Assignment: 1

AIM: Obtain data for training model to predict congestion on the nodes.

Below dataset was obtained from
https://www.kaggle.com/datasets/hasibullahaman/traffic-prediction-dataset

The model dataset contains four classes of vehicles: cars, bikes, buses, and trucks. The dataset is stored in a CSV file and includes additional columns such as time in hours, date and counts for each vehicle type (CarCount, BikeCount, BusCount, TruckCount) for each node. The "Total" column represents the total count of all vehicle types detected within a 15-minute duration.

The dataset includes a column indicating the traffic situation categorized into four classes: 1-Heavy, 2-High, 3-Normal, and 4-Low. This information can help assess the severity of congestion and monitor traffic conditions at different times of the day. It contains around 3000 entries.

Obtained dataset:

Time	Node	CarCount	BikeCount	BusCount	TruckCount	TrafficSituation
00:00:00	10	31	0	4	4	low
00:15:00	10	49	0	3	3	low
00:30:00	10	46	0	3	6	low
00:45:00	10	51	0	2	5	low
01:00:00	10	57	6	15	16	normal
01:15:00	10	44	0	5	4	low
01:30:00	10	37	0	1	4	low
01:45:00	10	42	4	4	5	low
02:00:00	10	51	0	9	7	low
02:15:00	10	34	0	4	7	low
02:30:00	10	45	0	1	1	low
02:45:00	10	45	0	1	3	low
03:00:00	10	50	0	3	0	low
03:15:00	10	34	0	4	4	low
03:30:00	10	129	22	42	1	heavy
03:45:00	10	144	16	49	0	heavy
04:00:00	10	111	28	20	3	normal
04:15:00	10	67	11	10	16	normal

04:30:00	10	65	24	7	16	normal
04:45:00	10	94	27	7	16	normal
05:00:00	10	94	20	8	7	normal
05:15:00	10	67	29	5	10	low
05:30:00	10	56	12	2	14	normal
05:45:00	10	57	13	3	11	low
06:00:00	10	129	22	42	1	heavy
06:15:00	10	144	16	49	0	heavy
06:30:00	10	111	28	20	3	normal
06:45:00	10	120	27	46	3	heavy
07:00:00	10	102	39	47	1	heavy
07:15:00	10	145	23	27	0	heavy
07:30:00	10	114	37	21	5	heavy
07:45:00	10	108	18	22	1	normal
08:00:00	10	122	28	33	1	heavy
08:15:00	10	114	39	30	3	heavy
08:30:00	10	150	36	25	1	heavy
08:45:00	10	107	10	49	2	heavy
09:00:00	10	124	24	22	0	heavy
09:15:00	10	77	16	39	29	high
09:30:00	10	15	23	30	21	normal
09:45:00	10	32	22	38	21	high
10:00:00	10	68	13	29	24	high
10:15:00	10	27	16	36	30	normal
10:30:00	10	76	7	11	15	normal
10:45:00	10	41	23	20	17	normal
11:00:00	10	33	10	3	29	normal
11:15:00	10	58	8	14	29	normal
11:30:00	10	65	7	11	26	normal
11:45:00	10	47	9	6	29	normal
12:00:00	10	38	10	5	25	normal
12:15:00	10	57	8	12	29	normal
12:30:00	10	20	6	4	20	normal
12:45:00	10	24	9	14	23	normal
13:00:00	10	52	10	13	21	normal
13:15:00	10	79	15	36	18	high
13:30:00	10	84	24	22	18	normal
13:45:00	10	59	19	35	16	high
14:00:00	10	88	26	31	19	high
14:15:00	10	24	11	32	13	normal
14:30:00	10	110	17	23	20	heavy
14:45:00	10	29	26	5	6	low
15:00:00	10	43	26	11	20	normal
15:15:00	10	68	28	9	15	normal
15:30:00	10	108	16	8	18	normal
15:45:00	10	101	26	8	14	normal
16:00:00	10	141	31	36	6	heavy
16:15:00	10	120	25	28	5	heavy

16:30:00	10	137	23	44	5	heavy
16:45:00	10	124	11	30	7	heavy
17:00:00	10	145	25	49	7	heavy
17:15:00	10	122	37	23	8	heavy
17:30:00	10	136	30	20	9	heavy
17:45:00	10	145	18	40	9	heavy
18:00:00	10	138	34	28	5	heavy
18:15:00	10	123	10	29	8	heavy
18:30:00	10	105	15	21	9	normal
18:45:00	10	75	22	20	11	normal
19:00:00	10	90	12	10	13	normal
19:15:00	10	102	22	20	16	normal
19:30:00	10	61	18	15	27	high
19:45:00	10	70	8	14	6	low
20:00:00	10	80	17	12	34	high
20:15:00	10	62	12	14	19	normal
20:30:00	10	96	5	11	13	normal
20:45:00	10	102	6	12	13	normal
21:00:00	10	91	14	15	6	normal
21:15:00	10	95	8	17	13	normal
21:30:00	10	75	15	12	21	high
21:45:00	10	53	21	20	10	normal
22:00:00	10	13	1	0	19	normal
22:15:00	10	10	0	1	24	normal
22:30:00	10	16	2	0	33	normal
22:45:00	10	11	1	0	29	normal
23:00:00	10	18	2	1	13	normal
23:15:00	10	15	0	1	11	low
23:30:00	10	14	1	0	33	normal
23:45:00	10	17	2	0	22	normal
00:00:00	11	12	2	1	17	normal
00:15:00	11	18	0	0	29	normal
00:30:00	11	16	1	0	14	normal
00:45:00	11	20	0	0	14	normal
01:00:00	11	20	1	1	30	normal
01:15:00	11	15	0	1	23	normal
01:30:00	11	16	0	1	26	normal
01:45:00	11	18	4	0	11	low
02:00:00	11	17	3	1	36	normal
02:15:00	11	14	4	1	10	low
02:30:00	11	18	2	1	25	normal
02:45:00	11	12	2	0	19	normal
03:00:00	11	11	4	0	30	normal
03:15:00	11	19	1	1	36	normal
03:30:00	11	10	4	0	36	normal
03:45:00	11	20	1	1	32	normal
04:00:00	11	15	5	1	40	normal
04:15:00	11	104	6	5	1	normal

Time					
04:30:00	11	109	25	3	8	normal
04:45:00	11	82	23	8	20	normal
05:00:00	11	81	25	1	18	normal
05:15:00	11	95	16	10	1	normal
05:30:00	11	91	24	7	6	normal
05:45:00	11	81	30	10	0	normal
06:00:00	11	125	13	26	2	high
06:15:00	11	125	39	49	3	heavy
06:30:00	11	125	34	37	1	heavy
06:45:00	11	125	19	25	4	heavy
07:00:00	11	125	15	49	0	heavy
07:15:00	11	125	32	50	5	heavy
07:30:00	11	125	38	50	1	heavy
07:45:00	11	125	29	29	3	heavy
08:00:00	11	125	31	48	4	heavy
08:15:00	11	125	32	50	0	heavy
08:30:00	11	125	31	45	0	heavy
08:45:00	11	125	21	20	1	normal
09:00:00	11	125	28	36	0	heavy
09:15:00	11	39	10	37	16	normal
09:30:00	11	89	8	12	13	normal
09:45:00	11	51	16	16	13	normal
10:00:00	11	17	9	18	28	normal
10:15:00	11	48	25	36	21	high
10:30:00	11	93	7	30	16	high
10:45:00	11	55	15	36	15	high
11:00:00	11	51	10	8	22	normal
11:15:00	11	51	7	3	24	normal
11:30:00	11	51	9	7	30	normal
11:45:00	11	51	7	14	20	normal
12:00:00	11	51	10	14	20	normal
12:15:00	11	51	10	6	22	normal
12:30:00	11	51	8	11	22	normal
12:45:00	11	51	6	10	26	normal
13:00:00	11	51	7	7	27	normal
13:15:00	11	104	17	25	20	normal
13:30:00	11	6	28	27	14	normal
13:45:00	11	54	29	37	9	high
14:00:00	11	43	13	30	20	normal
14:15:00	11	60	21	26	11	high
14:30:00	11	101	23	8	20	normal
14:45:00	11	62	26	19	11	normal
15:00:00	11	39	24	13	11	low
15:15:00	11	90	20	35	7	high
15:30:00	11	109	30	22	20	heavy
15:45:00	11	68	26	25	20	normal
16:00:00	11	142	22	37	6	heavy
16:15:00	11	113	14	20	5	normal

16:30:00	11	142	13	37	8	heavy
16:45:00	11	108	23	26	9	high
17:00:00	11	122	29	30	7	heavy
17:15:00	11	133	12	30	7	heavy
17:30:00	11	118	23	38	10	heavy
17:45:00	11	121	35	26	8	heavy
18:00:00	11	116	23	20	8	normal
18:15:00	11	132	12	27	8	heavy
18:30:00	11	144	17	33	7	heavy
18:45:00	11	103	21	11	11	normal
19:00:00	11	107	15	10	15	normal
19:15:00	11	50	10	10	17	normal
19:30:00	11	108	15	10	6	normal
19:45:00	11	108	24	15	29	heavy
20:00:00	11	101	6	15	13	normal
20:15:00	11	55	17	12	19	normal
20:30:00	11	77	7	20	16	normal
20:45:00	11	91	12	19	8	normal
21:00:00	11	95	25	17	29	high
21:15:00	11	78	17	17	27	high
21:30:00	11	98	16	16	21	high
21:45:00	11	86	13	11	35	high
22:00:00	11	18	4	0	16	normal
22:15:00	11	18	5	0	12	low
22:30:00	11	18	2	1	25	normal
22:45:00	11	18	1	0	17	normal
23:00:00	11	18	5	0	21	normal
23:15:00	11	18	0	1	12	low
23:30:00	11	18	3	1	28	normal
23:45:00	11	18	4	1	40	normal
00:00:00	12	18	1	1	39	normal
00:15:00	12	18	4	0	30	normal
00:30:00	12	18	5	1	13	normal
00:45:00	12	18	2	0	37	normal
01:00:00	12	18	0	0	13	normal
01:15:00	12	18	5	0	11	low
01:30:00	12	18	5	1	12	low