Model Development Phase Template

Date	15 March 2024
Team ID	739795
Project Title	Crop Prediction using machine learning
Maximum Marks	4 Marks

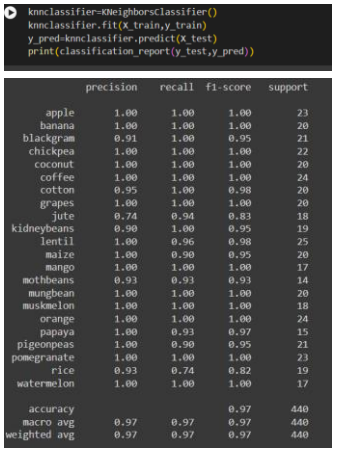
Initial Model Training Code, Model Validation and Evaluation Report

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:

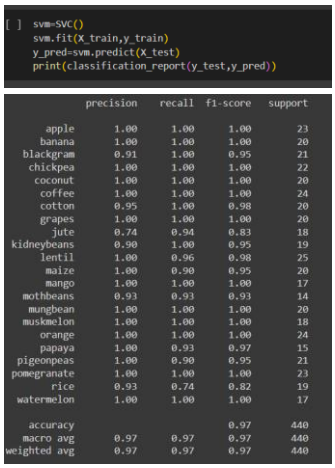
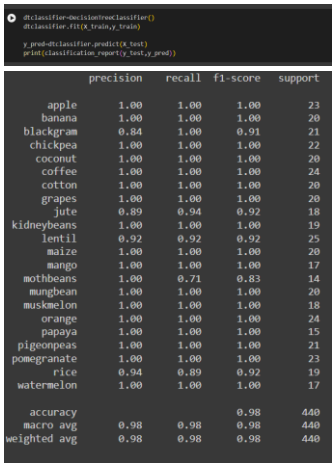
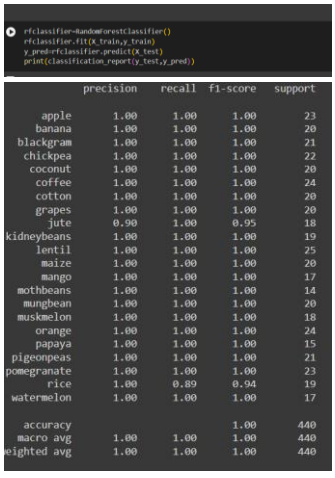
Paste the screenshot of the model training code

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
1. K Nearest Neighbors Model		**0.98579**	

```
knnclassifier=KNeighborsClassifier()
knnclassifier.fit(X_train,y_train)
y_pred=knnclassifier.predict(X_test)
print(classification_report(y_test,y_pred))
```

	precision	recall	f1-score	support
apple	1.00	1.00	1.00	23
banana	1.00	1.00	1.00	20
blackgram	0.91	1.00	0.95	21
chickpea	1.00	1.00	1.00	22
coconut	1.00	1.00	1.00	20
coffee	1.00	1.00	1.00	24
cotton	0.95	1.00	0.98	20
grapes	1.00	1.00	1.00	20
jute	0.74	0.94	0.83	18
kidneybeans	0.90	1.00	0.95	19
lentil	1.00	0.96	0.98	25
maize	1.00	0.90	0.95	20
mango	1.00	1.00	1.00	17
mothbeans	0.93	0.93	0.93	14
mungbean	1.00	1.00	1.00	20
muskmelon	1.00	1.00	1.00	18
orange	1.00	1.00	1.00	24
papaya	1.00	0.93	0.97	15
pigeonpeas	1.00	0.90	0.95	21
pomegranate	1.00	1.00	1.00	23
rice	0.93	0.74	0.82	19
watermelon	1.00	1.00	1.00	17
accuracy			0.97	440
macro avg	0.97	0.97	0.97	440
weighted avg	0.97	0.97	0.97	440

2. SVM Model		**0.97784**	
3.Decision Tree Model		0.7613	
4. Random Forest Model		0.9954	

```
svm=SVC()
svm.fit(X_train,y_train)
y_pred=svm.predict(X_test)
print(classification_report(y_test,y_pred))
```

	precision	recall	f1-score	support
apple	1.00	1.00	1.00	23
banana	1.00	1.00	1.00	20
blackgram	0.91	1.00	0.95	21
chickpea	1.00	1.00	1.00	22
coconut	1.00	1.00	1.00	20
coffee	1.00	1.00	1.00	24
cotton	0.95	1.00	0.98	20
grapes	1.00	1.00	1.00	20
jute	0.74	0.94	0.83	18
kidneybeans	0.90	1.00	0.95	19
lentil	1.00	0.96	0.98	25
maize	1.00	0.90	0.95	20
mango	1.00	1.00	1.00	17
mothbeans	0.93	0.93	0.93	14
mungbean	1.00	1.00	1.00	20
muskmelon	1.00	1.00	1.00	18
orange	1.00	1.00	1.00	24
papaya	1.00	0.93	0.97	15
pigeonpeas	1.00	0.90	0.95	21
pomegranate	1.00	1.00	1.00	23
rice	0.93	0.74	0.82	19
watermelon	1.00	1.00	1.00	17
accuracy			0.97	440
macro avg	0.97	0.97	0.97	440
weighted avg	0.97	0.97	0.97	440

```
dtclassifier=DecisionTreeClassifier()
dtclassifier.fit(X_train,y_train)

y_pred=dtclassifier.predict(X_test)
print(classification_report(y_test,y_pred))
```

	precision	recall	f1-score	support
apple	1.00	1.00	1.00	23
banana	1.00	1.00	1.00	20
blackgram	0.84	1.00	0.91	21
chickpea	1.00	1.00	1.00	22
coconut	1.00	1.00	1.00	20
coffee	1.00	1.00	1.00	24
cotton	1.00	1.00	1.00	20
grapes	1.00	1.00	1.00	20
jute	0.89	0.94	0.92	18
kidneybeans	1.00	1.00	1.00	19
lentil	0.92	0.92	0.92	25
maize	1.00	1.00	1.00	20
mango	1.00	1.00	1.00	17
mothbeans	1.00	0.71	0.83	14
mungbean	1.00	1.00	1.00	20
muskmelon	1.00	1.00	1.00	18
orange	1.00	1.00	1.00	24
papaya	1.00	1.00	1.00	15
pigeonpeas	1.00	1.00	1.00	21
pomegranate	1.00	1.00	1.00	23
rice	0.94	0.89	0.92	19
watermelon	1.00	1.00	1.00	17
accuracy			0.98	440
macro avg	0.98	0.98	0.98	440
weighted avg	0.98	0.98	0.98	440

```
rfclassifier=RandomForestClassifier()
rfclassifier.fit(X_train,y_train)
y_pred=rfclassifier.predict(X_test)
print(classification_report(y_test,y_pred))
```

	precision	recall	f1-score	support
apple	1.00	1.00	1.00	23
banana	1.00	1.00	1.00	20
blackgram	1.00	1.00	1.00	21
chickpea	1.00	1.00	1.00	22
coconut	1.00	1.00	1.00	20
coffee	1.00	1.00	1.00	24
cotton	1.00	1.00	1.00	20
grapes	1.00	1.00	1.00	20
jute	0.90	1.00	0.95	18
kidneybeans	1.00	1.00	1.00	19
lentil	1.00	1.00	1.00	25
maize	1.00	1.00	1.00	20
mango	1.00	1.00	1.00	17
mothbeans	1.00	1.00	1.00	14
mungbean	1.00	1.00	1.00	20
muskmelon	1.00	1.00	1.00	18
orange	1.00	1.00	1.00	24
papaya	1.00	1.00	1.00	15
pigeonpeas	1.00	1.00	1.00	21
pomegranate	1.00	1.00	1.00	23
rice	1.00	0.89	0.94	19
watermelon	1.00	1.00	1.00	17
accuracy			1.00	440
macro avg	1.00	1.00	1.00	440
eighted avg	1.00	1.00	1.00	440