User Manual: JyväskyläDepotOpt

This manual explains how to setup and run the bus depot optimization system.

System requirements:

- Python 3.11 or newer
- Julia 1.11 or newer

Installation steps:

1. Clone the repository

2. Create and activate Python virtual environment

3. Install requirements from requirements.txt file:
   - pip install -r requirements.txt

4. Julia setup:
   a. Install Julia from https://julialang.org/downloads/
   b. Install Julia packages:

```
using Pkg
Pkg.add("JuMP")
Pkg.add("GLPK")
```

5. Data preparation:
   - Deploy your Excel files in the *data/* directory (Verify the naming convention from code and modify the filenames or the code accordingly)

6. Running the program:
   - Run the program files (MAKE.py and TO.py work without modifications)
     - Example command: python3 MAKE.py

7. Program Output:
   - The program will add two columns to your Excel file:

     - Column T: “Saapuminen” (Arrival positions)
     - Column U: “Lähtö” (Departure positions)

   - The program will print detailed information about:

     - Main lane assignments (A-L)
     - Outside charging spots (U1-U17 + additional diesel spots)
     - Optimization output

Notes:

- **The program works as an initial framework for depot optimization**
- The program will possibly need some fine tuning to work on different datasets.
- Weekend allocations need code fine tuning **OR** more optimal use of buses in the depot.

Reading the project report is highly recommended for people working with the code.