Programming Fundamentals I - Personal Project

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1 Main Logic of the Program

The program, as has been planned, should behave along these guidelines:

1. Initiate the GUI, and load all the settings
2. If all goes well, fetch the most up to date data. Otherwise throw an exception
3. Once the data has been fetched, process it and strip away the information that is not needed.
4. Call the drawing function. This will add the first four entries to the GUI.
5. Start a timer to call the updating function. This takes care of refreshing the information stored every x seconds.
   (a) If the times left before the buses are greater than 0, do nothing, simply update the time left
   (b) if the time left is zero, pop the first item away, and add the next one to the GUI.
6. Check if there is any updated information for the buses:
   (a) If yes, download the new data, and merge it with the existing one
   (b) If no, simply do nothing
7. Repeat the last 2 steps indefinitely, or until interrupted by the user

2 Intended Data Structures

There are a few data structures that are going to be used, but mostly the following ones:

- Lists: A variety of lists are going to be used, mostly to access the IDs of the GUI elements. This allows for a very specific addressing, as well as simple mathematical operations when having to eliminate multiple items off the view.
- Dictionaries: Mostly used in conjunction with lists, they allow a very simple addressing by using a descriptive key, making it easy to know what has to be extracted.

3 Functions to implement

- Fetch new data
  This function is a very important as it deals with fetching as well as cleaning the data. It should be designed with only one parameter, a list of stops. This allows the user to specify multiple stops to be watched. It should return a list containing dictionaries for each of the leaving buses.
- Add item to the GUI
  This functions should make it easier to add an item to the view, by taking the parameters needed and adjusting by itself the coordinates as well as colors or text sizes.

- Update after time x
  This function should handle updating the time remaining before a bus leaves, as well as deciding if the top item has to be deleted. It should call itself after a time x without stopping the rest of the program, through something like queuing.

- Other functions
  The ones described here are the main ones. There will be a handful of helper ones, to make it easier to implement certain features, as well as keep the repeated code to a minimum.