Random Forest

1.What is the percentage of correct classification of both (Purchased and Not Purchased) to the total input of test set?

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```

	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

Accuracy = T(Purchased)+T(Not Purchased)÷T(Purchased)+T(Not Purchased)+F(Purchased)+F(Not Purchased)

=79+45÷79+45+6+4=124÷134= 0.925

Recall:

What Is the percentage of correct Classification Of Purchased to the total input of Purchased in the test set?

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```

	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

Recall=T(Purchased)÷T(Purchased)+F(Purchased)

=79÷79+6=79÷85=0.92

What Is the percentage of correct Classification Of Not Purchased to the total input of NotPurchased in the test set?

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```

	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

Recall= T(Not_Purchased) ÷T(Not_Purchased) +F(Not_Purchased)

=45÷45+4=45÷49=0.918

Precision:

What is the percentage of correct Classification of (Purchased) to sum of correctly Classified as (Purchased) and wrongly classified as (Purchased) in the test set?

The Confusion Matrix:

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```


	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

Precision=T(Purchased)÷T(Purchased)+F(Purchased)

= 79÷79+4=79÷83=0.95

What is the percentage of correct Classification of (Not_Purchased) to sum of correctly Classified as (Not_Purchased) and wrongly classified as (Not_Purchased) in the test set?

The Confusion Matrix:


```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```


	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

Precision= T (Not_ Purchased) ÷T(Not_ Purchased)+F(Not_ Purchased)

=45÷45+6=45÷51= 0.88

F1_Measure:

What is the overall performance of Purchased?

The Confusion Matrix:

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```

	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

F1_Measure=2*0.92 *0.95 ÷0.92+0.95=1.748÷1.87= 0.934

What is the overall performance of Not_Purchased?

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The confusion Matrix: 1.84
 [[79  6]
 [ 4 45]]
```

	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

F1_Measure=2*0.918 *0.88÷0.918+0.88=1.61568 ÷1.798 =0.898

Macro _Average:

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```

	purchased	Not Purchased	
Purchased	79 TP	6 FP	
Not_Purchased	4 F_Np	45 T_Np	

Precision:

What is the average performance of Precision(correctly and wrongly classified)?

Precision(Purchased)+Precision(Not_Purchased)÷2

=0.95+0.88÷2=1.83÷2
Precision= 0.915

Recall:

What is the average performance of Recall(correctly classified)?

Recall(Purchased)+Recall(Not_Purchased)÷2

=0.92+0.918 ÷2=1.838÷2

=0. 0.919

Which is the average performance of F1_Measure(overall_performance)?

=F1(Purchased)+F2(Not_Purchased)÷2

=0.934+0.898÷2=1.832÷2

=0. 0.916

Weighted_ Average:

```
The confusion Matrix:
 [[79  6]
 [ 4 45]]
```

	purchased		Not Purchased		
Purchased	79	TP	6	FP	
Not_Purchased	4	F_Np	45	T_Np	

Precision:

Total count in the test set = 134

Total count of Purchased in the test set = 85

Total count of Not_Purchased in the test set = 49

What is the sum of Product of proportion rate weight of each class?

Precision(Purchased)*85÷134+Precision(Not_ Purchased)*49÷134 0.95

Precision=0.95*85÷134+0.88*49÷134
=80.75÷134+43.12÷134

= 0.6026+0.3217

= 0.924

Recall:

What is the sum of product of proportion rate weight of each class?

Recall(Purchased)*85÷134+Recall(Not_Purchased)*49÷134

Recall=0.92*85÷134+0.918*49÷134

=78.2÷134+44.982÷134

=0.5835+0.3356 = 0.919

F1_Measure

What is the sum of product of proportion rate weight of each class?

F1_Measure=f1(Purchased)*124÷134+F2(Not_Purchased)*10÷134

=0.934*85÷134+0.898*49÷134
=79.39÷134+44.002÷134=0.5924+0.3283
=0.9207