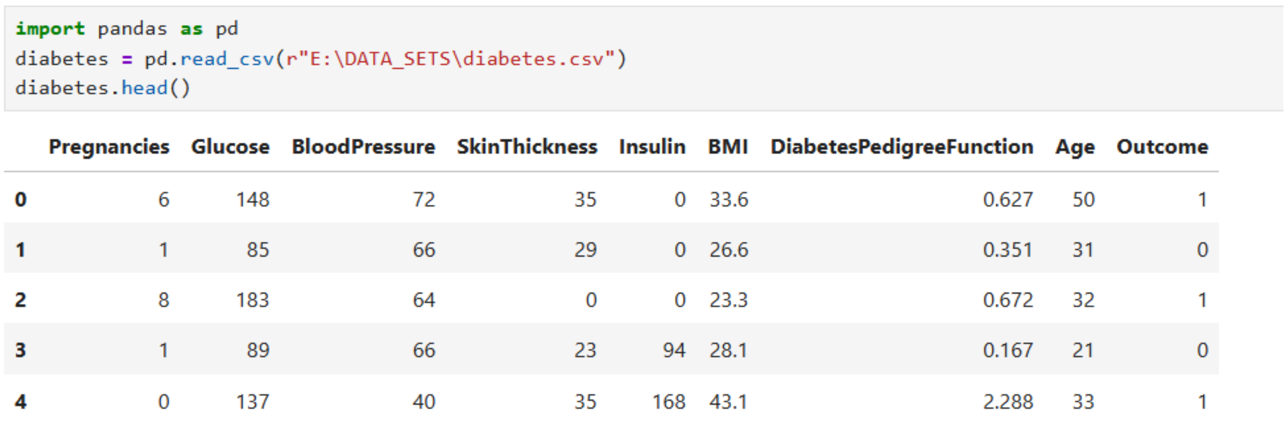
# INDUSTRIAL TRAINING DAILY DIARY
# DAY 16

## 14 July, 2025

**Topic :** Training model and Introduction to JobLib Library in Python

- **Training and Testing SVM model on diabetes dataset**

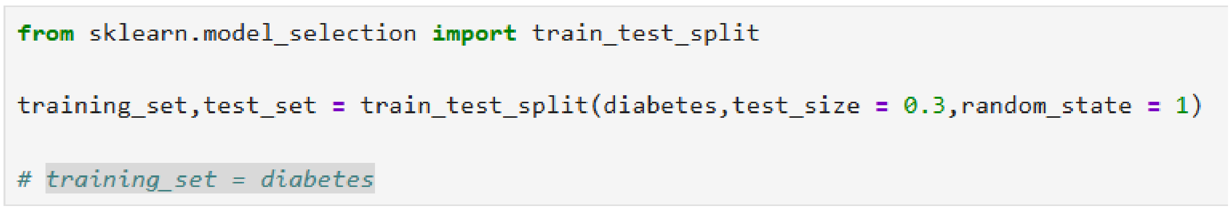
step 1 : importing required libraries and read dataset



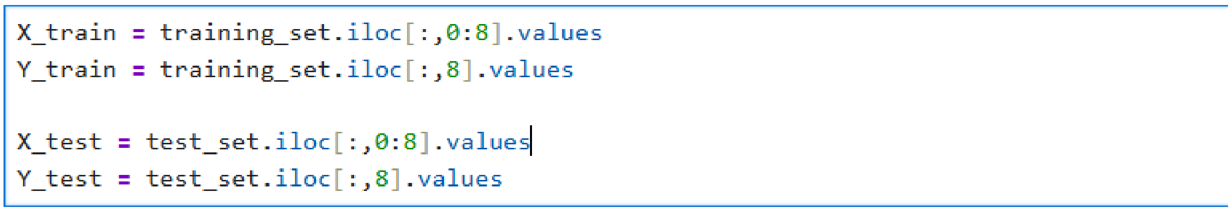
```python
import pandas as pd
diabetes = pd.read_csv(r"E:\DATA_SETS\diabetes.csv")
diabetes.head()
```

|   | Pregnancies | Glucose | BloodPressure | SkinThickness | Insulin | BMI | DiabetesPedigreeFunction | Age | Outcome |
|---|---|---|---|---|---|---|---|---|---|
| **0** | 6 | 148 | 72 | 35 | 0 | 33.6 | 0.627 | 50 | 1 |
| **1** | 1 | 85 | 66 | 29 | 0 | 26.6 | 0.351 | 31 | 0 |
| **2** | 8 | 183 | 64 | 0 | 0 | 23.3 | 0.672 | 32 | 1 |
| **3** | 1 | 89 | 66 | 23 | 94 | 28.1 | 0.167 | 21 | 0 |
| **4** | 0 | 137 | 40 | 35 | 168 | 43.1 | 2.288 | 33 | 1 |

step 2 : divide dataset into training set and test set

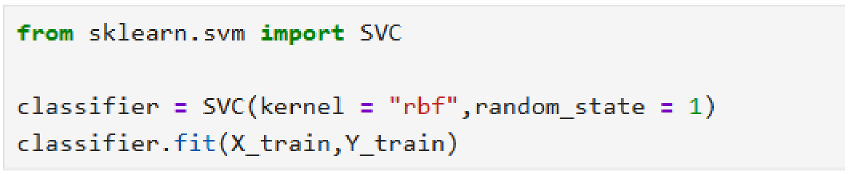


```python
from sklearn.model_selection import train_test_split

training_set,test_set = train_test_split(diabetes,test_size = 0.3,random_state = 1)

# training_set = diabetes
```

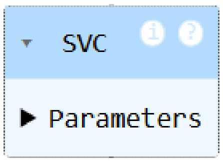


```python
X_train = training_set.iloc[:,0:8].values
Y_train = training_set.iloc[:,8].values

X_test = test_set.iloc[:,0:8].values
Y_test = test_set.iloc[:,8].values
```

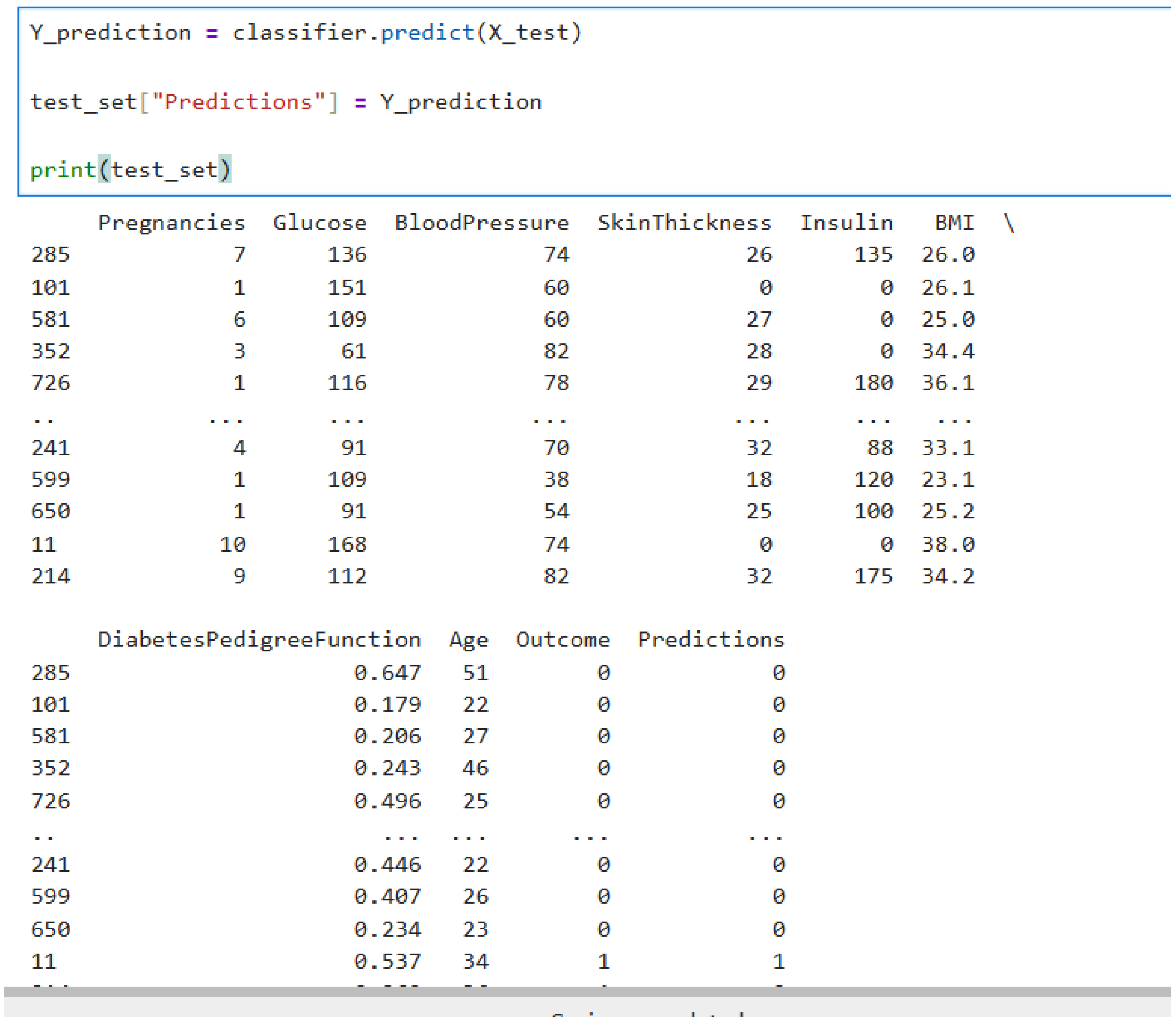
step 3 : train the model



```python
from sklearn.svm import SVC

classifier = SVC(kernel = "rbf",random_state = 1)
classifier.fit(X_train,Y_train)
```



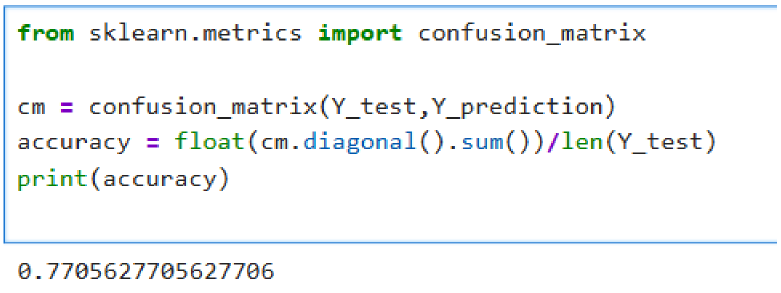
step 4 : test the model



```
Y_prediction = classifier.predict(X_test)

test_set["Predictions"] = Y_prediction

print(test_set)
```

```
     Pregnancies  Glucose  BloodPressure  SkinThickness  Insulin   BMI  \
285            7      136             74             26      135  26.0
101            1      151             60              0        0  26.1
581            6      109             60             27        0  25.0
352            3       61             82             28        0  34.4
726            1      116             78             29      180  36.1
..           ...      ...            ...            ...      ...   ...
241            4       91             70             32       88  33.1
599            1      109             38             18      120  23.1
650            1       91             54             25      100  25.2
11            10      168             74              0        0  38.0
214            9      112             82             32      175  34.2

     DiabetesPedigreeFunction  Age  Outcome  Predictions
285                     0.647   51        0            0
101                     0.179   22        0            0
581                     0.206   27        0            0
352                     0.243   46        0            0
726                     0.496   25        0            0
..                        ...  ...      ...          ...
241                     0.446   22        0            0
599                     0.407   26        0            0
650                     0.234   23        0            0
11                      0.537   34        1            1
```

step 5 : calculate accuracy



```
from sklearn.metrics import confusion_matrix

cm = confusion_matrix(Y_test,Y_prediction)
accuracy = float(cm.diagonal().sum())/len(Y_test)
print(accuracy)
```

```
0.7705627705627706
```

## JOBLIB LIBRARY IN PYTHON

**Joblib** is a Python library for running computationally intensive tasks in parallel. It provides a set of functions for performing operations in parallel on large data sets and for caching the results of computationally expensive functions. Joblib is especially useful for machine learning models because it allows you to save the state of your computation and resume your work later or on a different machine.

## Learning Objectives

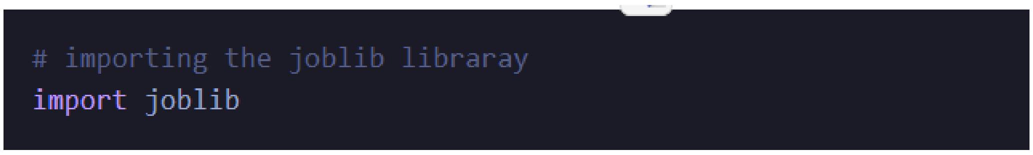
•Understanding the importance of the Joblib library and why saving our machine learning models is useful.

•How to use the joblib library for saving and loading our trained machine learning model?

•Understanding the different functions that save and load models, including functions like “save” and “load.”

## Import Joblib

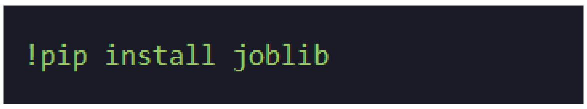
Import joblib using the following code:



```
# importing the joblib libraray
import joblib
```

If the above code gives an error, you don’t have joblib installed in your environment.

install joblib using the following code:



```
!pip install joblib
```

## Saving the Model Using Joblib

Saving our trained machine learning model using the dump function of the joblib library.

```
# save the model to a file
joblib.dump(reg, 'regression_model.joblib')

# the First parameter is the name of the model and the second parameter is the name of th
# with which we want to save it

# now the model named 'reg' will be saved as 'regression_model.joblib' in the current
# directory.
```

## Loading the Saved Model Using Joblib

Loading the regression_model.joblib for using it for making predictions.

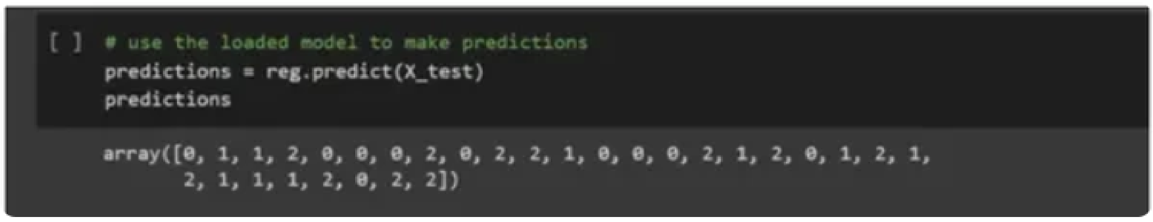
```
# load the saved model
reg = joblib.load('regression_model.joblib')
```

## Make Predictions Using the Loaded Model

Making predictions for the test dataset using our trained ML model.

```
# use the loaded model to make predictions
predictions = reg.predict(X_test)
predictions
#import csv
```

**Output:**



```
[ ] # use the loaded model to make predictions
    predictions = reg.predict(X_test)
    predictions

    array([0, 1, 1, 2, 0, 0, 0, 2, 0, 2, 2, 1, 0, 0, 0, 2, 1, 2, 0, 1, 2, 1,
           2, 1, 1, 1, 2, 0, 2, 2])
```