Required hardware

1. At least one device running the aggregator. Ubuntu Linux is recommended as the operating system.
2. Each display requires its own raspberry pi that is connected to a monitor. Raspbian Linux is recommended as the operating system.

Deployment

Manual Installation:

Installation requires apt package manager

Before installing anything make sure operating system is up to date.

Also check that your python is at least version 3.9

```
python3 –version
```

Install git with apt

```
sudo apt-get update
sudo apt install git
```

Install pip3 with apt

```
sudo apt install python3-pip
```

Clone the repository with git

```
git clone https://github.com/InnovationProject4/platform-info-system
```

Navigate to the build folder

```
cd platform-info-system/build
```

Install the requirements file with pip

```
pip3 install -r requirements.txt
```

Check if python comes with built-in tkinter package

```
python3 -m tkinter
```

```
If it gives an error: “No module named tkinter” then install tkinter
```

```
sudo apt-get install python3-tk
```

Edit the config.ini file for MQTT brokers IP and port. Also, if your device is running displays you can choose to have it full screen or windowed. You can use nano for this.

```
nano config.ini
```

```
[mqtt-broker]
ip = localhost  (Type in the brokers IP)
port = 1883  (Type in the brokers port)

[sqlite]
repository = database.db

[display]
fullscreen = 1  (1 = full screen, 0 = windowed)

[validation]
token=17adbcf543e851aa9216acc9d7206b96
```

Management node

Installing Eclipse Mosquitto:

```
sudo apt-add-repository ppa:mosquitto-dev/mosquitto-ppa
sudo apt-get update
sudo apt-get install mosquitto
sudo apt-get install mosquitto-clients
```

start the broker

```
mosquitto
```

The aggregator can be executed with the command:

```
python3 aggregator.py -s <station-short-code>
```

Displays

The display can be executed with the command:

```
python3 display_client.py -view <display_view> -s <station_short_code> -p <platform> -left <platform> -right <platform> -transit <transit> -transport <transport>
```

User manual

Displays

Explanation for the arguments used to run displays:

view: View type of the display: tableview, platformview, splitview or infoview

s: station short code e.g. PSL

p: Platform number e.g. 1

left: Platform number for left side of splitview e.g. 1 (This is only used if view is splitview)

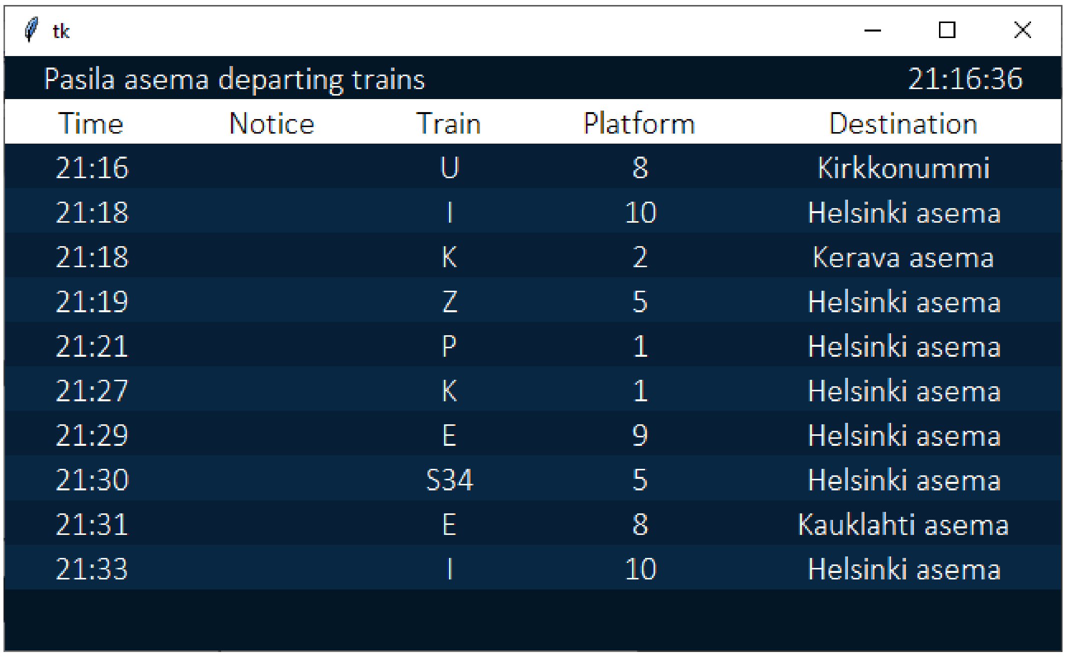
right: Platform number for right side of splitview e.g. 2 (This is only used if view is splitview)

transit: Type of transit: departures or arrivals (this is an optional argument)

transport: Type of transport: commuter or long_distance (this is an optional argument)

Examples of the different displays:

- Tableview



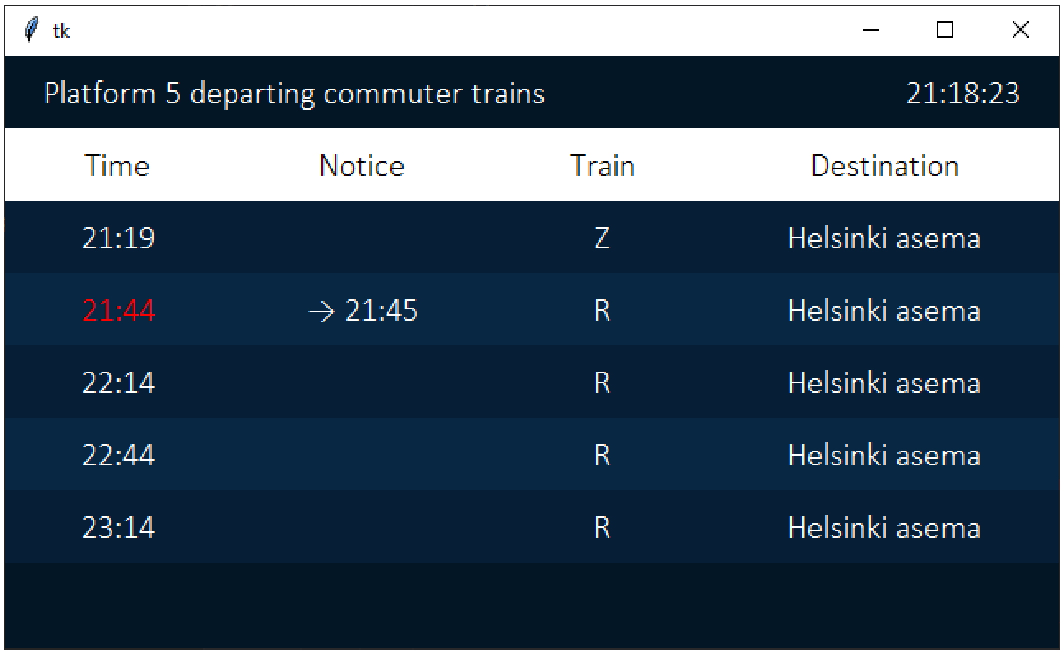
tk

Pasila asema departing trains 21:16:36

Time	Notice	Train	Platform	Destination
21:16		U	8	Kirkkonummi
21:18		I	10	Helsinki asema
21:18		K	2	Kerava asema
21:19		Z	5	Helsinki asema
21:21		P	1	Helsinki asema
21:27		K	1	Helsinki asema
21:29		E	9	Helsinki asema
21:30		S34	5	Helsinki asema
21:31		E	8	Kauklahti asema
21:33		I	10	Helsinki asema

This is a central display with the arguments:

```
-view tableview -s PSL -transit departures
```



tk

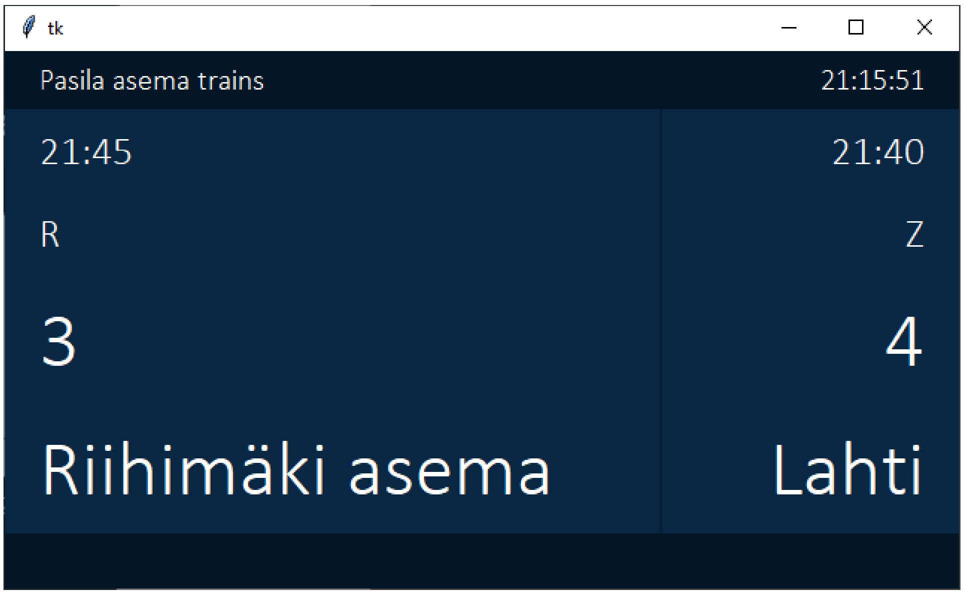
Platform 5 departing commuter trains 21:18:23

Time	Notice	Train	Destination
21:19		Z	Helsinki asema
21:44	→ 21:45	R	Helsinki asema
22:14		R	Helsinki asema
22:44		R	Helsinki asema
23:14		R	Helsinki asema

This is a platform display with the arguments:

```
-view tableview -s PSL -p 5 -transit departures -transport commuter
```

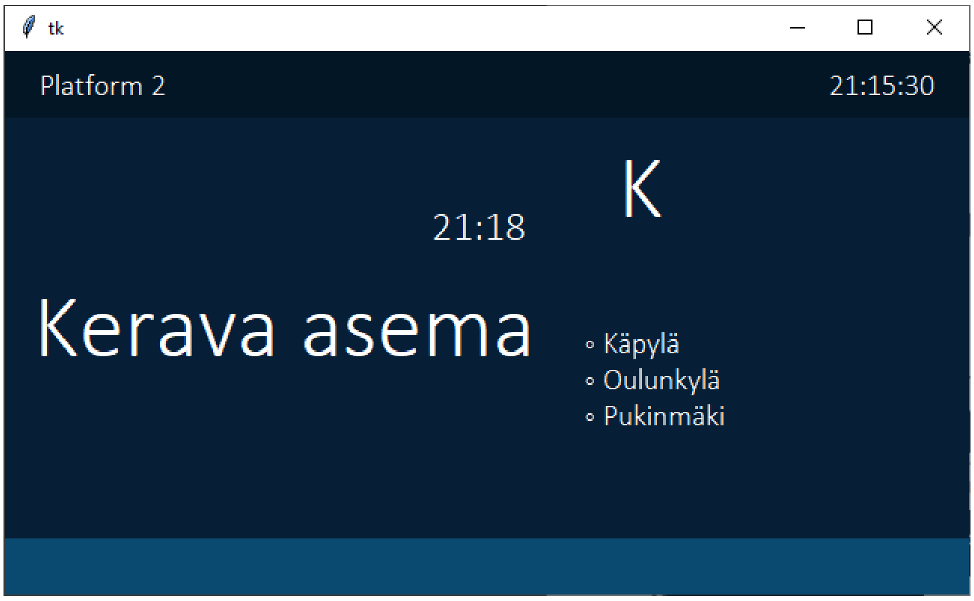
- Splitview



This is a dual platform display with the arguments:

```
-view splitview -s PSL -left 3 -right 4 -transit departures
```

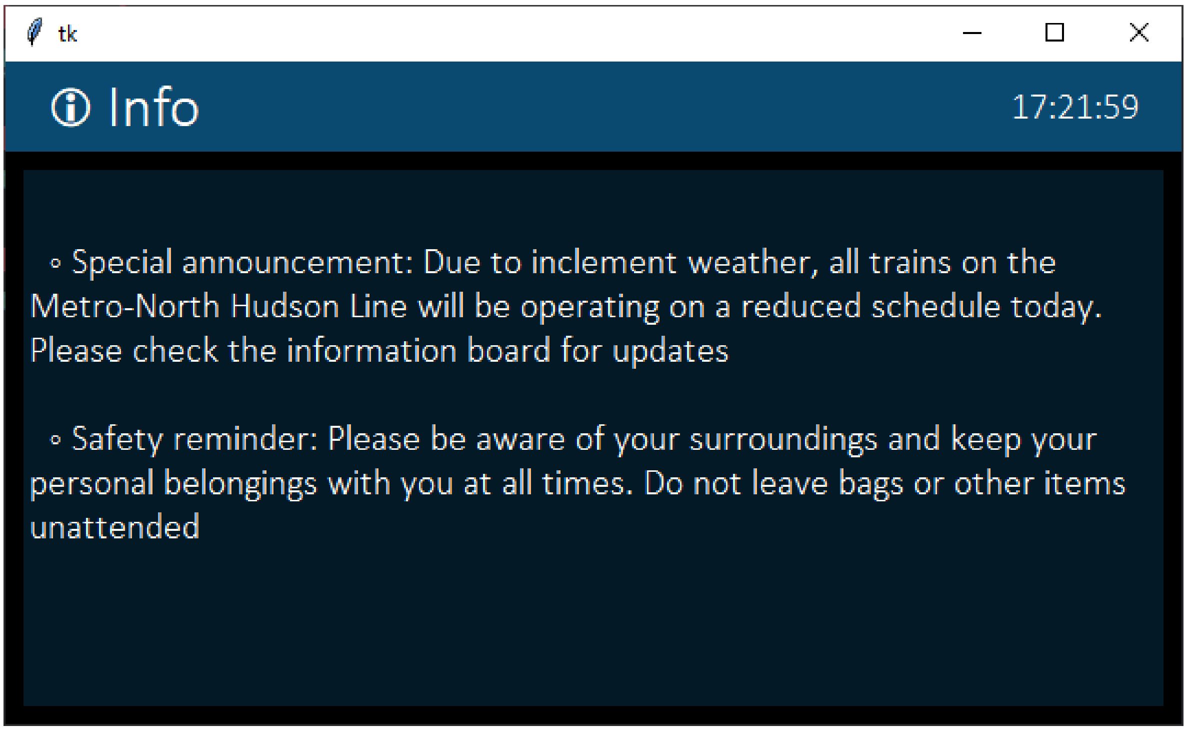
- Platformview



This is a platform display with the arguments:

```
-view platformview -s PSL -p 2 -transit departures
```

- Infoview



∘ Special announcement: Due to inclement weather, all trains on the Metro-North Hudson Line will be operating on a reduced schedule today. Please check the information board for updates

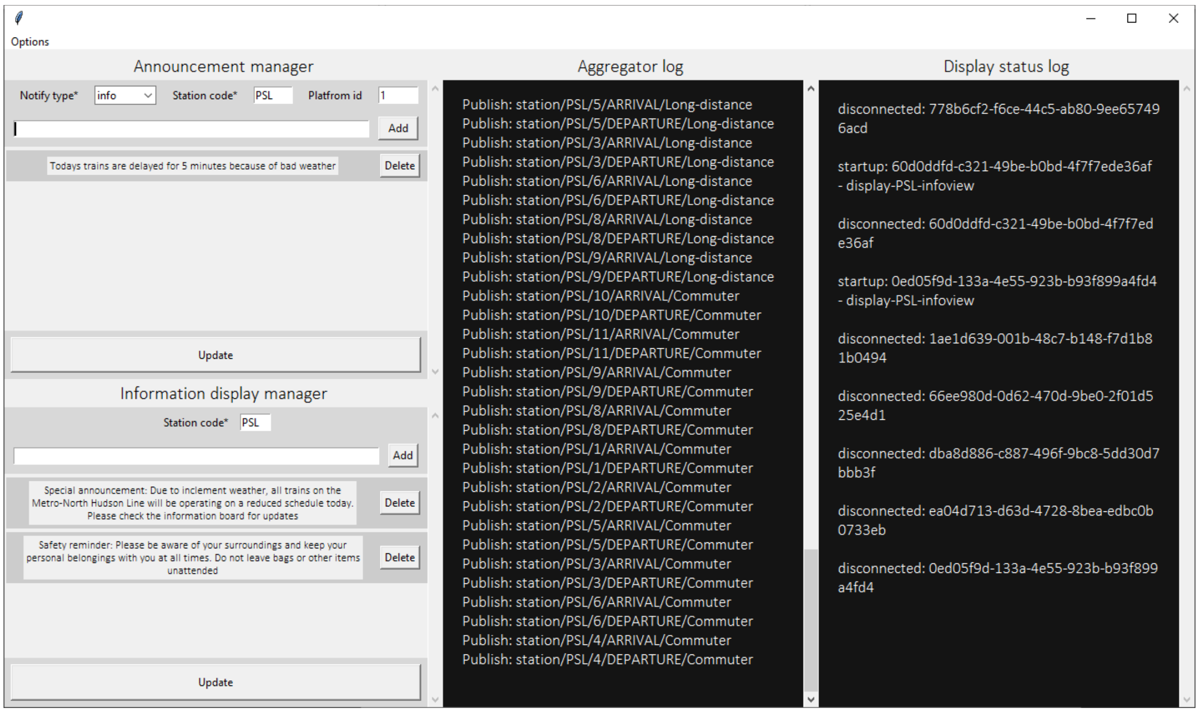
∘ Safety reminder: Please be aware of your surroundings and keep your personal belongings with you at all times. Do not leave bags or other items unattended

This is an information display with the arguments:

`-view infoview -s PSL`

Manager client

Manager client is to be used with the same device as where the aggregator is running. This is because it uses the same local database as the aggregator.



Notify type* info Station code* PSL Platfrom id 1

Todays trains are delayed for 5 minutes because of bad weather

Station code* PSL

Special announcement: Due to inclement weather, all trains on the Metro-North Hudson Line will be operating on a reduced schedule today. Please check the information board for updates

Safety reminder: Please be aware of your surroundings and keep your personal belongings with you at all times. Do not leave bags or other items unattended

```
Publish: station/PSL/5/ARRIVAL/Long-distance
Publish: station/PSL/5/DEPARTURE/Long-distance
Publish: station/PSL/3/ARRIVAL/Long-distance
Publish: station/PSL/3/DEPARTURE/Long-distance
Publish: station/PSL/6/ARRIVAL/Long-distance
Publish: station/PSL/6/DEPARTURE/Long-distance
Publish: station/PSL/8/ARRIVAL/Long-distance
Publish: station/PSL/8/DEPARTURE/Long-distance
Publish: station/PSL/9/ARRIVAL/Long-distance
Publish: station/PSL/9/DEPARTURE/Long-distance
Publish: station/PSL/10/ARRIVAL/Commuter
Publish: station/PSL/10/DEPARTURE/Commuter
Publish: station/PSL/11/ARRIVAL/Commuter
Publish: station/PSL/11/DEPARTURE/Commuter
Publish: station/PSL/9/ARRIVAL/Commuter
Publish: station/PSL/9/DEPARTURE/Commuter
Publish: station/PSL/8/ARRIVAL/Commuter
Publish: station/PSL/8/DEPARTURE/Commuter
Publish: station/PSL/1/ARRIVAL/Commuter
Publish: station/PSL/1/DEPARTURE/Commuter
Publish: station/PSL/2/ARRIVAL/Commuter
Publish: station/PSL/2/DEPARTURE/Commuter
Publish: station/PSL/5/ARRIVAL/Commuter
Publish: station/PSL/5/DEPARTURE/Commuter
Publish: station/PSL/3/ARRIVAL/Commuter
Publish: station/PSL/3/DEPARTURE/Commuter
Publish: station/PSL/6/ARRIVAL/Commuter
Publish: station/PSL/6/DEPARTURE/Commuter
Publish: station/PSL/4/ARRIVAL/Commuter
Publish: station/PSL/4/DEPARTURE/Commuter
```

```
disconnected: 778b6cf2-f6ce-44c5-ab80-9ee65749
6acd

startup: 60d0ddfd-c321-49be-b0bd-4f7f7ede36af
- display-PSL-infoview

disconnected: 60d0ddfd-c321-49be-b0bd-4f7f7ed
e36af

startup: 0ed05f9d-133a-4e55-923b-b93f899a4fd4
- display-PSL-infoview

disconnected: 1ae1d639-001b-48c7-b148-f7d1b8
1b0494

disconnected: 66ee980d-0d62-470d-9be0-2f01d5
25e4d1

disconnected: dba8d886-c887-496f-9bc8-5dd30d7
bbb3f

disconnected: ea04d713-d63d-4728-8bea-edbc0b
0733eb

disconnected: 0ed05f9d-133a-4e55-923b-b93f899
a4fd4
```

1. Announcement manager - manages what announcements you want to send to a station and its platforms

Notify type – The type of notification you want to add (values: info = message on bottom of display, alert = notification in center of the screen)

Station code - the short code of the station you want to send notification to (e.g PSL)

Platform id – The platform number where you want to send notfication (empty field results in sending announcement to displays with no argument -p <platform>)

Type in information to be sent and press add. Information will be listed below and can be deleted by pressing "Delete"

Update – by pressing update, the changes will be published

2. Information display manager – manages what announcements you want to send to stations information displays

Station code - the short code of the station you want to send notification to (e.g PSL)

Type in information to be sent and press add. Information will be listed below and can be deleted by pressing "Delete"

Update – by pressing update, the changes will be published

3. Aggregator log - Displays log information of what topics have been published to
4. Display status log - Displays log information of connected/disconnected displays
5. Options

Show all -option shows all announcements that are currently stored in the database.

Clear announcements – option clears all announcements from all displays that are currently receiving announcements.

Clear database – option clear all tables in the database Warning: If any currently running display has announcements on its view don't use this option.