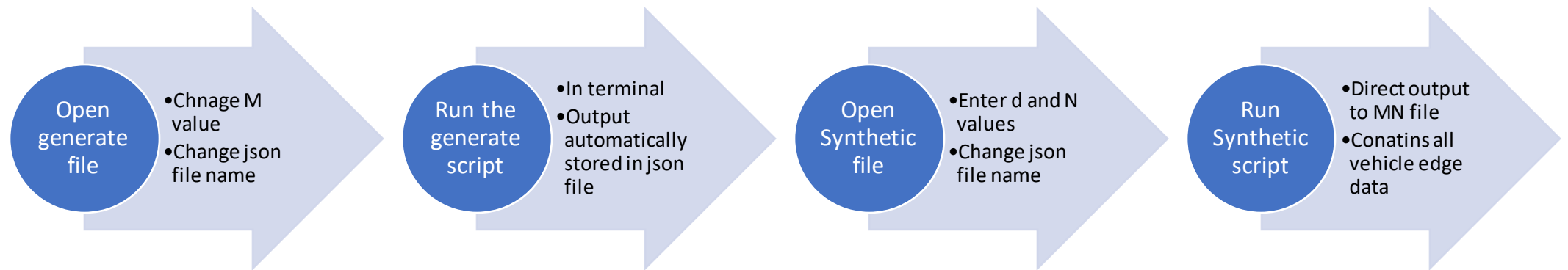


Data Set Generation

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Synthetic Data set

Flow of Working



Generate Edge Data

- This file contains the generation of all the data elements specific to each edge.
- While degenerating data for multiple values of N , for the same value of M we utilize the same edge data i.e. this file is only run once for a particular value of M
- Need to modify value of M and name of json file according to need
- Output will be stored automatically in a json file

Generate Edge Data

- All variables except `vel_at_edge`, `bw_const` and `density` are assigned random values in a specified range
- `bw_const` and `density` are fixed values
- `vel_at_edge` is calculated by the formula $\text{vel_at_edge} = \text{vel_free} * (1 - (\text{density} / \text{density_jam}))$

Synthetic Data Generator

Load Edge Data from json file

Calculate vehicle paths

Calculate earliest arrival time and latest departure time of vehicles at edges

Sort these vehicles and make a list of common vehicles at an edge

Calculate vehicle to edge travel time matrix

Calculate overlapping sets

Calculate length of overlapping sets

Synthetic Data Generator

- Modify the values of d (square root of perfect square M) and N (Number of Vehicles)
- Change the name of input json file accordingly
- Run the script using command `python3 Synthetic_data_generator.py`
- Direct the printed output into a file of the naming format `M__N__Data.txt` (e.g. `M36N140Data.txt`)

Real Data Set

Real data Generator

Extract list of vehicles passing through the chosen edges from xml file

Create fine set of vehicles satisfying passing through at least $M/10$ edges criteria

Extract length of road segments

Extract Vehicle routes

Create a distance matrix based on length of roads and vehicle routes

Vehicle path matrix calculation

Overlapping sets and V2E travel time calculation

(After vehicle path generation rest is similar to synthetic data set)

Real Data Generator

- Modify the values of M (Number of Edges) and N (Number of Vehicles)
- Change the name of input json file accordingly
- Run the script using command `python3 Real_data_generator.py`
- Direct the printed output into a file of the naming format M__N__Data.txt (e.g. M36N140DataR.txt)