## Brief of the Project



# Good Quality

Bad Quality

### Importing the dependencies

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score
```

### Correlation between Parameters

									7					- 0.8
fixed acidity -	1.0	-0.3	0.7	0.1	0.1	-0.2	-0.1	0.7	-0.7	0.2	-0.1	0.1		0.0
rolatile acidity -	-0.3	1.0	-0.6	0.0	0.1	-0.0	0.1	0.0	0.2	-0.3	-0.2	-0.4		V. Maria
citric acid -	0.7	-0.6	1.0		0.2	-0.1	0.0	0.4	-0.5	0.3	0.1	0.2		- 0.6
residual sugar -	0.1	0.0	0.1	1.0	0.1		0.2	0.4	-0.1	0.0	0.0	0.0		- 0.4
chlorides -	0.1	0.1	0.2	0.1	1.0	0.0	0.0	0.2	-0.3	0.4	-0.2	-0.1		
sulfur dioxide -	-0.2	-0.0	-0.1	0.2	0.0	1.0	0.7	-0.0	0.1	0.1	-0.1	-0.1		- 0.2
sulfur dioxide -	-0.1	0.1	0.0	0.2	0.0	0.7	1.0	0.1	-0.1	0.0	-0.2	-0.2		
density -	0.7	0.0	0.4	0.4	0.2	-0.0	0.1	1.0	-0.3		-0.5	-0.2		- 0.0
рН -	-0.7	0.2	-0.5	-0.1	-0.3	0.1	-0.1	-0.3	1.0	-0.2	0.2	-0.1		
sulphates -		-0.3	0.3	0.0	0.4	0.1	0.0		-0.2	1.0	0.1	0.3		0.2
alcohol -	-0.1	-0.2	0.1	0.0	-0.2	-0.1	-0.2	-0.5	0.2	0.1	1.0	0.5		0.4
quality -	0.1	-0.4	0.2	0.0	-0.1	-0.1	-0.2	-0.2	-0.1	0.3	0.5	1.0		5.4
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# Splitting the dataset into training and test In which 80 percent is training and 20 percent is test dataset

```
Train and test split

6]: X_train, X_test, Y_train, Y_test = train_test_split(X,Y,test_size=0.2,random_state=2)

7]: print(Y.shape,Y_train.shape,Y_test.shape)

(1599,) (1279,) (320,)
```

## Training the model with RFC

```
Model Training: Random Forest Classifier
```

```
model = RandomForestClassifier()
```

```
model.fit(X_train,Y_train)
```

RandomForestClassifier()

### Accuracy of the Model

#### Model Evaluation

```
# accuracy on test data

X_test_prediction = model.predict(X_test)

test_data_accuracy = accuracy_score(X_test_prediction,Y_test)
```

```
print('Accuracy : ',test_data_accuracy)
```

Accuracy: 0.9875