CKD Disease Features/Independent values

1. age
2. bp – blood pressure - 0-180
3. sg – urine specific gravity
4. al – albumin – 0 - 5
5. su – sulfonylureas(high sugar in blood)
6. rbc – red blood cells
7. pc – polycystic(puss cell) – NORMAL, ABNORMAL
8. pcc – puss cell clumps – PRESENT, NOTPRESENT
9. ba – bicarbonate(acid-base balance in blood)
10. bgr – blood glucose random - 0 - 490
11. bu – blood urea nitrogen 0 - 391
12. sc – serum creatine
13. sod – sueperoxide dismutase
14. pot – potassium binders
15. hrmo – highly resistent micro organism
16. pcv – low packed cell volume
17. wc – waist circumference a measure of abdominal obesity associated with CDK risk
18. rc – Renal Cell carcinoma a type of kidney cancer
19. htn – hypertension – NO ,YES
20. dm – Diabetes Mellitus - NO, YES
21. cad – coronary artery disease – NO , YES
22. appet- appetite(hunger lack) – POOR, GOOD
23. pe – pulmonary embolism
24. ane – anemia(blood lack) – NO, YES

CKD Disease Target/Dependent values

1) classification – NOTCKD, CKD

1. Problem Identification:

a. Machine Learning Algorithm

b. Supervised learning – 1. Requirement present 2. Input and output(dataset) is present

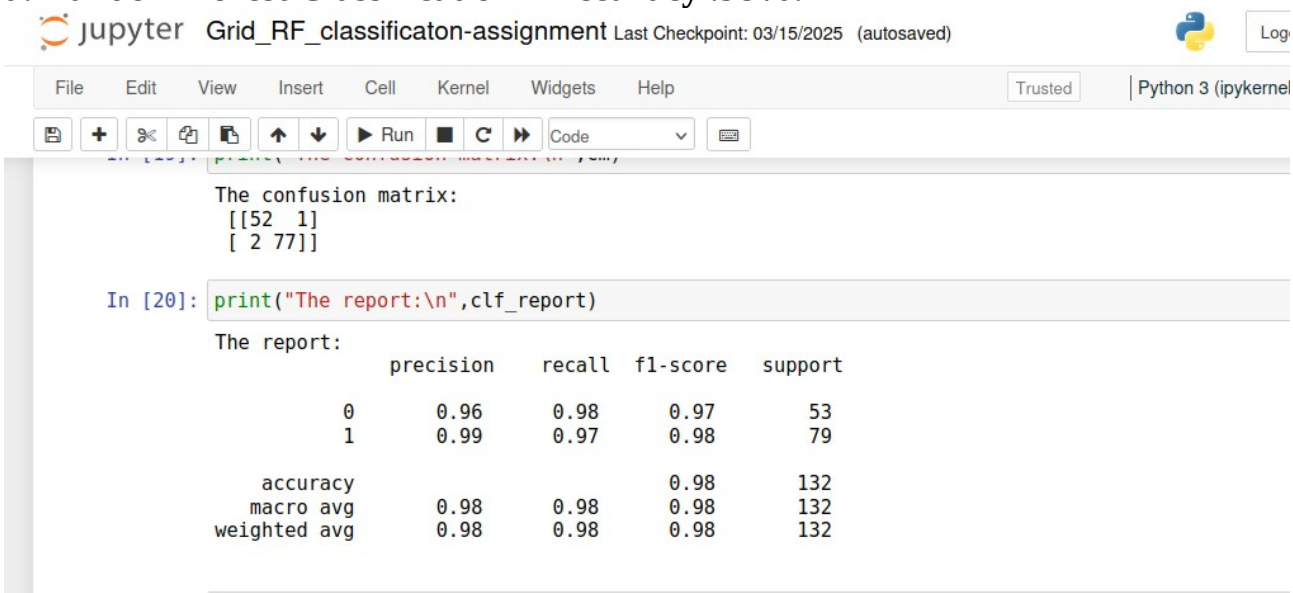
c. Classification - Converting the categorical values to Numerical value(Regression).

2. No of rows and columns in dataset : 25 cols * 400 columns, after preprocessing 40 * 400

3. Preprocessing methods : Categorical value conversion , Standardization of values.

4. Results : Algorithm's & its Score as follows with Screenshot.

a. Random Forest Classification – Accuracy .98%.

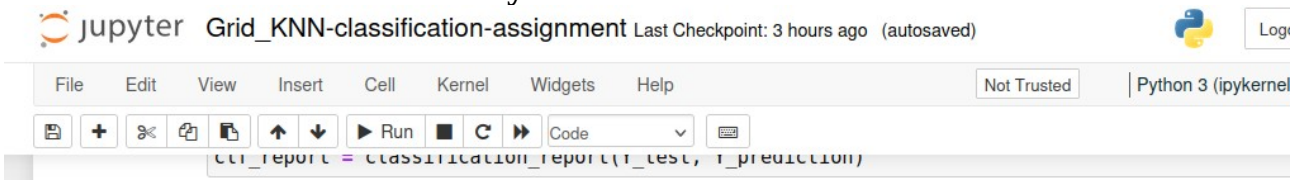



```
The confusion matrix:
 [[52  1]
 [ 2 77]]
```

In [20]:
```
print("The report:\n",clf_report)
```

```
The report:
              precision    recall  f1-score   support

           0       0.96      0.98      0.97        53
           1       0.99      0.97      0.98        79

    accuracy                           0.98       132
   macro avg       0.98      0.98      0.98       132
weighted avg       0.98      0.98      0.98       132
```

b. KNN-Classification: Accuracy score .74%



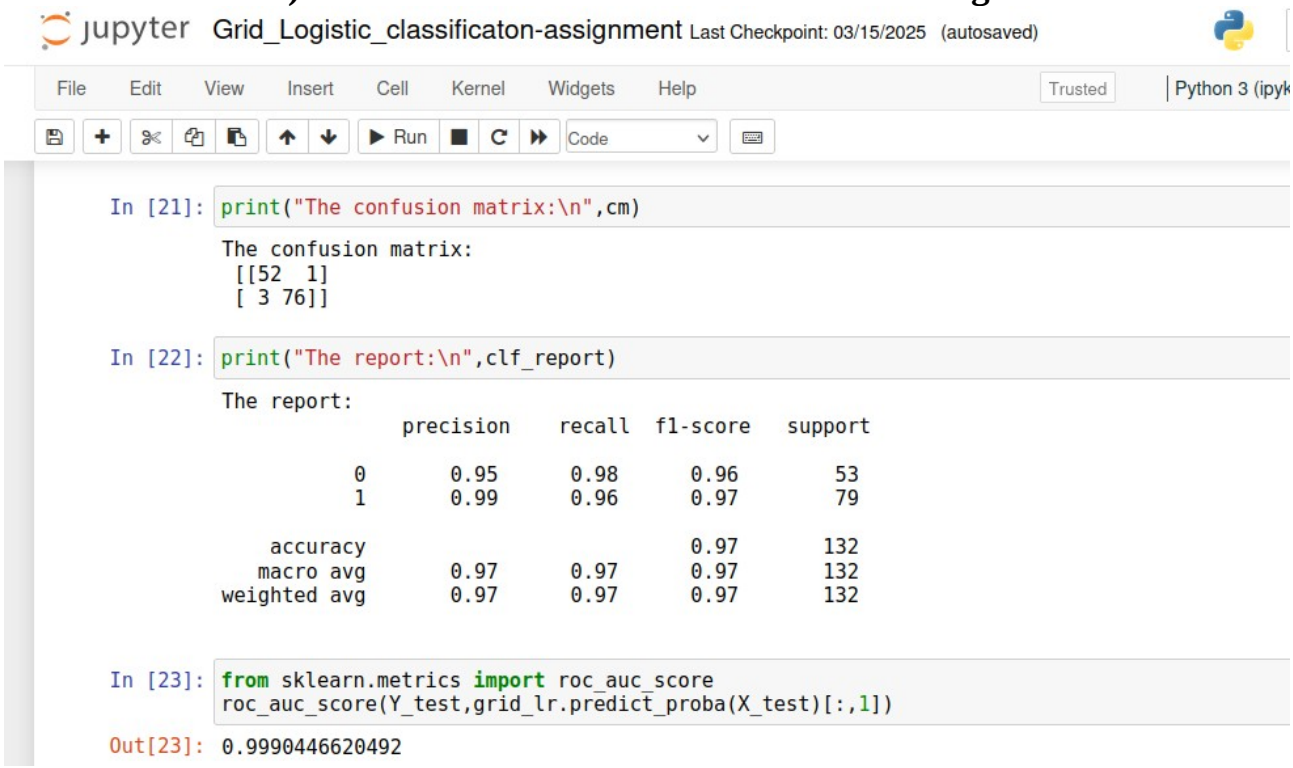
In [22]:
```
from sklearn.metrics import f1_score
macro_value = f1_score(Y_test,Y_prediction,average='weighted')
print("The macro_value for best parameter {}:".format(grid_KNN.best_params_),macro_value)
```

```
The macro_value for best parameter {'algorithm': 'auto', 'weights': 'distance'}: 0.743762298
3077529
```

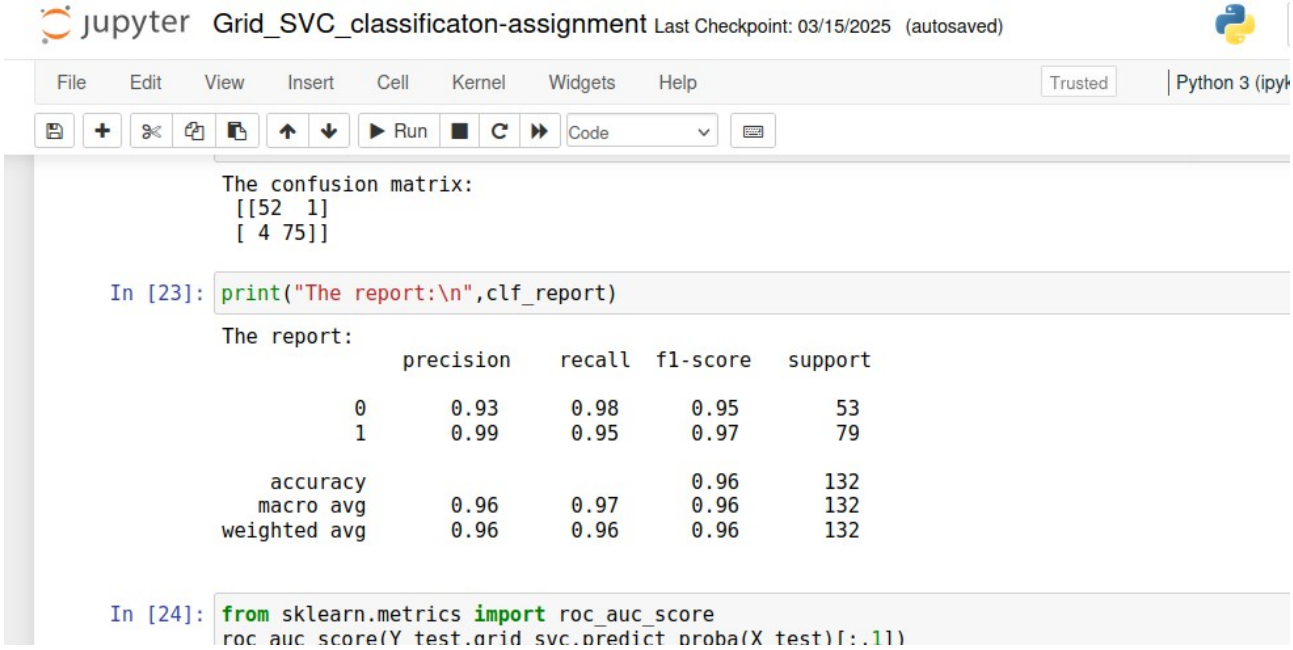
In [23]:
```
print(clf_report)
```

```
              precision    recall  f1-score   support

           0       0.67      0.72      0.69        53
           1       0.80      0.76      0.78        79

    accuracy                           0.74       132
   macro avg       0.73      0.74      0.74       132
weighted avg       0.75      0.74      0.74       132
```

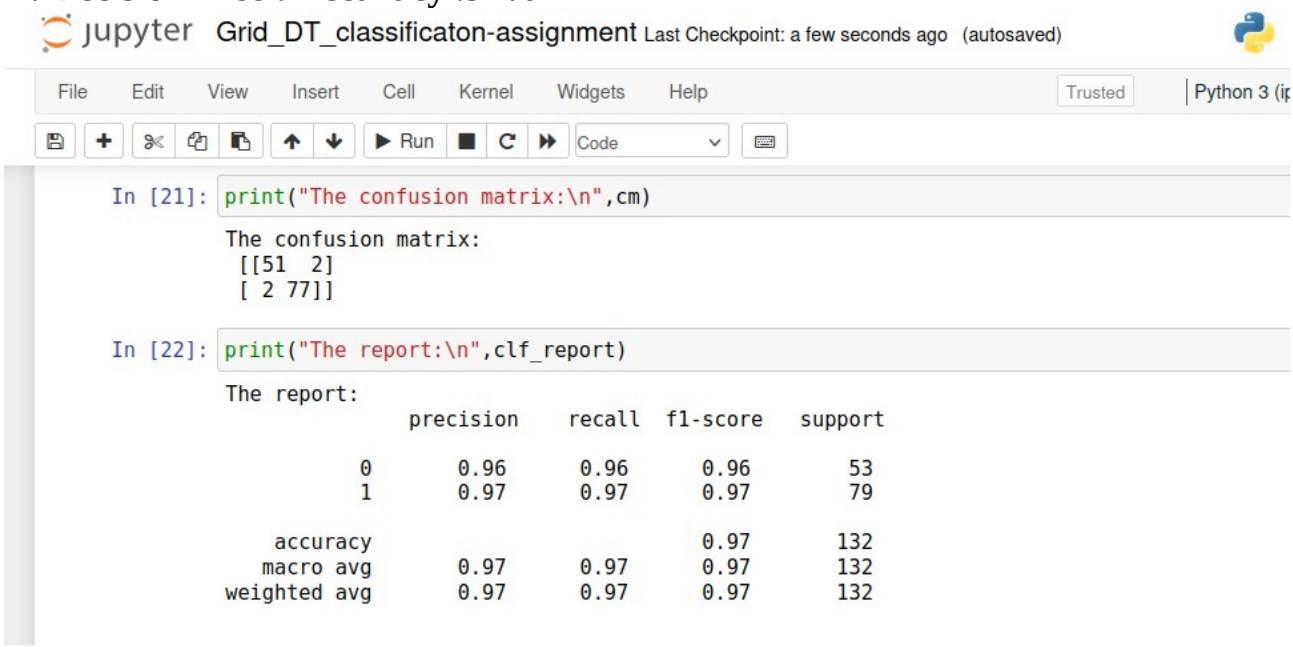
C. LogisticRegression(Classification) – roc_auc(Receiver Operating Characteristic _ Area Under the Curve**) – Metrics .99% which is best model among all.**



D. SVC-Classification : Accuracy .96%



E: Decision Tree : Accuracy .97%



F: NaiveBaye's -
BernoulliNB – Accuracy - .91%
MultiNomialNB – Accuracy - .83%
ComplementNB – Accuracy - .83%
CategoricalNB – Accuracy - .93%