

## Model Development Phase Template

Date	July 2024
Team ID	739887
Project Title	Drug classification using machine learning
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:

### Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
Decision tree classifier	<pre> Classification report precision    recall  f1-score   support  DrugY      1.00      1.00      1.00      25 DrugA      0.78      1.00      0.88       7 DrugB      1.00      0.67      0.80       6 DrugC      1.00      1.00      1.00       7 DrugX      1.00      1.00      1.00      15           </pre>	<pre> accuracy          0.97      60 macro avg         0.96      0.93      0.93      60 weighted avg      0.97      0.97      0.97      60           </pre>	<pre> ***DecisionTreeClassifier*** Confusion matrix [[25  0  0  0  0]  [ 0  7  0  0  0]  [ 0  2  4  0  0]  [ 0  0  0  7  0]  [ 0  0  0  0 15]]           </pre>
Random forrest classifier	<pre> Classification report precision    recall  f1-score   support  DrugY      1.00      1.00      1.00      25 DrugA      0.78      1.00      0.88       7 DrugB      1.00      0.67      0.80       6 DrugC      1.00      1.00      1.00       7 DrugX      1.00      1.00      1.00      15           </pre>	<pre> accuracy          0.97      60 macro avg         0.96      0.93      0.93      60 weighted avg      0.97      0.97      0.97      60           </pre>	<pre> ***RandomForestClassifier*** Confusion matrix [[25  0  0  0  0]  [ 0  7  0  0  0]  [ 0  2  4  0  0]  [ 0  0  0  7  0]  [ 0  0  0  0 15]]           </pre>

Gradient boosting classifier	<pre> Classification report precision    recall  f1-score   support  DrugY       1.00    1.00    1.00     25 DrugA       0.78    1.00    0.88      7 DrugB       1.00    0.50    0.67      6 DrugC       1.00    0.86    0.92      7 DrugX       0.88    1.00    0.94     15           </pre>	<pre> accuracy          0.93    60 macro avg    0.93    0.87    0.88    60 weighted avg  0.94    0.93    0.93    60           </pre>	<pre> ***Gradient BoostingClassifier*** Confusion matrix [[25  0  0  0  0]  [ 0  7  0  0  0]  [ 0  2  3  0  1]  [ 0  0  0  6  1]  [ 0  0  0  0 15]]           </pre>
Kneighbors classifier	<pre> Classification report precision    recall  f1-score   support  DrugY       0.43    0.72    0.54     25 DrugA       0.00    0.00    0.00      7 DrugB       0.50    0.33    0.40      6 DrugC       0.00    0.00    0.00      7 DrugX       0.20    0.13    0.16     15           </pre>	<pre> accuracy          0.37    60 macro avg    0.23    0.24    0.22    60 weighted avg  0.28    0.37    0.30    60           </pre>	<pre> ***KNeighborsClassifier*** Confusion matrix [[18  2  1  0  4]  [ 6  0  0  0  1]  [ 3  0  2  0  1]  [ 5  0  0  0  2]  [10  1  1  1  2]]           </pre>