# Model Development Phase Template

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|---|---|
| Date | 05 June 2024 |
| Team ID | 739975 |
| Project Title | To Predict Consumer Price Index |
| Maximum Marks | 4 Marks |

### 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.

### Initial Model Training Code:

```
from sklearn.ensemble import RandomForestRegressor
rfr=RandomForestRegressor()
rfr.fit(x_train,y_train)
```

```
RandomForestRegressor
RandomForestRegressor()
```

```
from sklearn.metrics import accuracy_score
```

```
from sklearn.linear_model import LinearRegression,Lasso
lr=LinearRegression()
```

```
lr.fit(x_train,y_train)
```

```
LinearRegression
LinearRegression()
```

## Model Validation and Evaluation Report:

| Model | Classification Report | Accuracy | Confusion Matrix |
|---|---|---|---|
| Random Forest | `print(classification_report(y_test,ypred))`<br>precision recall f1-score support<br>Loan will be Approved 0.78 0.83 0.80 75<br>Loan will not be Approved 0.85 0.81 0.83 94<br>accuracy 0.82 169<br>macro avg 0.81 0.82 0.82 169<br>weighted avg 0.82 0.82 0.82 169 | 81% | `confusion_matrix(y_test,ypred)`<br>array([[62, 13],<br>[18, 76]]) |
| Decision Tree | `print(classification_report(y_test,ypred))`<br>precision recall f1-score support<br>Loan will be Approved 0.73 0.83 0.77 75<br>Loan will not be Approved 0.85 0.76 0.80 94<br>accuracy 0.79 169<br>macro avg 0.79 0.79 0.79 169<br>weighted avg 0.79 0.79 0.79 169 | 79% | `confusion_matrix(y_test,ypred)`<br>array([[62, 13],<br>[23, 71]]) |
| KNN | `print(classification_report(y_test,ypred))`<br>precision recall f1-score support<br>Loan will be Approved 0.60 0.57 0.59 75<br>Loan will not be Approved 0.67 0.69 0.68 94<br>accuracy 0.64 169<br>macro avg 0.63 0.63 0.63 169<br>weighted avg 0.64 0.64 0.64 169 | 64% | `confusion_matrix(y_test,ypred)`<br>array([[43, 32],<br>[29, 65]]) |
| Gradient Boosting | `print(classification_report(y_test,ypred))`<br>precision recall f1-score support<br>Loan will be Approved 0.71 0.84 0.77 75<br>Loan will not be Approved 0.85 0.72 0.78 94<br>accuracy 0.78 169<br>macro avg 0.78 0.78 0.77 169<br>weighted avg 0.79 0.78 0.78 169 | 78% | `confusion_matrix(y_test,ypred)`<br>array([[63, 12],<br>[26, 68]]) |