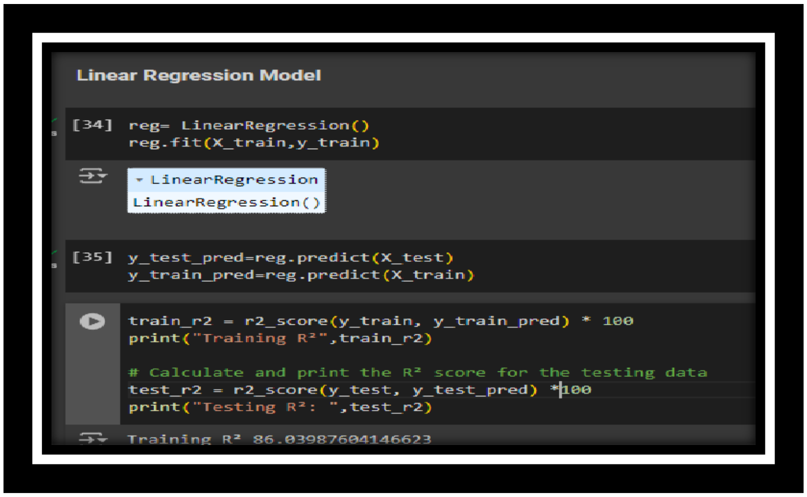
Model Development Phase Template

Date	31 June 2024
Team ID	739854
Project Title	Software Salary Prediction
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

Initial Model Training Code, Model Validation and Evaluation Report The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots



Linear Regression Model

```
[34] reg= LinearRegression()
     reg.fit(X_train,y_train)
```

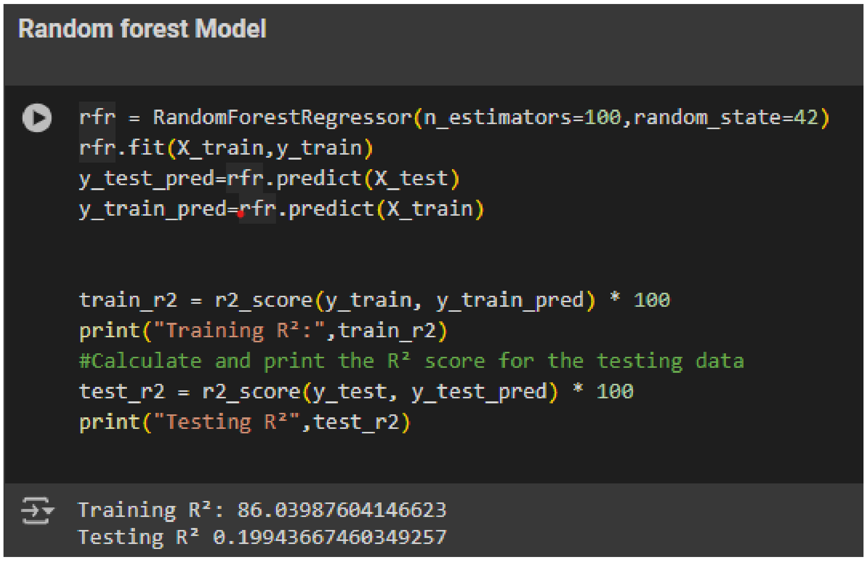
```
▾ LinearRegression
LinearRegression()
```

```
[35] y_test_pred=reg.predict(X_test)
     y_train_pred=reg.predict(X_train)
```

```
train_r2 = r2_score(y_train, y_train_pred) * 100
print("Training R²",train_r2)

# Calculate and print the R² score for the testing data
test_r2 = r2_score(y_test, y_test_pred) *100
print("Testing R²: ",test_r2)
```

```
Training R² 86.03987604146623
```

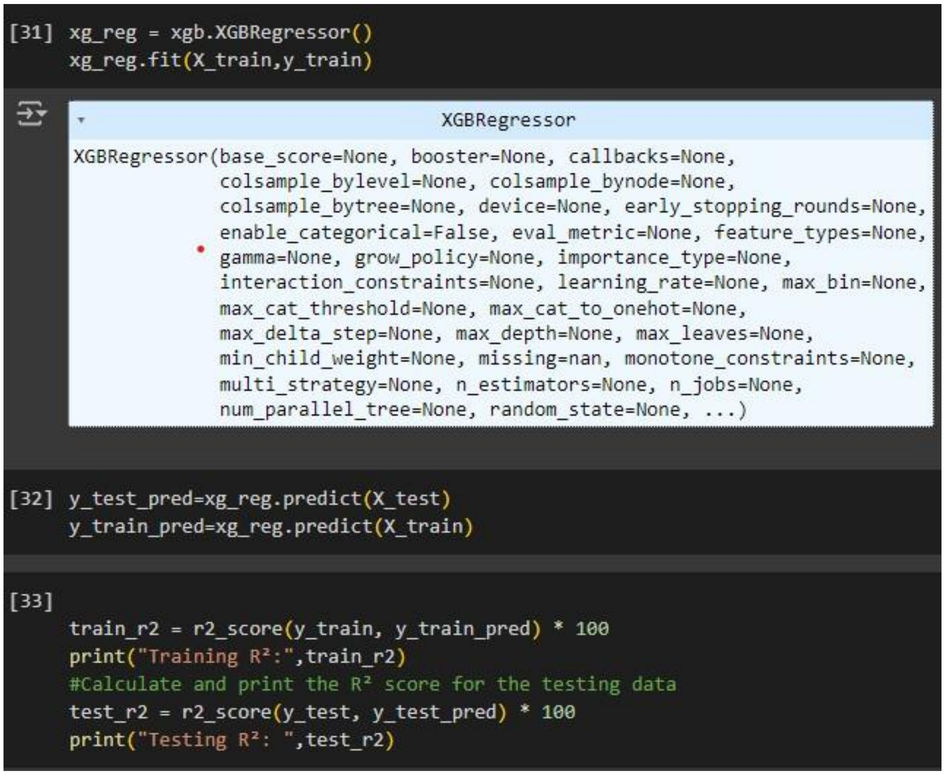


Random forest Model

```
rfr = RandomForestRegressor(n_estimators=100,random_state=42)
rfr.fit(X_train,y_train)
y_test_pred=rfr.predict(X_test)
y_train_pred=rfr.predict(X_train)


train_r2 = r2_score(y_train, y_train_pred) * 100
print("Training R²:",train_r2)
#Calculate and print the R² score for the testing data
test_r2 = r2_score(y_test, y_test_pred) * 100
print("Testing R²",test_r2)
```

```
Training R²: 86.03987604146623
Testing R² 0.19943667460349257
```

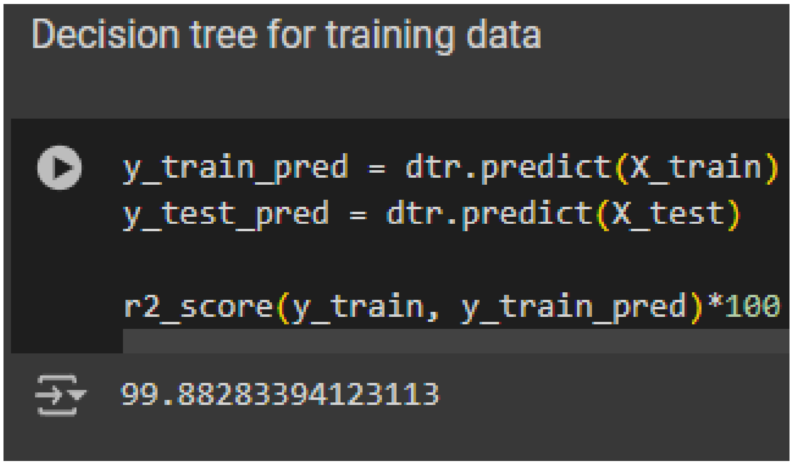


```
[31] xg_reg = xgb.XGBRegressor()
     xg_reg.fit(X_train,y_train)
```

```
                                XGBRegressor
XGBRegressor(base_score=None, booster=None, callbacks=None,
             colsample_bylevel=None, colsample_bynode=None,
             colsample_bytree=None, device=None, early_stopping_rounds=None,
             enable_categorical=False, eval_metric=None, feature_types=None,
             gamma=None, grow_policy=None, importance_type=None,
             interaction_constraints=None, learning_rate=None, max_bin=None,
             max_cat_threshold=None, max_cat_to_onehot=None,
             max_delta_step=None, max_depth=None, max_leaves=None,
             min_child_weight=None, missing=nan, monotone_constraints=None,
             multi_strategy=None, n_estimators=None, n_jobs=None,
             num_parallel_tree=None, random_state=None, ...)
```

```
[32] y_test_pred=xg_reg.predict(X_test)
     y_train_pred=xg_reg.predict(X_train)
```

```
[33]
     train_r2 = r2_score(y_train, y_train_pred) * 100
     print("Training R²:",train_r2)
     #Calculate and print the R² score for the testing data
     test_r2 = r2_score(y_test, y_test_pred) * 100
     print("Testing R²: ",test_r2)
```



Decision tree for training data

```
y_train_pred = dtr.predict(X_train)
y_test_pred = dtr.predict(X_test)

r2_score(y_train, y_train_pred)*100
```

```
99.88283394123113
```

Model Validation and Evaluation Report:

Model	F1 Scor e
Random Forest	86%
Decision Tree	83%
KNN	64%
Gradient Boosting	78%