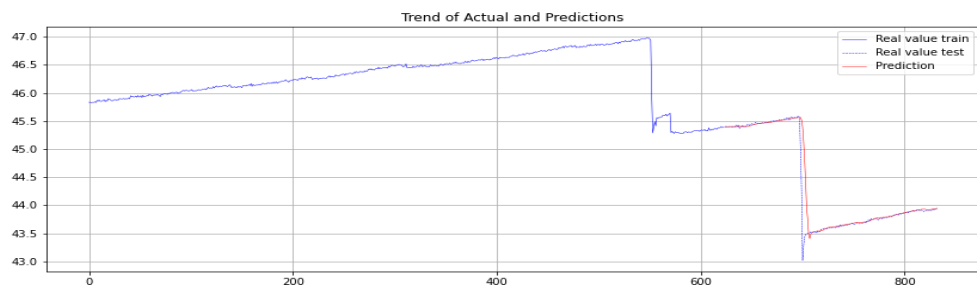
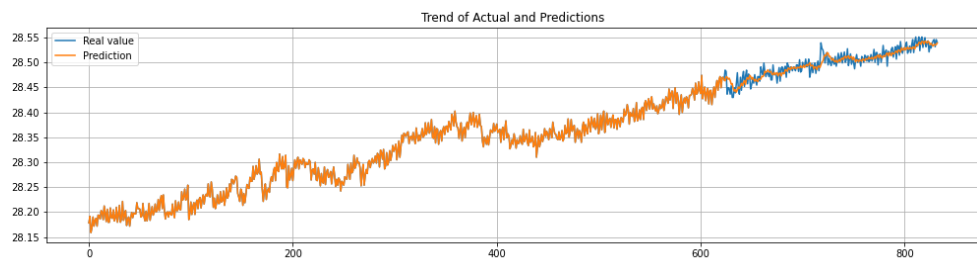
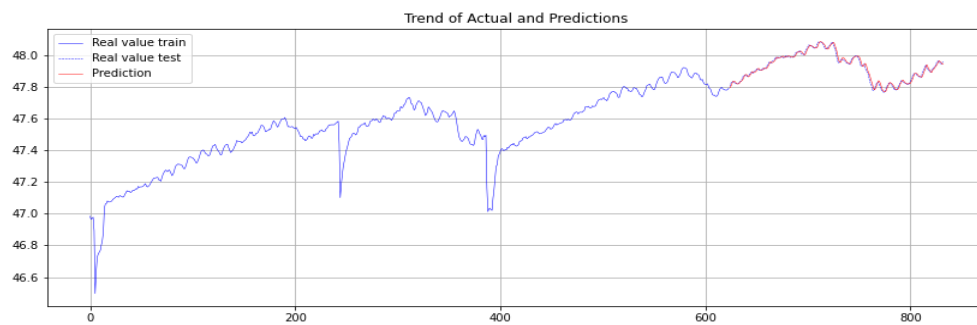


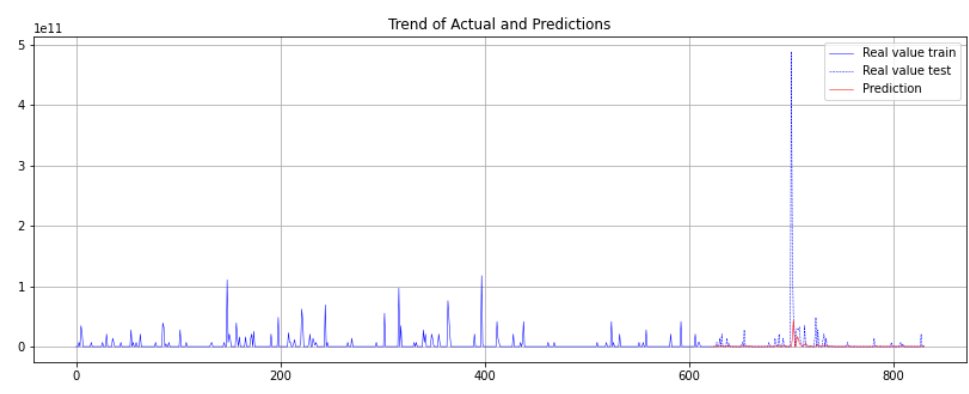
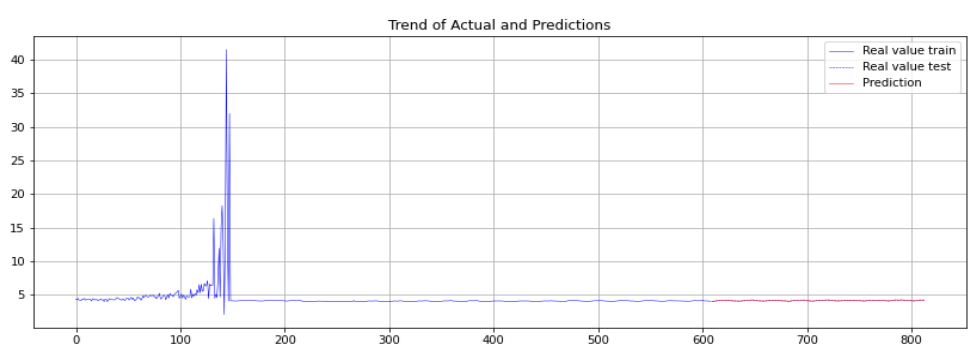
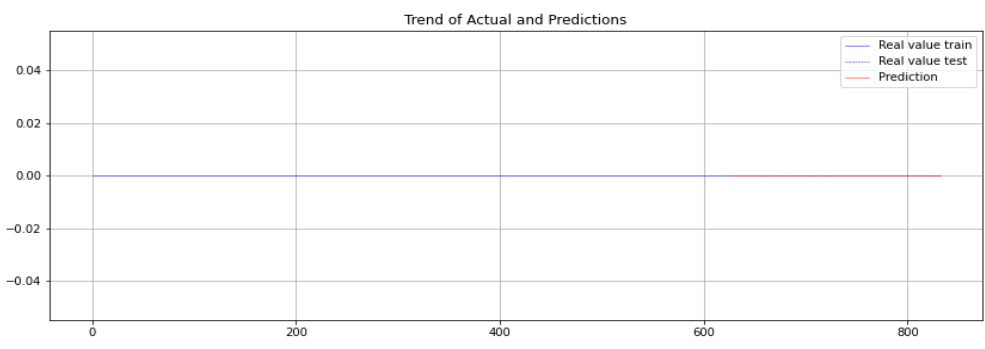
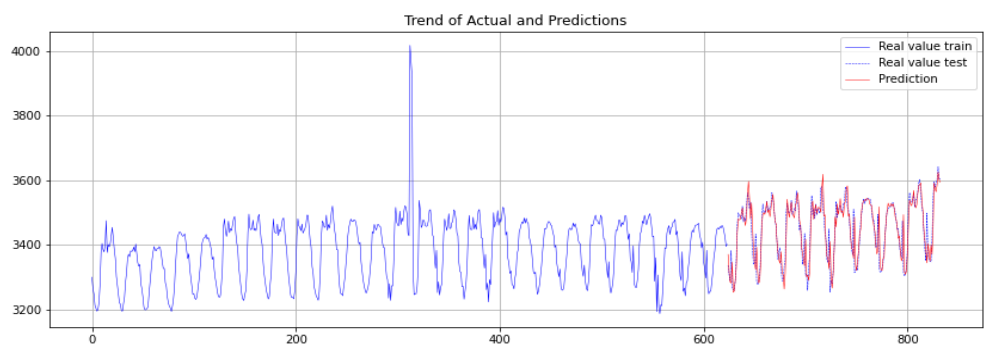
TABLE OF CONTENTS

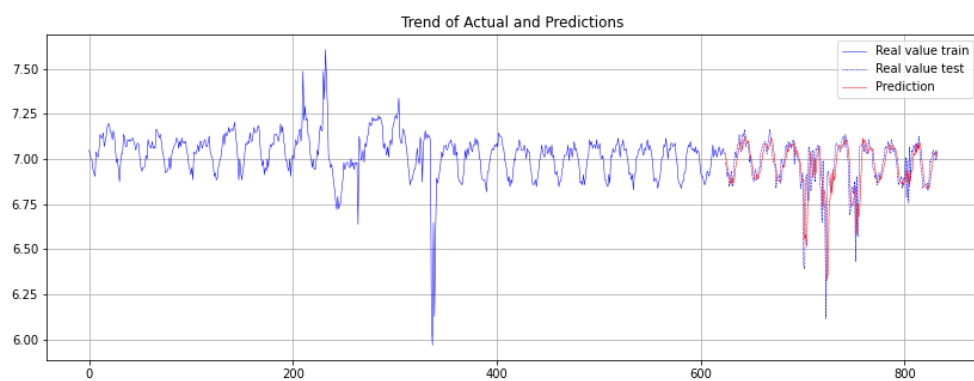
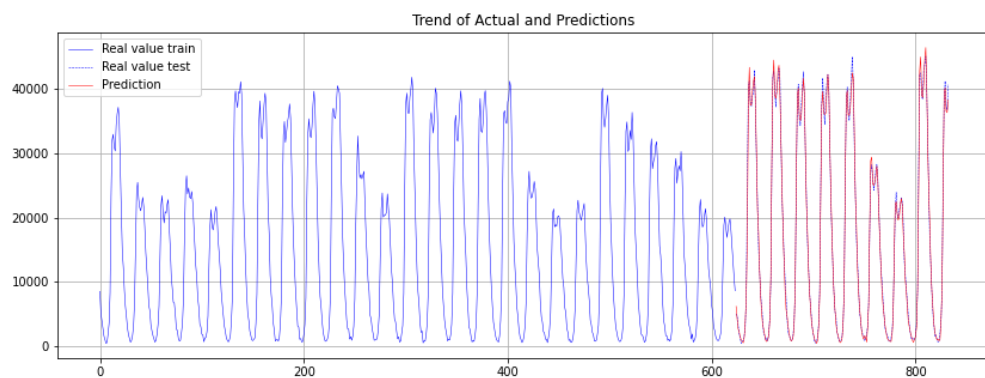
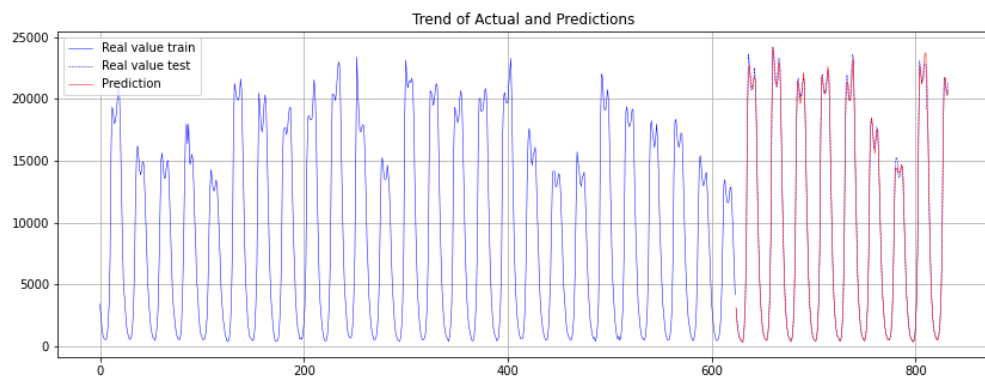
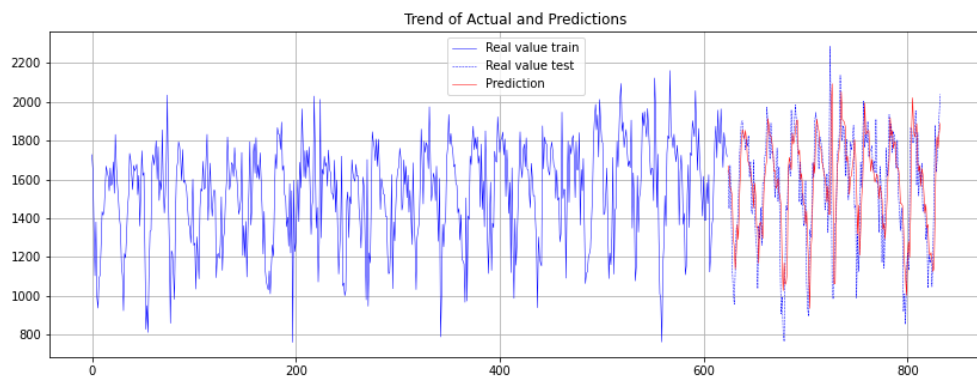
Sno.	Title
1	PLOTS
2	MATRICES(MAE, RMSE, MAPE, MSE)
3	WHY REVIN?
4	PARAMETERS
5	METHODOLOGY

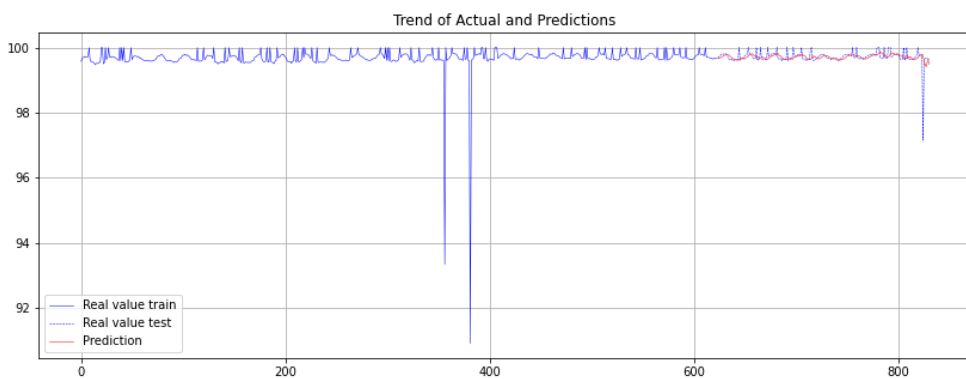
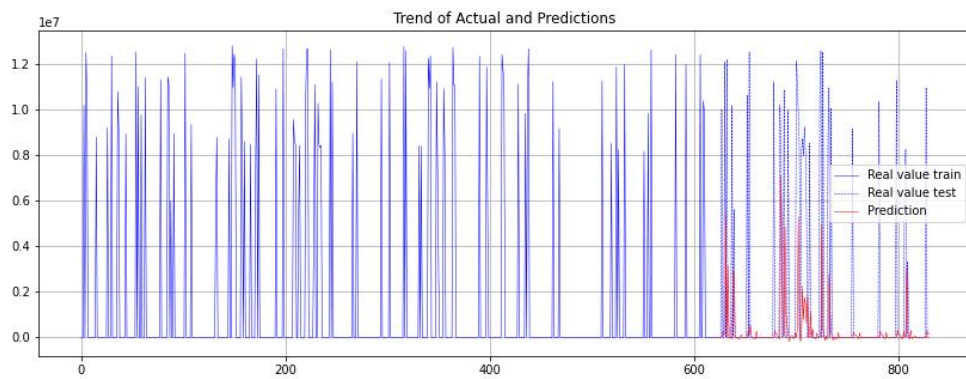
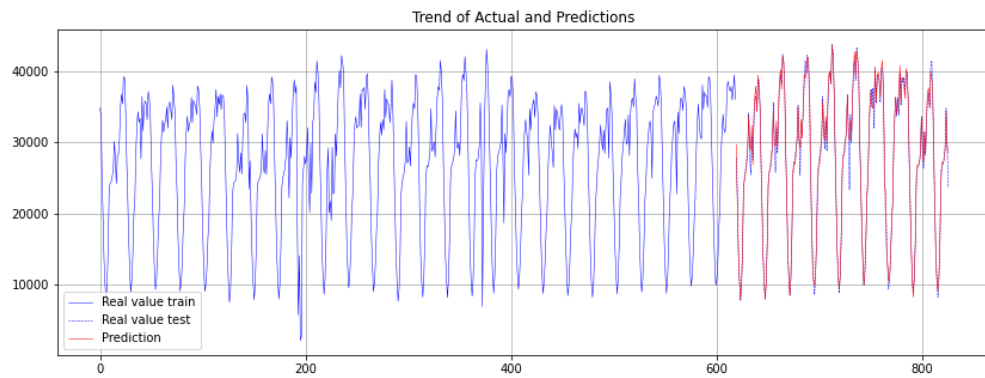
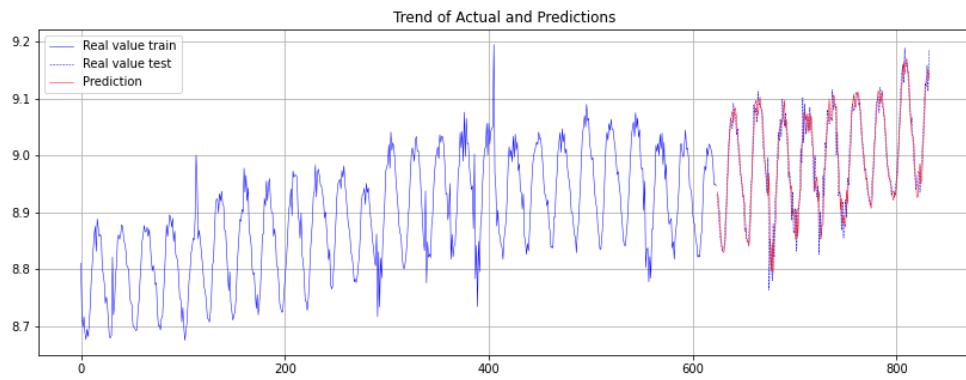
1. FORECAST PLOTS FOR EACH TIMESERIES DATA (0-49)

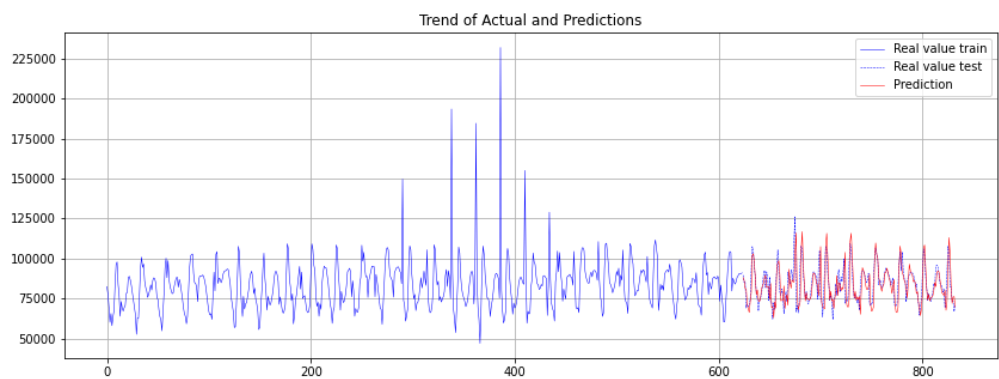
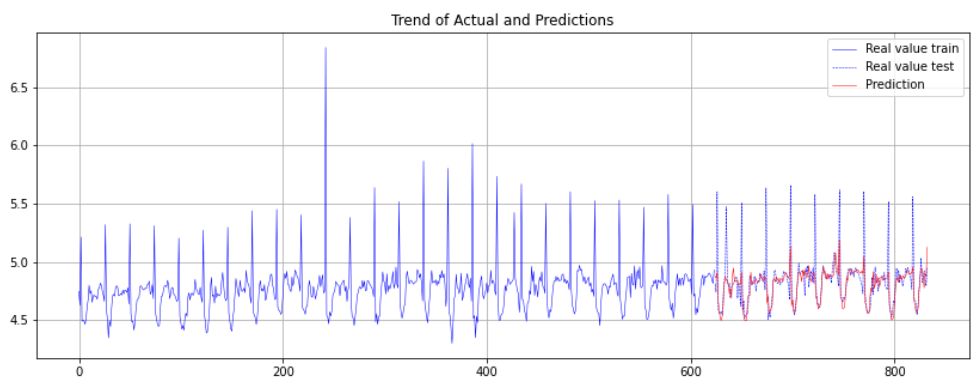
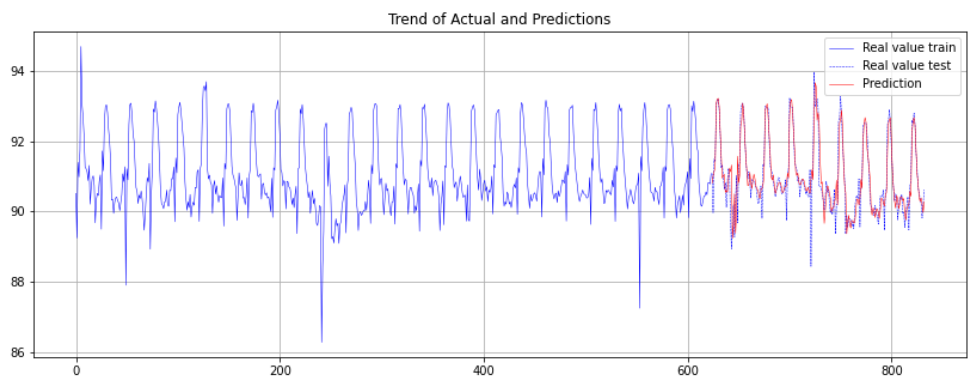
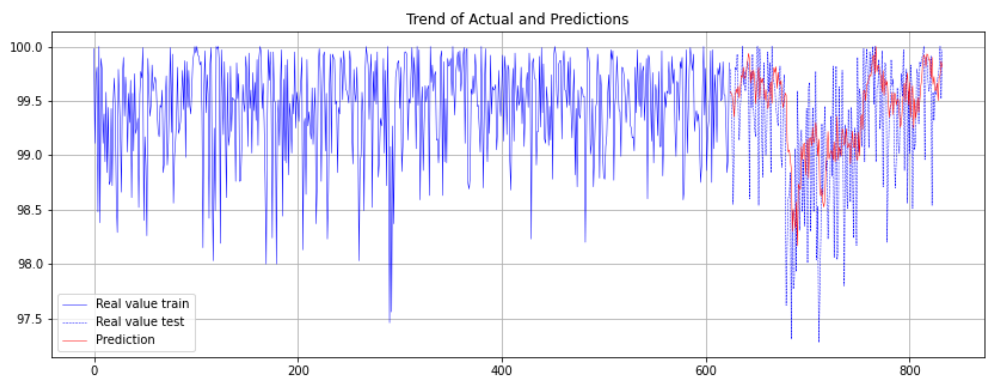
since the quality of plots is poor in pdf kindly refer to this [link](#) for higher quality plots

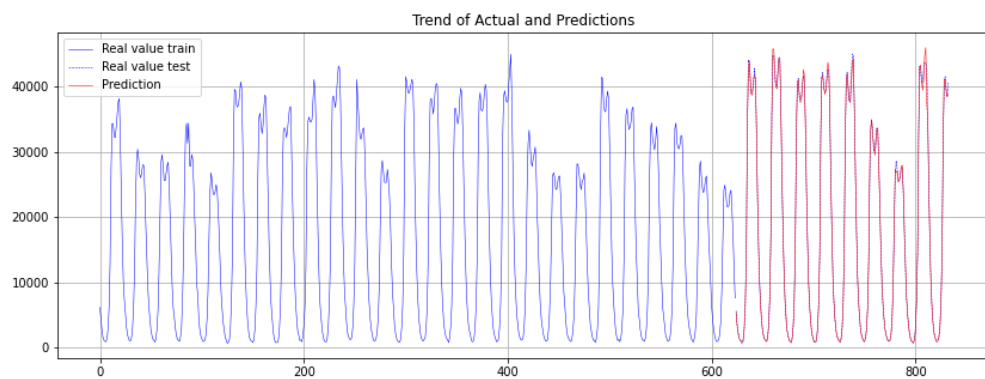
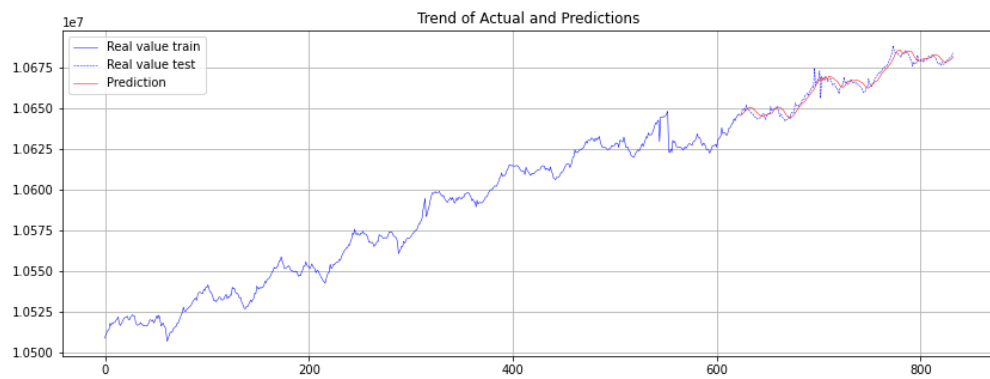
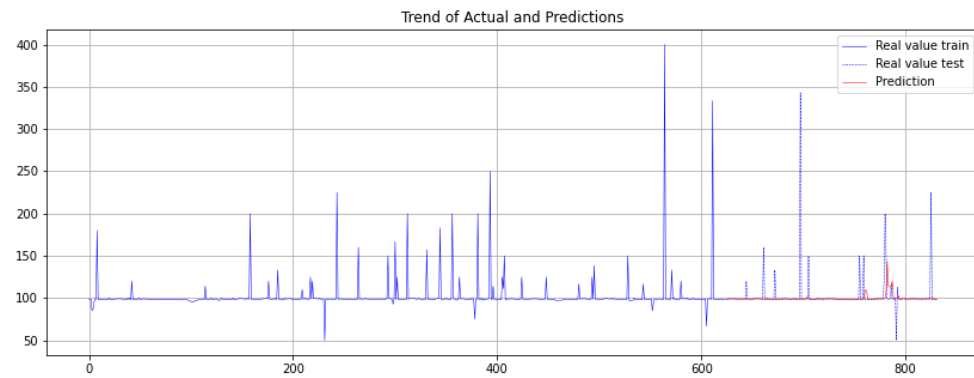
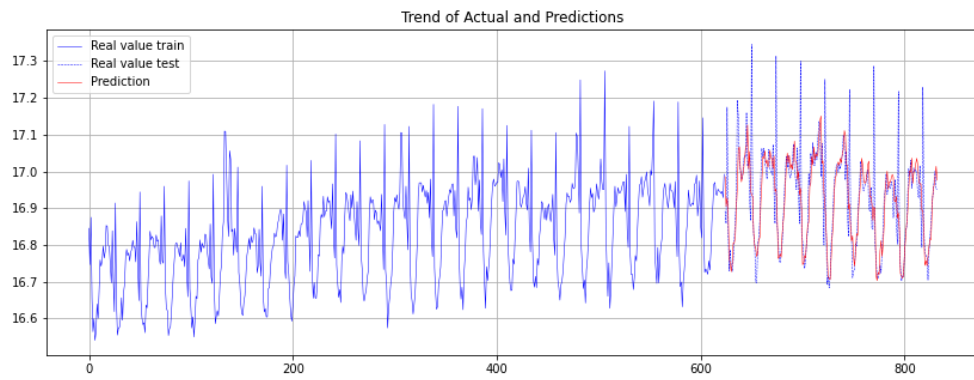


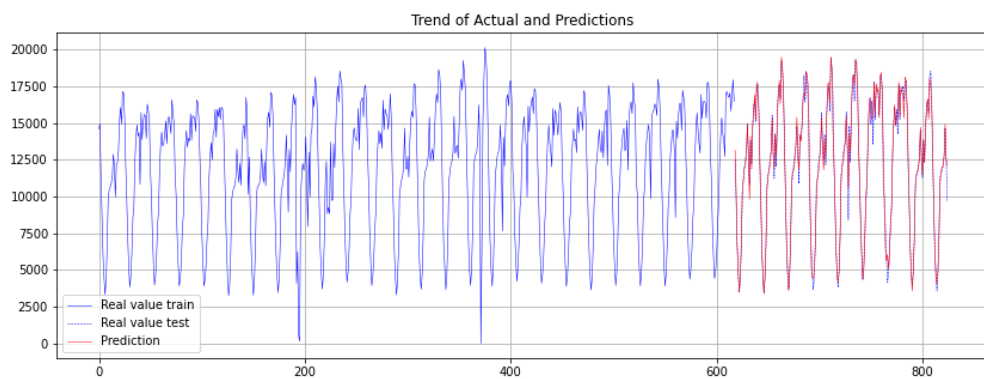
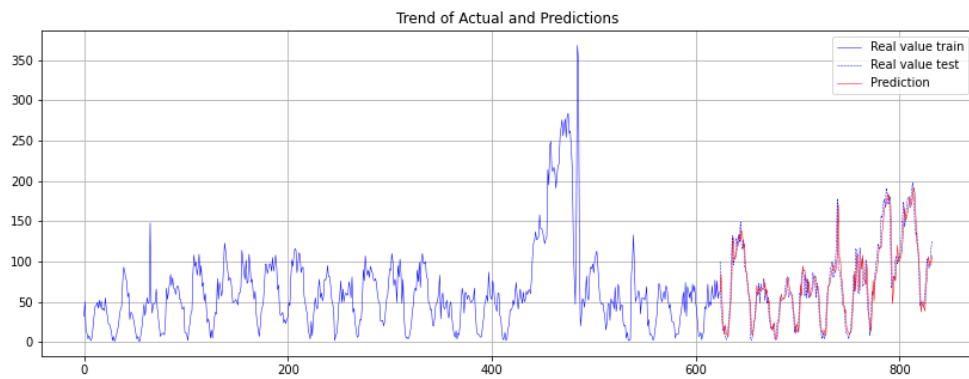
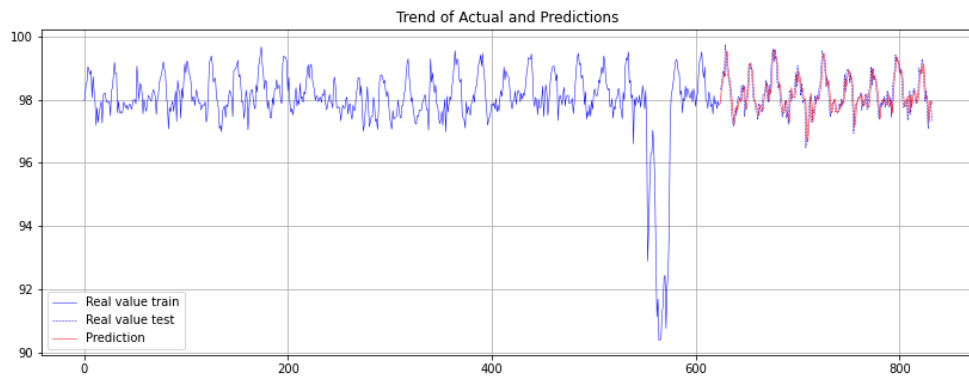
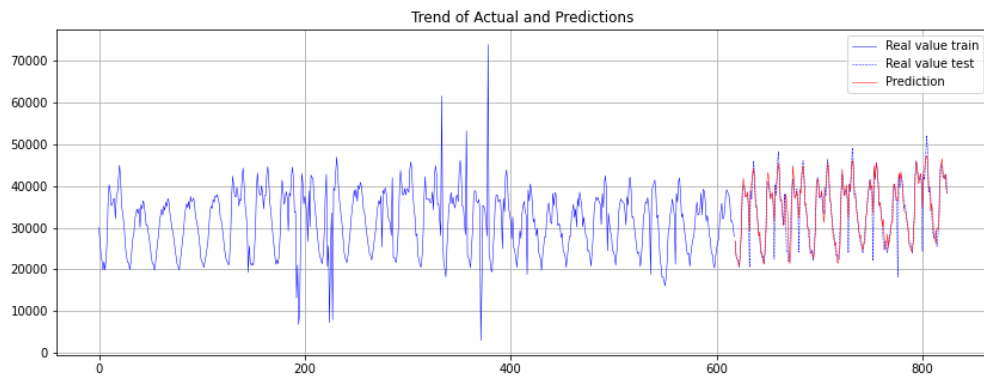


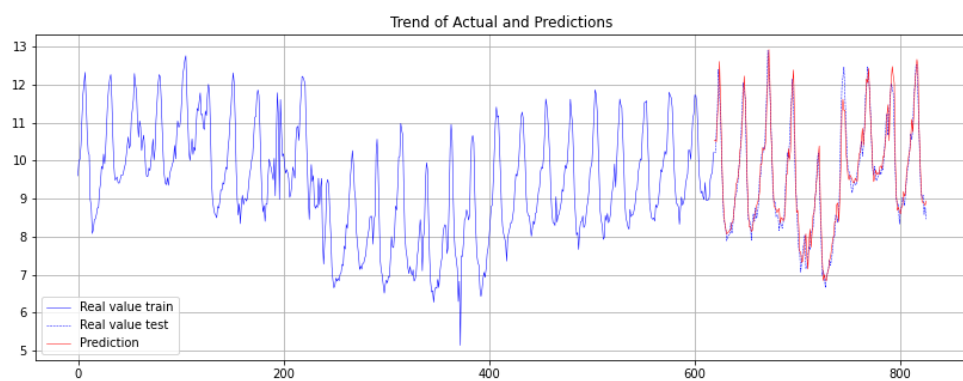
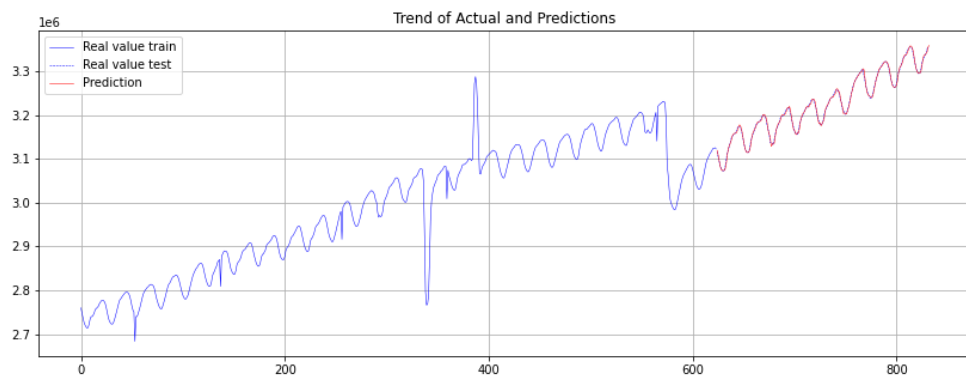
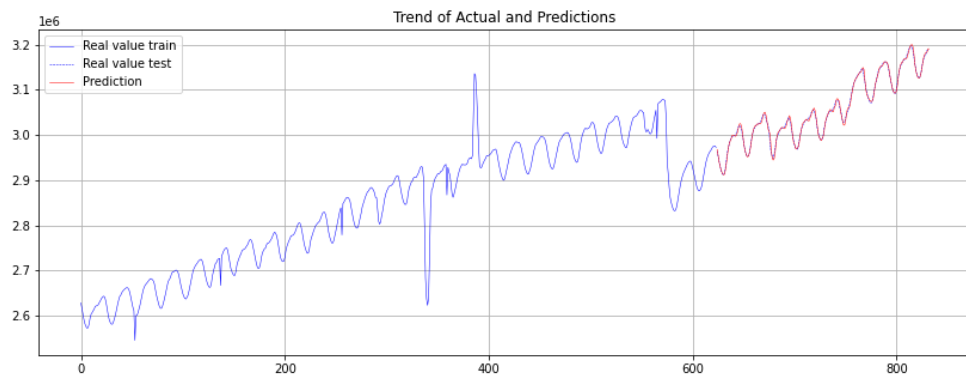
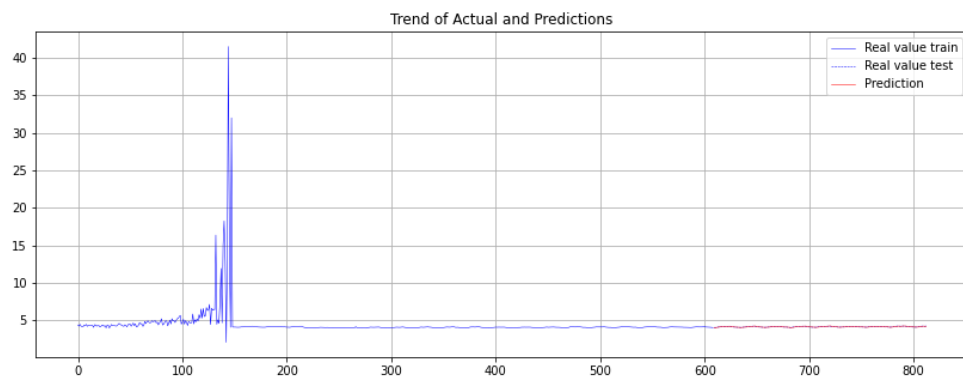


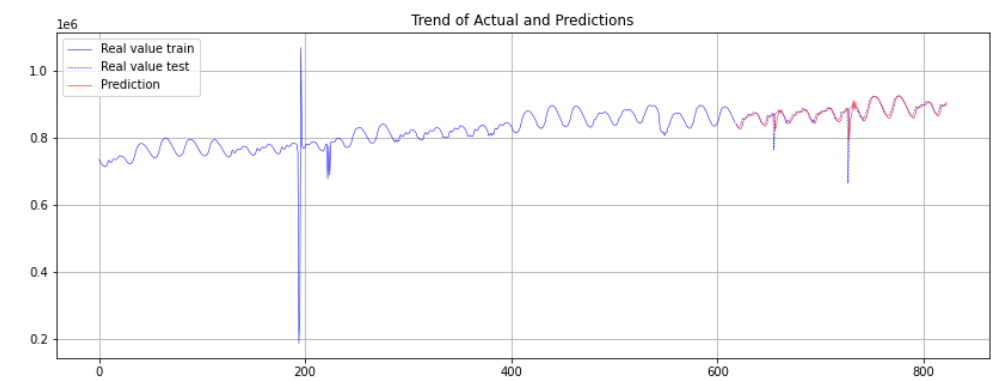
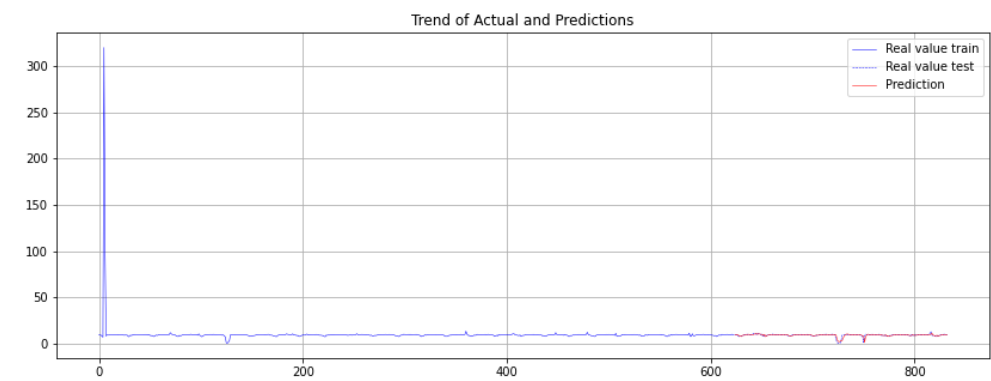
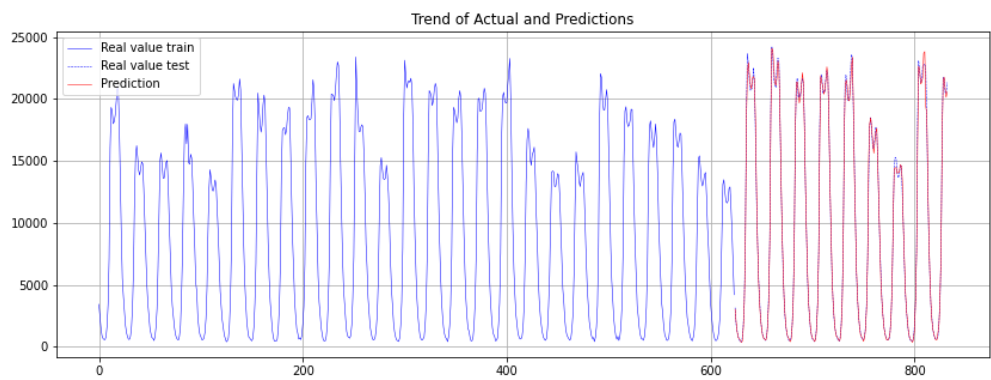
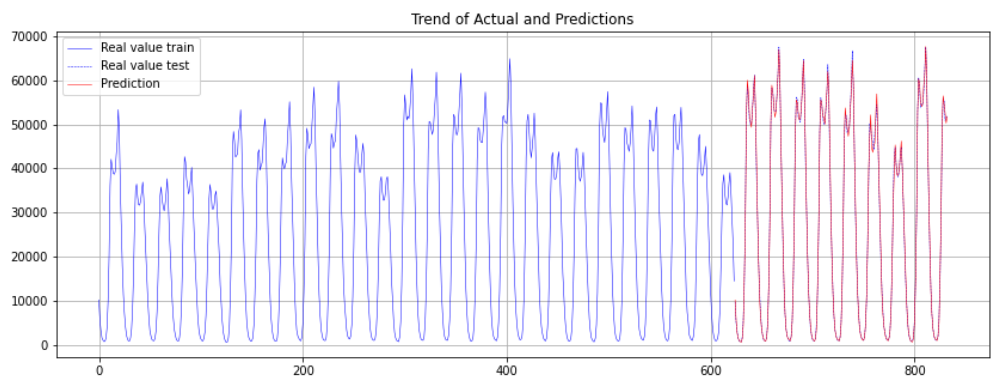


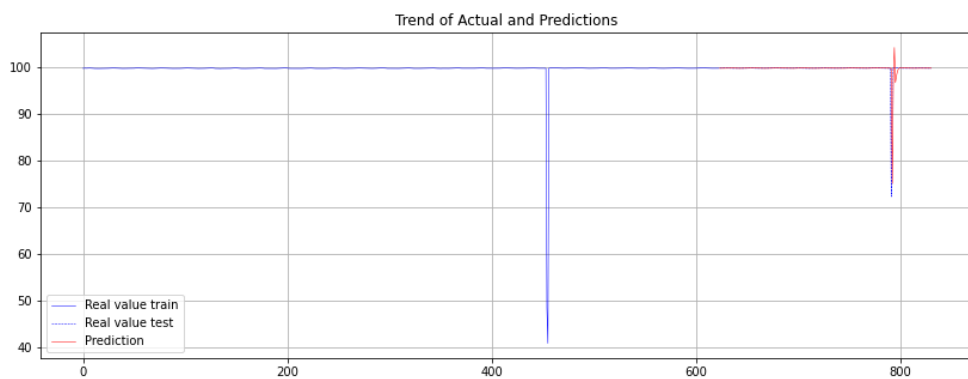
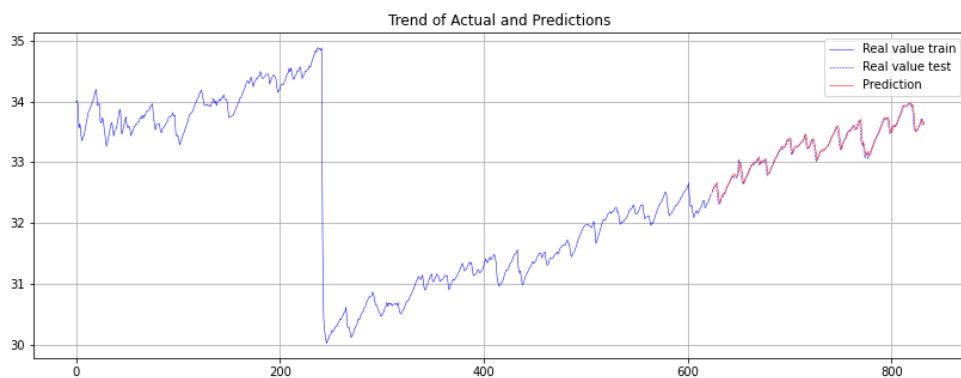
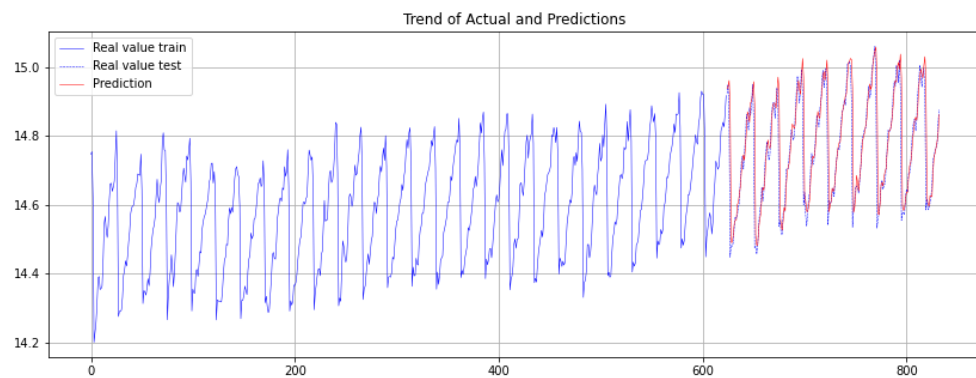
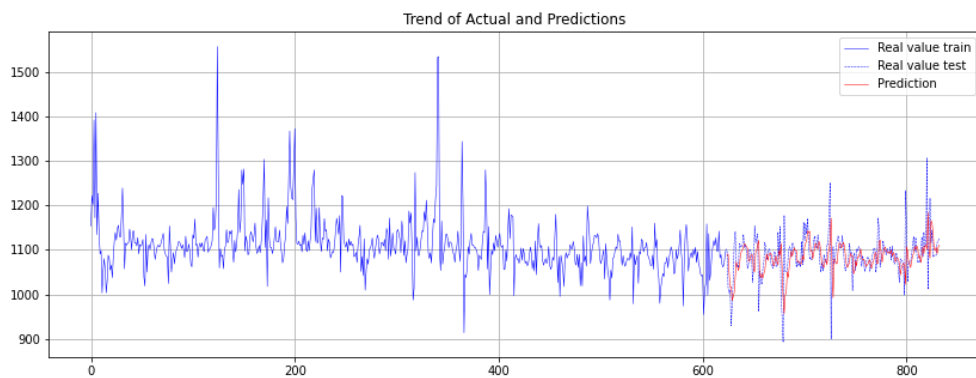


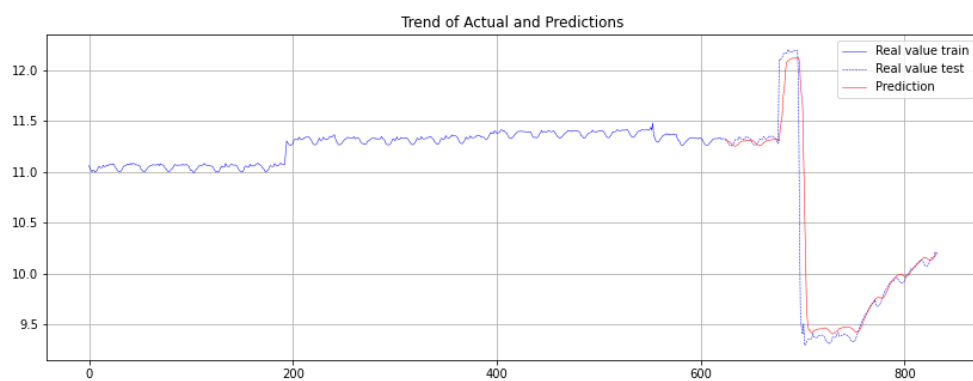
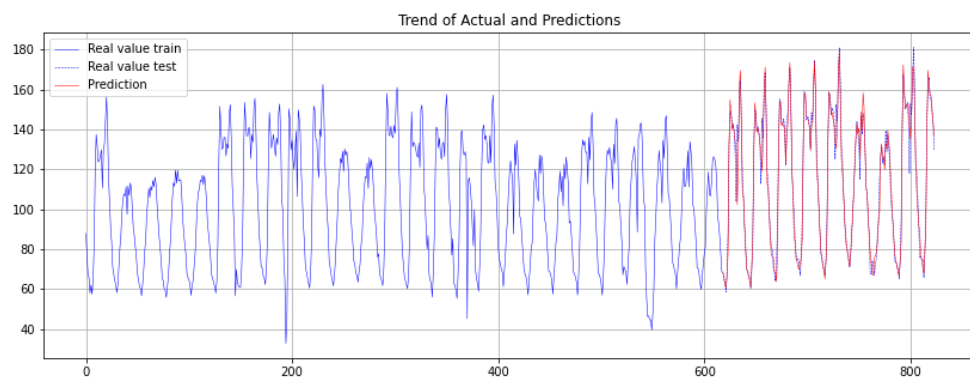
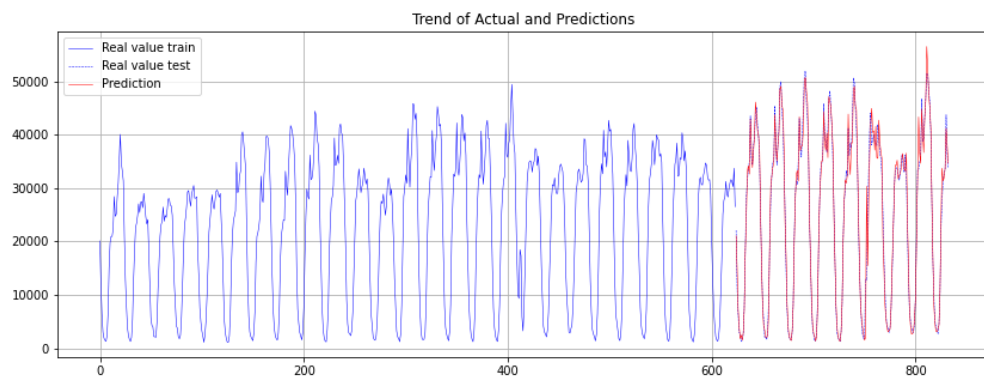
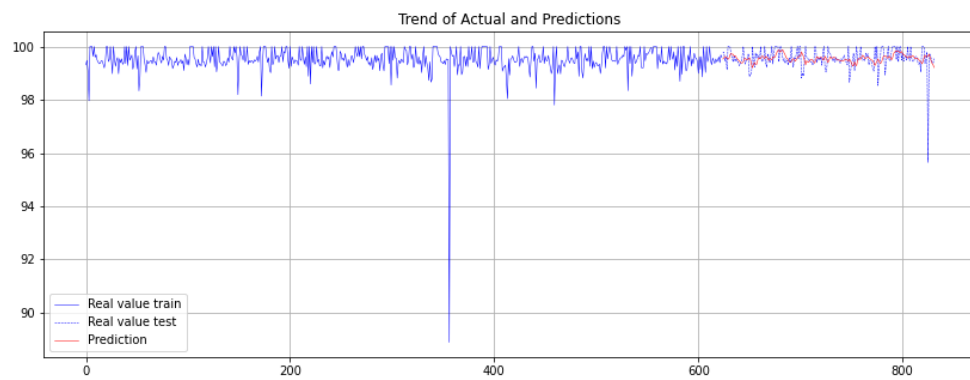


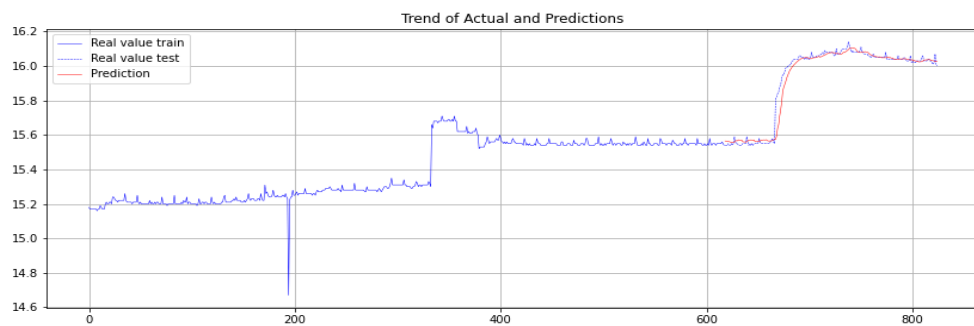
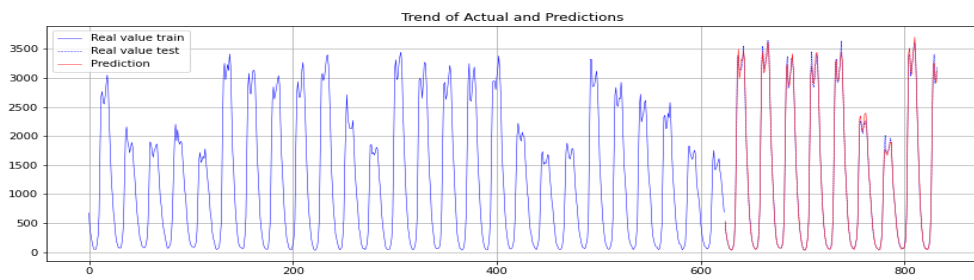
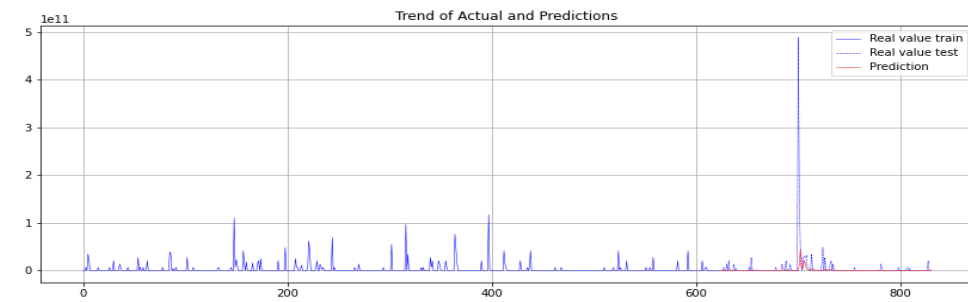
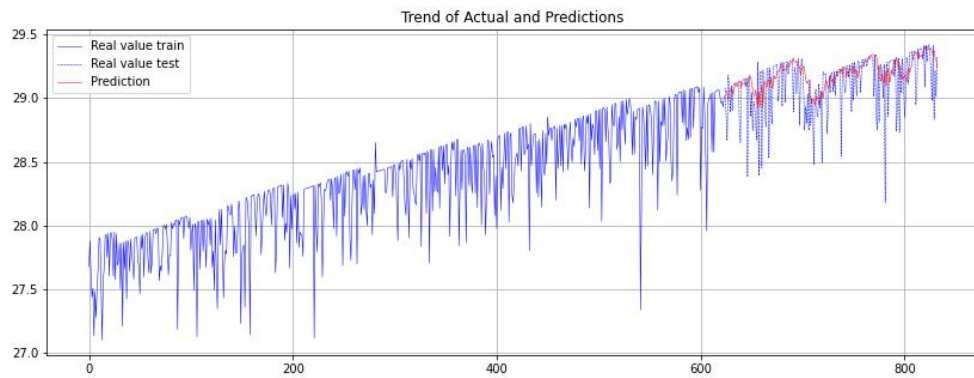
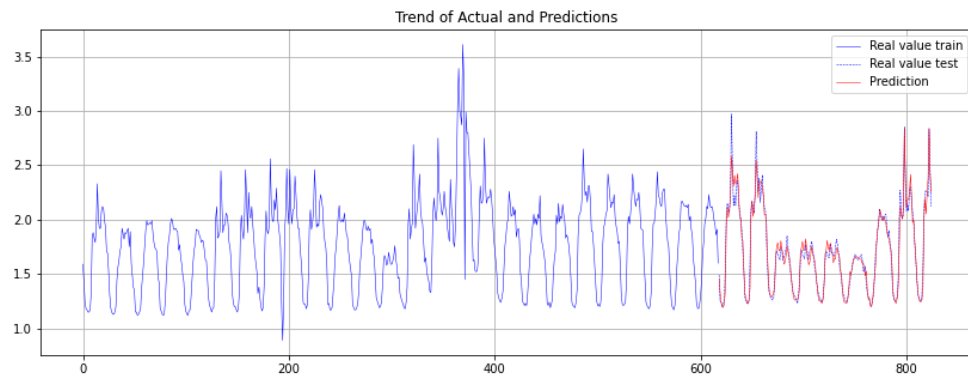


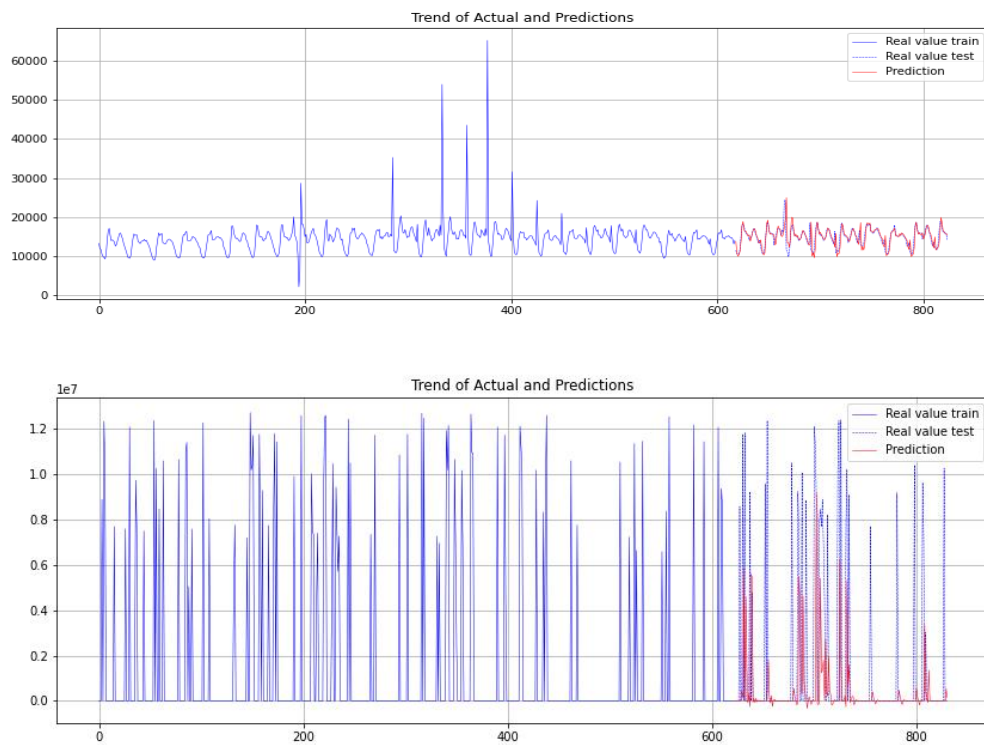












2.SCORE TABLE FOR EACH DATAFILE(0-49)

Sno.	Mae	mse	rmse	mape
0	0.00959	0.000151	0.012292	0.020013
1	0.010154	0.000156	0.012475	0.035633
2	0.055815	0.067119	0.259073	0.127757
3	27.3482	1978.104	44.47588	0.79791
4	0	0	0	0
5	0.015047	0.000423	0.020556	0.359561
6	5.6E+09	1.29E+21	3.59E+10	38980816
7	148.6449	42232.02	205.5043	10.69871
8	279.6553	203602.2	451.223	5.478514
9	732.0327	1149656	1072.22	10.84537
10	0.078259	0.015456	0.124321	1.138162
11	0.025426	0.001197	0.034599	0.283182
12	815.2981	1644913	1282.542	3.20051
13	1746033	1.57E+13	3957316	5787825
14	0.0941	0.046751	0.21622	0.094625
15	0.413506	0.307578	0.554597	0.418137
16	0.311476	0.235638	0.485425	0.343557
17	0.084188	0.024115	0.155291	1.671114
18	6068.432	83426450	9133.808	7.273196
19	0.053344	0.007868	0.088701	0.313523
20	5.189277	515.0099	22.69383	3.519714
21	2283.675	8877280	2979.477	0.021413
22	467.4463	591857.9	769.323	4.284516

23	1704.848	8682367	2946.586	5.811403
24	0.317228	0.159847	0.399809	0.323242
25	14.59145	380.829	19.51484	37.79413
26	402.3704	366242.3	605.1796	3.814001
27	0.014892	0.000419	0.020474	0.35586
28	3117.889	18059842	4249.688	0.102169
29	2862.275	14176960	3765.231	0.088954
30	0.263711	0.124556	0.352924	2.727055
31	616.4436	819256.3	905.1278	4.110164
32	278.2714	206151.6	454.0393	5.399682
33	0.560329	1.251221	1.11858	11.61635
34	8629.288	4.27E+08	20666.23	1.032198
35	32.39646	2688.276	51.84858	2.987091
36	0.039842	0.008068	0.08982	0.271306
37	0.041732	0.00438	0.06618	0.125678
38	0.333017	6.793387	2.606412	0.383845
39	0.256678	0.176019	0.419547	0.258553
40	1511.864	6187256	2487.419	9.601218
41	4.092912	42.40166	6.511655	3.704571
42	0.119817	0.125673	0.354504	1.190325
43	0.054026	0.005956	0.077176	3.024596
44	0.155955	0.052798	0.229778	0.539668
45	5.61E+09	1.29E+21	3.59E+10	3329299
46	59.51254	6907.899	83.11377	8.648508
47	0.020616	0.001622	0.040278	0.129823
48	922.4132	3068208	1751.63	6.616706
49	1651960	1.38E+13	3711675	1269120

3.WHY REVIN?

Statistical properties such as mean and variance often change over time in time series, i.e., time-series data suffer from a distribution shift problem. This change in temporal distribution is one of the main challenges that prevent accurate time-series forecasting. To address this issue, RevIN proposes a simple yet effective normalization method called reversible instance normalization (RevIN), a generally-applicable normalization-and-denormalization method with learnable affine transformation. The proposed method is symmetrically structured to remove and restore the statistical information of a time-series instance, leading to significant performance improvements in time-series forecasting, as shown in Figs below.

4.PARAMETERS

PARAMTER	ASSIGNED	REASONING
BATCH_SIZE	1024	<i>Best out of [256,512,1024,2048] using trial and error</i>
HORIZON	1	<i>HOW FAR TO PREDICT FORWARD</i>
WINDOW_SIZE	7	<i>HOW FAR TO LOOKBACK</i>
N_EPOCHS	5000	<i>VALUES FROM N-BEATS PAPER FIGURE 1 AND TABLE 18/APPENDIX D</i>
N_NEURONS	512	<i>VALUES FROM N-BEATS PAPER FIGURE 1 AND TABLE 18/APPENDIX D</i>
N_LAYERS	4	<i>VALUES FROM N-BEATS PAPER FIGURE 1 AND TABLE 18/APPENDIX D</i>
N_STACKS	30	<i>VALUES FROM N-BEATS PAPER FIGURE 1 AND TABLE 18/APPENDIX D</i>
THETA_SIZE	INPUT_SIZE+ HORIZON	<i>DEPENDANT PARAM</i>
INPUT_SIZE	WINDOW_SIZE * HORIZON	<i>DEPENDANT PARAM</i>
BACKCAST, FORECAST	THETA[:, :SELF.INPUT_SIZE], THETA[:, -SELF.HORIZON:]	<i>DEPENDANT PARAM</i>

5.METHODOLOGY

- Function for MSE,MAPE,RMSE,MAE calculations are derived
- A data preparation function is defined to create tensor dataset from csv
- Creating Nbeats model object by taking reference from its [research paper](#)
- Creating RevIN normalisation object by taking reference from its [research paper](#)
- Setting parameters
- Defining training step calling all the above dependencies and training the model
- Evaluating the model on test and plotting curves