Project Development Phase
Model Performance Test

Date	21 November 2023
Team ID	Team-592148
Project Name	Project – Smart Home – Temperature Prediction
Maximum Marks	10 Marks

Model Performance Testing:

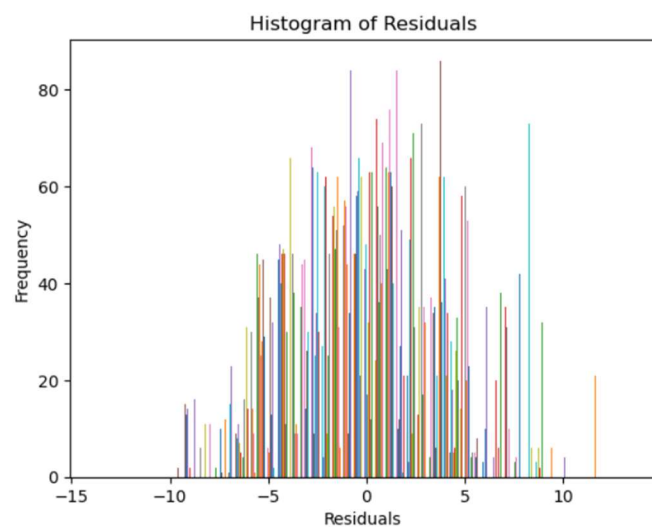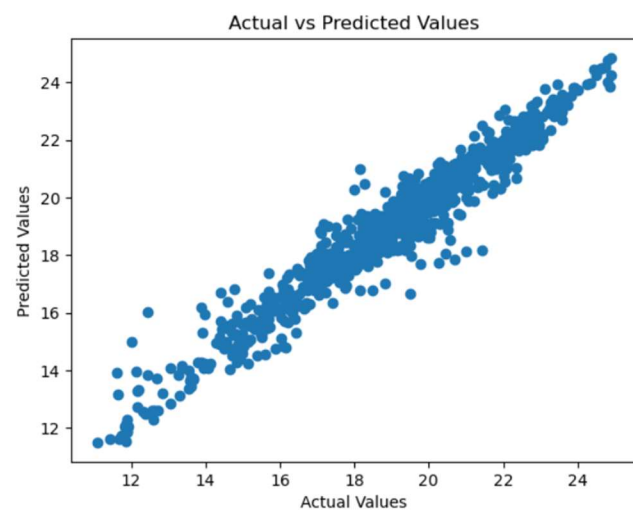| S.No.	Parameter	Values	Screenshot (For Light Gradient Boost Model)

1.	Metrics	**Regression Model:**
		
		For Light Gradient Boost Model(Best Model, selected for project)
		MAE– 0.5090
		MSE – 0.5008
		RMSE – 0.7076
		R2 score – 0.9361
		For Linear Regression Model
		MAE– 1.5727
		MSE – 3.7428
		RMSE – 1.9346
		R2 score – 0.5222
		For Random Forest Model
		MAE– 0.5212
		MSE – 0.6311
		RMSE – 0.7944
		R2 score – 0.9194
		For Xgboost Model
		MAE– 0.5327
		MSE – 0.5384
		RMSE – 0.7338
		R2 score – 0.9313
			<pre><code>1 #for Light Gradient Boost Model
			2 mae = mean_absolute_error(y_test, pred2)
			3 print(mae)
			4 mse1 = mean_squared_error(y_test, pred2)
			5 print(mse1)
			6 nrmse = np.sqrt(mse1)
			7 print(nrmse)
			8 r2_score(y_test,pred2)</code></pre>0.5089989459469727
			0.5007536664270105
			0.7076395031560989
			
			0.9360756052934541
			
			<pre><code>1 #for Linear Regression Model
			2 mae = mean_absolute_error(y_test, pred)
			3 print(mae)
			4 mse1 = mean_squared_error(y_test, pred)
			5 print(mse)
			6 nrmse = np.sqrt(mse1)
			7 print(nrmse)
			8 r2_score(y_test,pred)</code></pre>1.572677907866914
			3.7427887580824297
			1.934628842461114
			
			0.5222091780535016
			
			<pre><code>1 #for Random Forest Model
			2 mae = mean_absolute_error(y_test, pred1)
			3 print(mae)
			4 mse1 = mean_squared_error(y_test, pred1)
			5 print(mse1)
			6 nrmse = np.sqrt(mse1)
			7 print(nrmse)
			8 r2_score(y_test,pred1)</code></pre>0.5211940722891568
			0.6311135111844771
			0.7944265297587166
			
			0.9194343408777197

```
1  #for XgBoost Model
2  mae = mean_absolute_error(y_test, pred3)
3  print(mae)
4  mse1 = mean_squared_error(y_test, pred3)
5  print(mse1)
6  nrmse = np.sqrt(mse1)
7  print(nrmse)
8  r2_score(y_test,pred3)
```
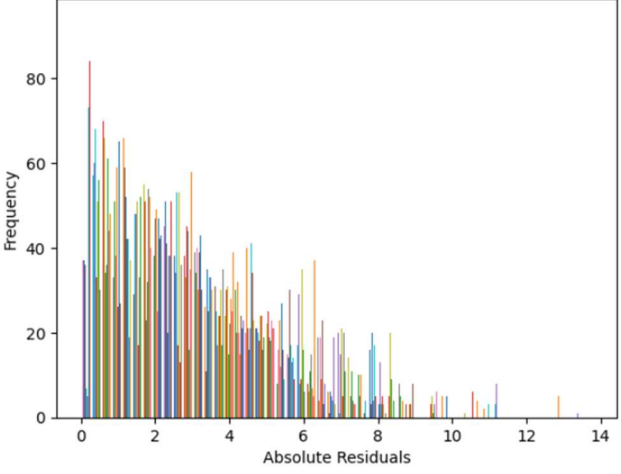
0.5326548784995941
0.5383893229516795
0.7337501774798283

0.9312711740450739

Below Graphs are for Light Gradient Boost Model

Actual vs Predicted Values

Histogram of Residuals

Histogram of Absolute Residuals

2.	Tune the Model	Hyperparameter Tuning - Nil Validation Method - Nil	Not applicable, done without tunning