LAB - 6
RANDOM FOREST ALGORITHM

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CODE -

```
import numpy as np
import pandas as pd
from sklearn.ensemble import RandomForestClassifier
data =
pd.read_csv('/home/priyanshu/Desktop/PRIYANSHU/MAIN/LAB/breast.csv'
)
data.head()
```

	1000025	5	1	1.1	1.2	2	1.3	3	1.4	1.5	2.1
0	1002945	5	4	4	5	7	10	3	2	1	2
1	1015425	3	1	1	1	2	2	3	1	1	2
2	1016277	6	8	8	1	3	4	3	7	1	2
3	1017023	4	1	1	3	2	1	3	1	1	2
4	1017122	8	10	10	8	7	10	9	7	1	4

```
colnames=['ID', 'RADIUS', 'TEXTURE', 'PERIMETER', 'AREA',
'SMOOTHNESS', 'COMPACTNESS', 'CONCAVITY', 'CONCAVE',
'SYMMETRY', 'FRACTAL']
data =
pd.read_csv('/home/priyanshu/Desktop/PRIYANSHU/MAIN/LAB/breast.csv'
, names=colnames, header=None)
```

data.head()

	ID	RADIUS	TEXTURE	PERIMETER	AREA	SMOOTHNESS	COMPACTNESS	CONCAVITY	CONCAVE	SYMMETRY	FRACTAL
0	1000025	5	1	1	1	2	1	3	1	1	2
1	1002945	5	4	4	5	7	10	3	2	1	2
2	1015425	3	1	1	1	2	2	3	1	1	2
3	1016277	6	8	8	1	3	4	3	7	1	2
4	1017023	4	1	1	3	2	1	3	1	1	2

```
from sklearn.cross_validation import train_test_split
X = data.iloc[0:, [1,2,3,4,5,6,7,8,9]].values
X_train,X_test,Y_train,Y_test = train_test_split(X,data['FRACTAL'],
test_size=0.3, random_state=0)

rf = RandomForestClassifier(n_estimators = 100)
rf.fit(X_train, Y_train)
```

```
RandomForestClassifier(bootstrap=True, class_weight=None, criterion='gini',
            max_depth=None, max_features='auto', max_leaf_nodes=None,
            min_impurity_decrease=0.0, min_impurity_split=None,
            min_samples_leaf=1, min_samples_split=2,
            min_weight_fraction_leaf=0.0, n_estimators=100, n_jobs=1,
            oob_score=False, random_state=None, verbose=0,
            warm_start=False)
```

```
accuracy = rf.score(X_test, Y_test)
print("Accuracy = {}% ".format(accuracy*100))
```

```
Accuracy = 95.2380952381%
```

```
X = [[6,2,4,1,4,6,4,5,2]]
rf.predict(X)
```

```
array([4])
```