GUI logic)
      https://github.com/tekuprogramming/bank_p2p/blob/main/gui/monitor.py
- **Database classes and model** - basic SQLite wrapper and BankAccount dataclass:
    - db/database.py
      https://github.com/tekuprogramming/bank_p2p/blob/main/db/database.py
    - db/models.py
      https://github.com/tekuprogramming/bank_p2p/blob/main/db/models.py

Example Usage

1. Run main.py -> GUI opens.
2. Click **Start Node** -> node starts listening on port 65525-65535.
3. Event Log will display messages such as:

   14:23:01: [INFO] Node started

   14:23:05: [CONNECTION] New connection: 192.168.1.101:52345

   14:23:06: [COMMAND] 192.168.1.101:52345: AC 500

   14:23:06: [RESPONSE] 192.168.1.101:52345: 10001/192.168.1.100
4. Click **Stop Node** -> node stops and all connections are closed.