Loop Processor Documentation

Files:

The Loop processor program is comprised of several main parts:

- processLoops.sh, a Shell script
- LoopProcessor.py, a Python file
- StopCoordList.txt, a text file

In addition, several other files are created as a result of running the program for use both inside and outside the program.

- current_loops.txt, a text file
- loopETAs.txt, a text file

Program Breakdown:

The processLoops.sh script makes a GET /buses call to the SlugLoop API (https://slugloop.azurewebsites.net/api-docs/#/default/get_buses) to get a list of current loop bus data and stores it inside current_loops.txt. It then runs the LoopProcessor.py program using Python3.

The LoopProcessor.py program takes in the current_loops.txt file to create a dictionary of loop buses and their related information. It then takes in a list of bus stops and their affiliated names and coordinates, provided in StopCoordList.txt, and also stores this information in a separate dictionary. The program goes through each bus and checks their distance to each stop in order to determine the closest stop and the bus's estimated arrival time at that stop. Buses with the route statuses "OUT OF SERVICE/SORRY" or "OUT OF SERVICE AT BARN THEATER" are excluded. A list of ETAs along with stop names and miscellaneous debugging info is then stored as a list of dictionaries in the file loopETAs.txt.

System Requirements:

The LoopProcessor.py program utilizes several Python libraries that need to be installed locally on the same executable path in order for the program to work. Python release 3.8.0 or newer must be installed in order for this program to be compiled and run.

- import json for json.dumps() method to write out a Python dictionary to a JSON-formatted text file
- import math for ceil() and dist() methods to calculate distance
- from datetime import datetime, timedelta to perform calculations on Python datetime object
- from dateutil import parser to process a specific date/time formatting from the SlugLoop API, may need to be installed using `pip3 install python-dateutil`

Running:

To run the program, execute the following command in your terminal:

```
$ ./processLoops.sh
```