1.Logistic_Algorithm

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

```
The confusion Matrix:
 [[74 11]
 [ 5 44]]
```

	purchased	Not Purchased	
Purchased	74 TP	11 FP	
Not_Purchased	5 F_Np	44 T_Np	

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

=74+44÷74+44+11+5=118÷134= 0.88

Recall:

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

```
The confusion Matrix:
 [[74 11]
 [ 5 44]]
```

	purchased	Not Purchased	
Purchased	74 TP	11 FP	
Not_Purchased	5 F_Np	44 T_Np	

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

=74÷74+11=74÷85=0.87

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

```
The confusion Matrix:
 [[74 11]
 [ 5 44]]
```

	purchased	Not Purchased	
Purchased	74 TP	11 FP	
Not_Purchased	5 F_Np	44 T_Np	

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

=44÷44+5=44÷49=0.897

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:

```
[[74 11]
 [ 5 44]]
```

	purchased	Not Purchased	
Purchased	74 TP	11 FP	
Not_Purchased	5 F_Np	44 T_Np	

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

= 74÷74+5=74÷79=0.936

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:
 [[74 11]
 [ 5 44]]
```

	purchased	Not Purchased	
Purchased	74 TP	11 FP	
Not_Purchased	5 F_Np	44 T_Np	

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

=44÷44+11=44÷55= 0.8

F1_Measure:

What is the overall performance of Purchased?

```
The confusion Matrix:
 [[74 11]
 [ 5 44]]
```

	purchased		Not Purchased		
Purchased	74	TP	11	FP	
Not_Purchased	5	F_Np	44	T_Np	

F1_Measure=2*0.87*0.936÷0.87+0.936=1.62864÷1.806= 0.90

What is the overall performance of Not_Purchased?

```
The confusion Matrix:
 [[74  11]
 [ 5 44]]
```

	purchased		Not Purchased		
Purchased	74	TP	11	FP	
Not_Purchased	5	F_Np	44	T_Np	

F1_Measure=2*0.897 *0.8÷0.897+0.8= 1.4352÷1.697 =0.84

Macro _Average:

```
The confusion Matrix:
 [[74  11]
 [ 5 44]]
```

	purchased		Not Purchased		
Purchased	74	TP	11	FP	
Not_Purchased	5	F_Np	44	T_Np	

Precision:

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

Precision(Purchased)+Precision(Not_Purchased)÷2

=0.936+= 0.8÷2=1.736÷2
Precision=0.86

Recall:

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

Recall(Purchased)+Recall(Not_Purchased)÷2

=0.87+0.897 ÷2=1.767÷2

=0.88

Which is the average performance of F1_Measure(overall_performance)?

=F1(Purchased)+F2(Not_Purchased)÷2

=0.90+0.84÷2= 1.74÷2
=0.87

Weighted_ Average:

```
The confusion Matrix:
 [[74  11]
 [ 5 44]]
```

	purchased	Not Purchased	
Purchased	74 TP	11 FP	
Not_Purchased	5 F_Np	44 T_Np	

Precision:

Total count in the test set = 134

Total count of Purchased in the test set = 118

Total count of Not_Purchased in the test set = 16

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

Precision(Purchased)*118÷134+Precision(Not_ Purchased)*16÷134

Precision=0.936*118÷134+0.8*16÷134
=110.448÷134+12.8÷134

=0.8242+0.0955

=0.919

Recall:

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

Recall(Purchased)*118÷134+Recall(Not_Purchased)*16÷134

Recall=0.87*118÷134+0.897*16÷134

=102.66÷134+14.352÷134

=0.7661+0.1071

=0.8732

F1_Measure

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

F1_Measure=f1(Purchased)*118÷134+F2(Not_Purchased)*16÷134

=0.90*118÷134+0.84*16÷134
=106.2÷134+13.44÷134=0.792+0.100
=0.892