Project Development Phase
Model Performance Test

Date	20 November 2023
Team ID	Team-591961
Project Name	Project - Time Series Analysis For Bitcoin Price Prediction Using Prophet
Maximum Marks	10 Marks

Model Performance Testing:

S.No.	Parameter	Values	Screenshot
1.	Metrics	**Regression Model:** MAE - , MSE - , RMSE - , R2 score -	

```
from prophet import Prophet

# model 2

model2=Prophet(
    seasonality_mode="multiplicative",

    # Hyperparameter tuning
    changepoint_prior_scale=0.5,
    seasonality_prior_scale=10,
)

model2.fit(df1)

forecast2 = model2.predict(future)
y_true = df1['y']
forecast_upto_today2 = forecast2[forecast2['ds'] < datetime.today().strftime('%Y-%m-%d')]
y_pred = forecast_upto_today2['yhat']
mae = mean_absolute_error(y_true, y_pred)
print(f"Mean Absolute Error (MAE): {mae}")
mse = mean_squared_error(y_true, y_pred)
print(f"Mean Squared Error (MSE): {mse}")
r2 = r2_score(y_true, y_pred)
print(f"R-squared (R2): {r2}")
rmse = np.sqrt(mse)
print(f"Root Mean Squared Error (RMSE): {rmse}")
```

```
20:17:59 - cmdstanpy - INFO - Chain [1] start processing
20:18:00 - cmdstanpy - INFO - Chain [1] done processing
```

```
Mean Absolute Error (MAE): 1671.509710491076
Mean Squared Error (MSE): 6787588.628805856
R-squared (R2): 0.974010101500878
Root Mean Squared Error (RMSE): 2605.30010340572
```

2.	Tune the Model	Hyperparameter Tuning - Validation Method -	

```python
from prophet import Prophet

# model 2

model2=Prophet(
    seasonality_mode="multiplicative",

    # Hyperparameter tuning
    changepoint_prior_scale=0.5,
    seasonality_prior_scale=10,
)

model2.fit(df1)
```