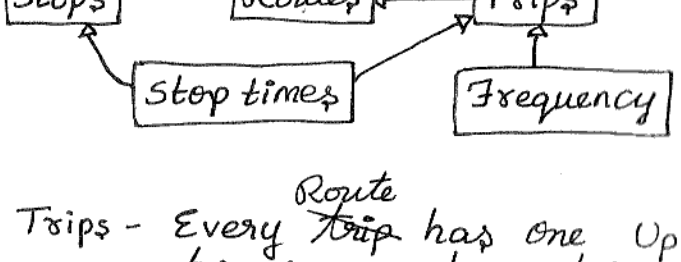
GTFS Data for Non-scheduled Routing



Trips - Every ~~Trip~~ Route has one Up trip & one down trip

Stop times - Gives relative time of stops.

Non-scheduled Routing

Input :

* Source
* Destination

Output :

* A list of Changeovers and routes connecting them. (Optimize for high frequency)

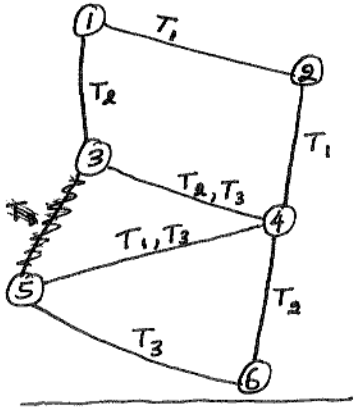
How?

1. Create and populate FrequencyGraph that is a Complete Graph with 'n' stops and n(n-1) edges.
2. Find list of changeovers corresponding to maximum frequency of services.
3. Find Routes between changeovers and order them by frequency.

Eg: Stops : 1, 2, 3, 4, 5, 6

Trips :

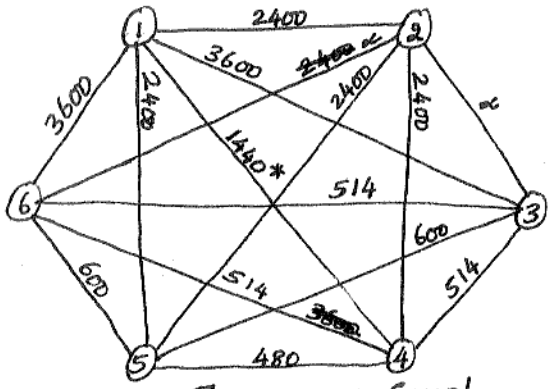
					Frequency (in headway seconds)
T_1	1	2	4	5	2400
T_1'	5	4	2	1	2400
T_2	1	3	4	6	3600
T_2'	6	4	3	1	3600
T_3	6	5	4	3	600
T_3'	3	4	5	6	600



Adjacency Graph

Stop-times:

	1	2	3	4	5	6
T_1	0:00	0:20	–	0:40	0:50	–
T_2	0:00	–	0:15	0:30	–	0:45
T_3'	~~0:00~~	–	0:00	0:15	0:30	0:40



Frequency Graph

From \ To	1	2	3	4	5	6
1	–	2400	3600	1440	2400	3600
2	2400	–	∝	2400	2400	∝
3	3600	∝	–	514	600	514
4	1440	2400	514	–	480	~~3600~~ 514
5	2400	2400	600	480	–	600
6	3600	∝	514	~~3600~~ 514	600	–

Frequency table

* - T_1 & T_2 cover stops 1 & 4. ∴

Effective freq at 1-4 $= \dfrac{1}{\frac{1}{f(T_1)} + \frac{1}{f(T_2)}}$

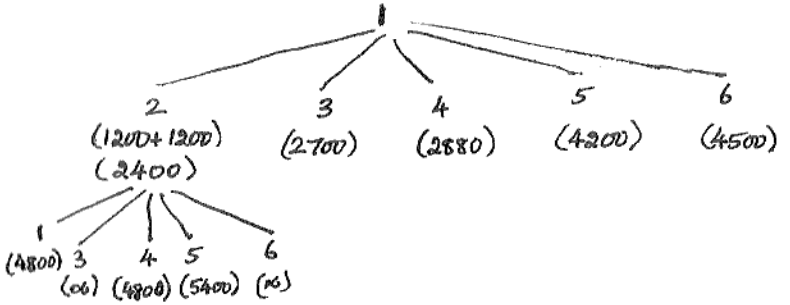
Travel Time Graph:

Similar to Frequency Graph but edges are ~~acv~~ expected travel time between two stops.

|AB| = Weighted average of time delta from A to B in stop_times where weight is frequency of individual trips.

From \ To	1	2	3	4	5	6
1	-	1200	900	2160	3000	2700
2	1200	-	∞	1200	1800	∞
3	900	∞	-	900	1800	2314
4	2160	1200	900	-	840	1414
5	3000	1800	1800	840	-	600
6	2700	∞	2314	1414	600	-

Travel Time table



State space tree for Routing