City Electricity Network Application

Objected Oriented Software Engineering: Assignment 1

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Purpose

This application is a model simulation of a city's electricity usage. It either reads in or randomly generates data to be processed and represented as a Tree like structure of the network.

How to compile

Compilation of this application requires the following:

- Apache Ant (https://ant.apache.org/)
- Java

From the project root directory, build the application using the following command:

```
ant
```

Usage

This application can be run with four different settings that determine the source and output of data. They are as follows:

- Generate random data to be displayed to the terminal. `-g -d`.
- Generate random data to be written to a csv file. `-g -w outputdata.csv`.
- Read in data from a csv file to be displayed to the terminal. `-r inputdata.csv -d`.
- Read in data from a csv file to be written to another csv file. `-r inputdata.csv -w outputdata.csv`

NOTE: All files to be read into the application must be stored in the `/resources` directory found in the project root directory. Any output files will also be saved in the `/resources` directory.

Once any data to be read in has been appropriately stored, move to the `/dist` directory:

```
cd dist/
```

Enter the commands below to execute the application for each given setting.

Generate random data to be displayed to the terminal

```
java -jar ElectricityNetwork.jar -g -d
```

Generate random data to write to csv file

```
java -jar ElectricityNetwork.java -g -w outputdata.csv
```

Read in data from a csv file to be displayed to the terminal

```
java -jar ElectricityNetwork.java -r inputdata.csv -d
```

Read in data from a csv file to be written to another csv file

```
java -jar ElectricityNetwork.java -r inputdata.csv -w outputdata.csv
```

NOTE: Any invalid input within the csv file, to be read in, will display an error relevant to the invalid input to the terminal.

Additional Notes

1. PDF versions of the following documents have been created in the event reading Markdown documents are not suitable:
   - README.md
   - criteria.md
2. Given that the assignment specification did not explicitly describe how 'Root-Leaf Nodes' should be represented, I have made an assumption to represent it in the following format for the input and output csv files:

   ```
   city
   city, city, em=123,h=4242,...
   ```

   The above format is only applicable to Root-Leaf Nodes. Any other input, where the node name and node parent name are the same, will result in an error output.

   Display of a Root-Leaf Node is represented as follows:

   ```
   city
       city
   ```

3. To reiterate, all input csv files must be stored in the `/resources` directory prior to executing the application with the `-r` tag.
4. To reiterate, all output csv files will be saved to the `/resources` directory.