Data 1: Bernoulli, 20news
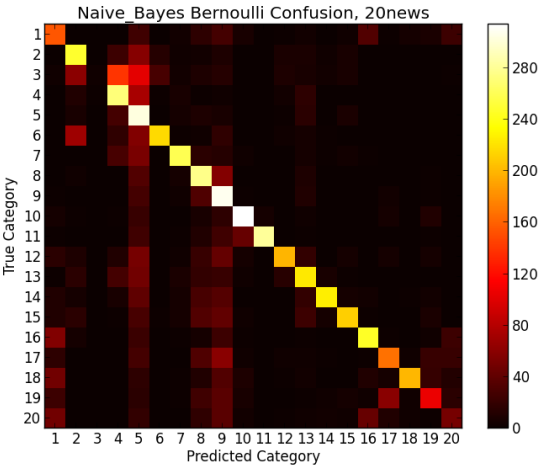
```
Report File: Naive_Bayes_Bernoulli_20news_report.txt
--------------------------------------------------------------------------------
Classification Report:
                         precision    recall  f1-score   support

             alt.atheism       0.39      0.49      0.43       319
           comp.graphics       0.54      0.64      0.59       389
 comp.os.ms-windows.misc       0.38      0.01      0.01       394
comp.sys.ibm.pc.hardware       0.48      0.69      0.57       392
   comp.sys.mac.hardware       0.29      0.79      0.42       385
          comp.windows.x       0.82      0.55      0.66       395
            misc.forsale       0.80      0.67      0.73       390
               rec.autos       0.48      0.70      0.57       396
         rec.motorcycles       0.37      0.78      0.50       398
      rec.sport.baseball       0.77      0.79      0.78       397
        rec.sport.hockey       0.97      0.70      0.82       399
               sci.crypt       0.79      0.50      0.61       396
         sci.electronics       0.58      0.57      0.58       393
                 sci.med       0.86      0.57      0.68       396
               sci.space       0.79      0.54      0.64       394
  soc.religion.christian       0.70      0.62      0.66       398
      talk.politics.guns       0.63      0.46      0.53       364
   talk.politics.mideast       0.91      0.53      0.67       376
      talk.politics.misc       0.54      0.34      0.42       310
      talk.religion.misc       0.33      0.20      0.25       251

             avg / total       0.63      0.57      0.56      7532


--------------------------------------------------------------------------------
Confusion Matrix:
155    1    0    1   25    0    4   16   27    7    0    2    4    1    3   34    2    5    8   24
  1  248    0   24   58   13    3    4    9    0    0    8    8    3    7    1    0    1    1    0
  3   61    3  139  103   29    4    9   13    0    0    9    7    4    7    1    0    0    0    2
  0   10    2  272   74    2    7    2    3    0    0    4   16    0    0    0    0    0    0    0
  0    7    1   27  303    0    6    9    7    0    0    2   15    0    8    0    0    0    0    0
  0   69    1   18   56  217    2    3   18    1    0    3    5    2    0    0    0    0    0    0
  0    1    0   29   52    1  260   15   13    3    1    0    6    2    4    2    0    1    0    0
  1    3    0    1   34    0    6  276   57    1    0    1    9    1    1    1    1    0    2    1
  2    1    0    0   28    0    3   33  309    2    0    1   11    0    0    0    4    1    2    1
  6    2    0    2   22    0    1    7   17  314    6    0    3    1    0    1    5    0   10    0
  2    1    1    0   25    0    2   10   25   44  281    1    2    1    1    0    1    0    2    0
 15    9    0   10   51    1    3   21   42    5    0  199   19    1    6    0    6    1    6    1
  2   15    0   27   49    1    8   19   21    3    0   14  224    7    2    0    0    0    1    0
 11    5    0    7   40    0    5   29   35    1    0    0   19  226    6    4    1    2    4    1
 10   15    0    2   29    2    5   34   41    3    0    0   24    5  212    2    1    1    8    0
 56    6    0    1   23    0    2    6   24    2    0    0    2    1    0  246    2    0    3   24
 17    0    0    1   27    0    1   32   59    3    1    3    3    2    1    2  167    3   21   21
 48    0    0    1   16    0    2   10   34    9    0    2    4    0    1   10    6  201   20   12
 24    1    0    1   15    0    2   25   37    7    0    1    2    3    6    3   59    3  106   15
 49    1    0    1   19    0    0   18   38    4    0    2    3    4    3   43   10    3    2   51
```


Naive_Bayes Bernoulli Confusion, 20news

Data 2: Bernoulli, 20news5 and 20news4

```
Report File: Naive_Bayes_Multinomial_20news5_report.txt
--------------------------------------------------------------------------------
Classification Report:
            precision    recall   f1-score    support

  computers       0.86      0.75       0.80       1955
 recreation       0.92      0.85       0.88       1590
    science       0.68      0.82       0.74       1579
   politics       0.77      0.76       0.77       1050
   religion       0.77      0.82       0.79        968

avg / total       0.81      0.80       0.80       7142


--------------------------------------------------------------------------------
Confusion Matrix:
1461    44   414    13    23
  71  1351    80    50    38
 100    40  1296    95    48
  28    24    67   798   133
  33    17    50    76   792
```

```
Report File: Naive_Bayes_Multinomial_20news4_report.txt
--------------------------------------------------------------------------------
Classification Report:
                    precision    recall   f1-score    support

     comp.graphics      0.92      0.89       0.91        389
 talk.religion.misc     0.84      0.92       0.88        396
         sci.space      0.87      0.84       0.85        394
         rec.autos      0.85      0.82       0.84        251

       avg / total      0.87      0.87       0.87       1430


--------------------------------------------------------------------------------
Confusion Matrix:
348    18    15     8
  8   364    17     7
 15    29   330    20
  7    21    18   205
```
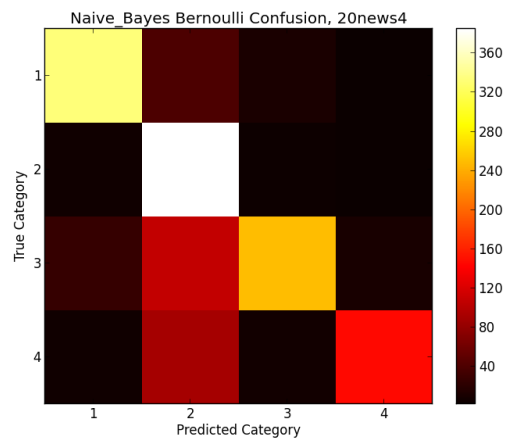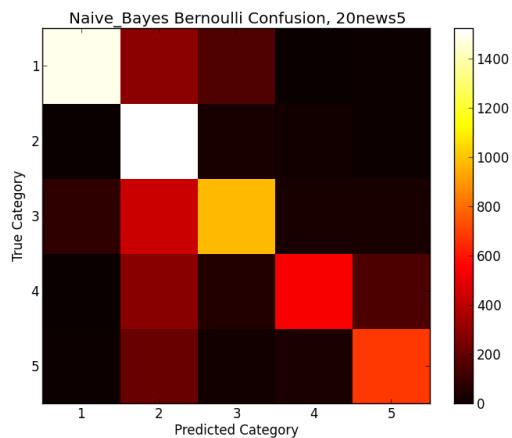

Naive_Bayes Bernoulli Confusion, 20news5

Naive_Bayes Bernoulli Confusion, 20news4

Data 3: Multinomial, 20news

```
Report File: Naive_Bayes_Multinomial_20news_report.txt
--------------------------------------------------------------------------------
Classification Report:
                          precision    recall  f1-score   support

            alt.atheism       0.50      0.52      0.51       319
          comp.graphics       0.57      0.71      0.63       389
comp.os.ms-windows.misc       0.71      0.01      0.02       394
comp.sys.ibm.pc.hardware     0.52      0.71      0.60       392
  comp.sys.mac.hardware       0.59      0.70      0.64       385
          comp.windows.x       0.75      0.73      0.74       395
           misc.forsale       0.82      0.69      0.75       390
              rec.autos       0.69      0.72      0.71       396
        rec.motorcycles       0.72      0.72      0.72       398
     rec.sport.baseball       0.90      0.79      0.84       397
       rec.sport.hockey       0.59      0.87      0.71       399
              sci.crypt       0.73      0.74      0.74       396
        sci.electronics       0.64      0.55      0.59       393
                sci.med       0.80      0.76      0.78       396
              sci.space       0.75      0.74      0.74       394
   soc.religion.christian     0.62      0.80      0.70       398
     talk.politics.guns       0.59      0.63      0.61       364
  talk.politics.mideast       0.78      0.73      0.75       376
     talk.politics.misc       0.46      0.43      0.44       310
     talk.religion.misc       0.34      0.28      0.31       251

            avg / total       0.66      0.65      0.64      7532


--------------------------------------------------------------------------------
Confusion Matrix:
167    0    0    2    0    1    0    3    2    1   10    4    4    3    7   49    7   11   15   33
  4  276    0   16   20   20    4    1    2    4    6   16    6    5    6    2    0    0    1    0
  5   73    5  125   50   62    5    3    5    0   15   10    6    7   10    2    0    0    7    4
  0   12    0  278   50    4    9    2    1    1    7    4   21    1    0    0    0    0    2    0
  1   10    1   30  268    1   11    8    2    1   14    6   16    4    7    2    1    0    0    2
  0   51    1   14    9  287    1    1    3    0    8    7    4    7    2    0    0    0    0    0
  0    2    0   31   27    0  271   14   10    4    9    1    9    3    6    1    0    1    1    0
  1    2    0    1    1    0    9  287   31    1   25    2    9    1    6    5    4    3    7    1
  6    2    0    0    2    1    6   33  287    3   13    0   13    3    3    4    9    3    6    4
  6    3    0    0    0    1    4    4    6  313   24    2    1    5    4    8    5    1    9    1
  6    0    0    1    0    0    0    5    4   13  349    1    1    2    4    2    2    2    7    0
  3    5    0    3    7    1    1    1    4    2   18  293    9    3    8    2   15    7   12    2
  2   20    0   29   16    0    7   23    8    1   11   29  218    8   12    2    2    2    2    1
  6    5    0    1    0    0    1    9    6    1   15    1   10  301    5   12    6    6    8    3
  9   11    0    1    0    2    0    8    6    0   18    3    6    6  291    7    2    3   16    5
 22    5    0    1    1    0    0    0    1    1   14    2    0    2    0  318    1    1    2   27
  9    0    0    0    0    0    1    6    6    2   11    6    2    5    4   12  230   13   29   28
 21    1    0    1    0    1    1    1    4    1    7    7    1    0    0   17    8  275   20   10
 19    2    0    0    0    1    1    6    5    0    8    2    2    5    8    5   81   16  132   17
 48    4    0    1    0    0    0    2    5    0    7    3    4    3    6   63   16   10    9   70
```
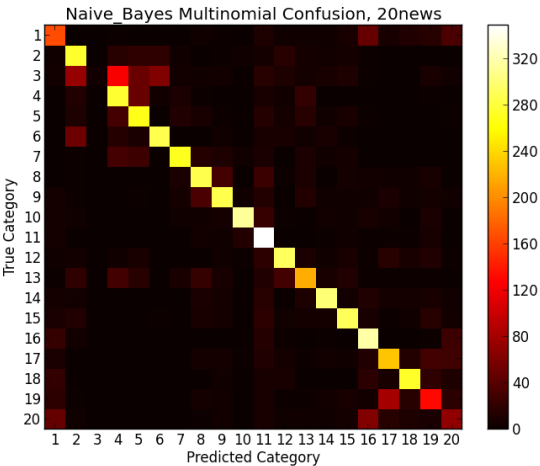

Naive_Bayes Multinomial Confusion, 20news

Data 4: Multinomial, 20news5 and 20news4

```
Report File: Naive_Bayes_Multinomial_20news5_report.txt
--------------------------------------------------------------------------------
Classification Report:
            precision    recall   f1-score    support

  computers       0.86      0.75       0.80       1955
 recreation       0.92      0.85       0.88       1590
    science       0.68      0.82       0.74       1579
   politics       0.77      0.76       0.77       1050
   religion       0.77      0.82       0.79        968

avg / total        0.81      0.80       0.80       7142


--------------------------------------------------------------------------------
Confusion Matrix:
1461    44   414    13    23
  71  1351    80    50    38
 100    40  1296    95    48
  28    24    67   798   133
  33    17    50    76   792
```
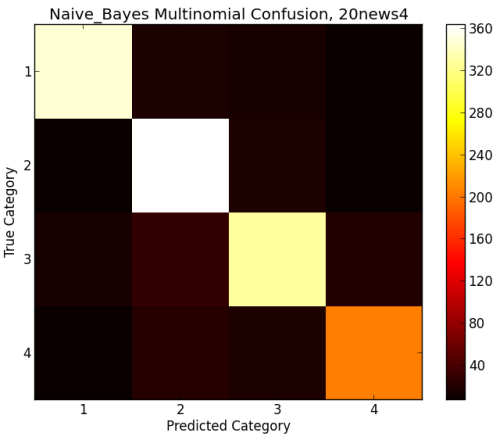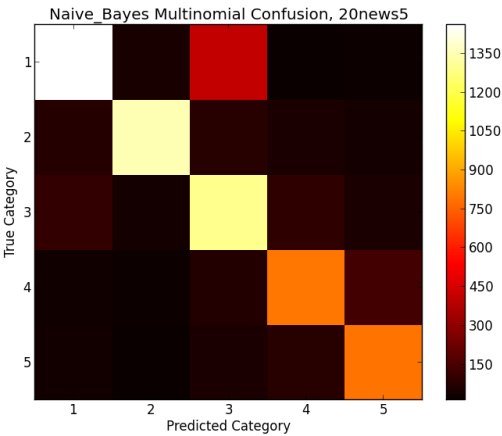
```
Report File: Naive_Bayes_Multinomial_20news4_report.txt
--------------------------------------------------------------------------------
Classification Report:
                  precision    recall   f1-score    support

     comp.graphics      0.92      0.89       0.91        389
 talk.religion.misc     0.84      0.92       0.88        396
         sci.space      0.87      0.84       0.85        394
         rec.autos      0.85      0.82       0.84        251

        avg / total     0.87      0.87       0.87       1430


--------------------------------------------------------------------------------
Confusion Matrix:
348    18    15     8
  8   364    17     7
 15    29   330    20
  7    21    18   205
```


Naive_Bayes Multinomial Confusion, 20news5

Naive_Bayes Multinomial Confusion, 20news4

Data 5: TFIDF, 20news

```
Report File: Naive_Bayes_TFIDF_20news_report.txt
--------------------------------------------------------------------------------
Classification Report:
                          precision    recall  f1-score   support

            alt.atheism       0.59      0.44      0.51       319
          comp.graphics       0.66      0.71      0.68       389
comp.os.ms-windows.misc       0.69      0.53      0.60       394
comp.sys.ibm.pc.hardware       0.60      0.70      0.65       392
  comp.sys.mac.hardware       0.73      0.70      0.71       385
         comp.windows.x       0.80      0.74      0.77       395
           misc.forsale       0.80      0.72      0.76       390
              rec.autos       0.75      0.72      0.74       396
        rec.motorcycles       0.75      0.73      0.74       398
     rec.sport.baseball       0.93      0.81      0.87       397
       rec.sport.hockey       0.59      0.93      0.72       399
              sci.crypt       0.73      0.77      0.75       396
        sci.electronics       0.72      0.58      0.65       393
                sci.med       0.84      0.78      0.81       396
              sci.space       0.74      0.80      0.77       394
  soc.religion.christian       0.59      0.89      0.71       398
     talk.politics.guns       0.58      0.71      0.64       364
  talk.politics.mideast       0.82      0.81      0.81       376
     talk.politics.misc       0.60      0.45      0.51       310
     talk.religion.misc       0.50      0.22      0.30       251

            avg / total       0.71      0.70      0.70      7532


--------------------------------------------------------------------------------
Confusion Matrix:
141    0    3    1    1    2    0    3    3    2   11    4    1    2   12   74   12   12   10   25
  1  276   11   15   15   24    6    0    5    2    7   13    3    0    7    2    0    2    0    0
  3   27  210   59   11   25    5    1    5    0   16   12    1    3    7    1    0    1    4    3
  0   11   31  273   32    2   11    2    0    0    8    2   18    0    1    0    0    0    1    0
  0   11    7   30  269    4    9    8    1    0   14    7   13    2    6    2    2    0    0    0
  0   45   16    8    7  291    2    0    0    1    7    5    5    2    4    1    1    0    0    0
  1    4    2   30   19    0  281   16    6    2   10    1    7    1    6    1    2    0    1    0
  1    1    2    1    1    0    8  286   32    0   25    3   10    2    7    2    4    3    8    0
  7    3    1    0    2    3    6   27  291    2   15    0   10    3    6    4    8    3    6    1
  5    2    0    0    0    1    6    0    3  323   34    3    1    3    3    3    4    2    4    0
  4    0    0    0    0    1    0    1    2    5  373    3    0    1    2    5    2    0    0    0
  1    8    7    3    3    3    1    0    4    2   17  303    3    1    5    3   19    5    7    1
  1    8    9   27   11    1   12   11   10    1   11   33  229   12   11    2    0    2    2    0
  4    5    0    1    0    0    2    5    3    1   16    0    5  308   10   17    9    3    5    2
  4    6    2    1    0    2    1    6    2    2   18    3    5    4  316    6    2    6    8    0
  7    3    1    0    0    2    0    1    1    1   14    1    0    1    1  354    2    0    2    7
  4    0    0    1    0    1    1    5    7    1   12   10    1    4   10   12  260    9   14   12
 10    3    1    1    0    1    0    1    4    2   10    2    1    0    0   13    9  303   15    0
 15    2    0    0    0    2    1    5    3    0    8    5    2    8    7    9   92   10  139    2
 30    4    1    1    0    0    0    2    4    0    8    4    2    8    5   89   23    9    7   54
```
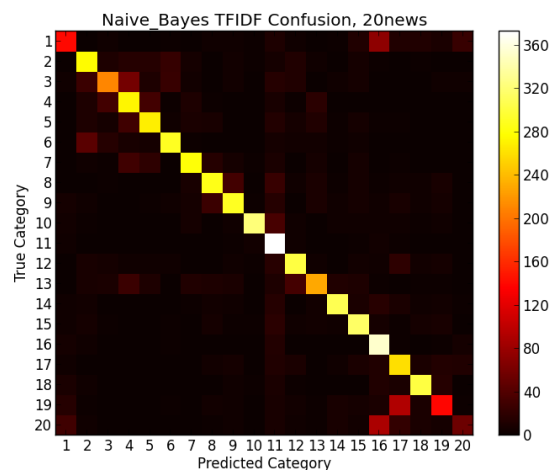

Naive_Bayes TFIDF Confusion, 20news

Data 6: TFIDF, 20news5 and 20news4

```
Report File: Naive_Bayes_TFIDF_20news5_report.txt
--------------------------------------------------------------------------------
Classification Report:
            precision    recall  f1-score   support

  computers       0.83      0.92      0.87      1955
 recreation       0.91      0.87      0.89      1590
    science       0.81      0.77      0.79      1579
   politics       0.80      0.79      0.79      1050
   religion       0.83      0.80      0.81       968

avg / total       0.84      0.84      0.84      7142


--------------------------------------------------------------------------------
Confusion Matrix:
1796    22   116    11    10
  86  1384    67    31    22
 193    61  1213    81    31
  38    35    56   826    95
  52    21    43    82   770
```

```
Report File: Naive_Bayes_TFIDF_20news4_report.txt
--------------------------------------------------------------------------------
Classification Report:
                  precision    recall  f1-score   support

     comp.graphics     0.93      0.89      0.91       389
 talk.religion.misc    0.85      0.92      0.88       396
         sci.space     0.87      0.86      0.86       394
         rec.autos     0.88      0.82      0.85       251

       avg / total     0.88      0.88      0.88      1430


--------------------------------------------------------------------------------
Confusion Matrix:
348    15    21     5
  7   365    15     9
 13    27   339    15
  8    22    16   205
```
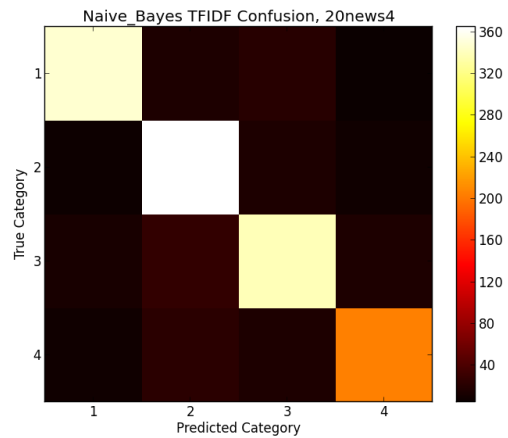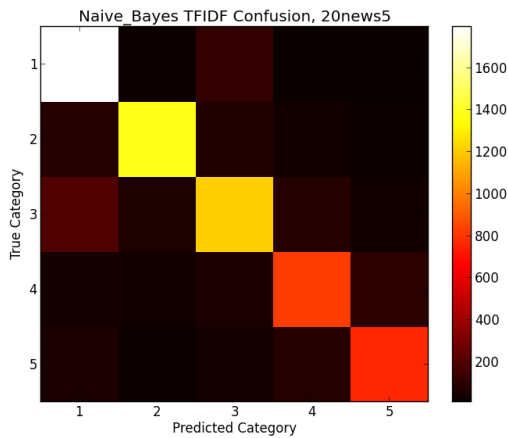

Naive_Bayes TFIDF Confusion, 20news5

Naive_Bayes TFIDF Confusion, 20news4

Data 7: Bernoulli, Reuters

```
Report File: Naive_Bayes_Bernoulli_Reuters21578-10_report.txt
--------------------------------------------------------------------------------
Classification Report:
              precision    recall  f1-score    support

        earn       0.97      0.94      0.96        789
         acq       0.91      0.98      0.94        472
       crude       0.90      0.87      0.88         82
       trade       0.94      0.81      0.87         72
    money-fx       0.80      0.70      0.75         61
    interest       0.73      0.77      0.75         57
money-supply       0.67      0.91      0.77         32
        ship       0.89      0.78      0.83         32
       sugar       1.00      1.00      1.00         29
      coffee       1.00      0.87      0.93         23

 avg / total       0.93      0.92      0.92       1649


--------------------------------------------------------------------------------
Confusion Matrix:
745   34    5    0    3    1    0    1    0    0
  9  461    0    2    0    0    0    0    0    0
  4    4   71    1    0    1    0    1    0    0
  3    0    1   58    2    2    5    1    0    0
  1    1    0    1   43   11    4    0    0    0
  3    0    1    0    4   44    5    0    0    0
  0    0    0    0    2    1   29    0    0    0
  0    6    1    0    0    0    0   25    0    0
  0    0    0    0    0    0    0    0   29    0
  1    2    0    0    0    0    0    0    0   20
```
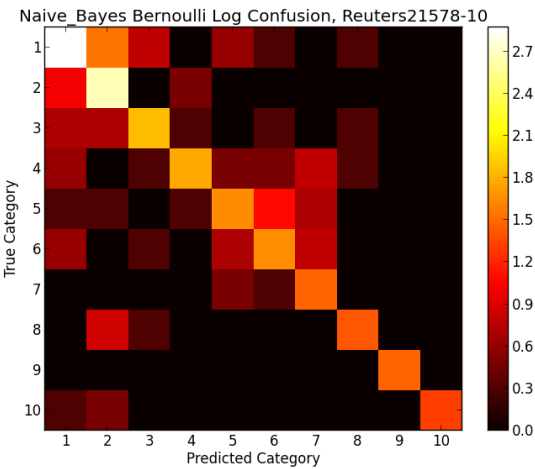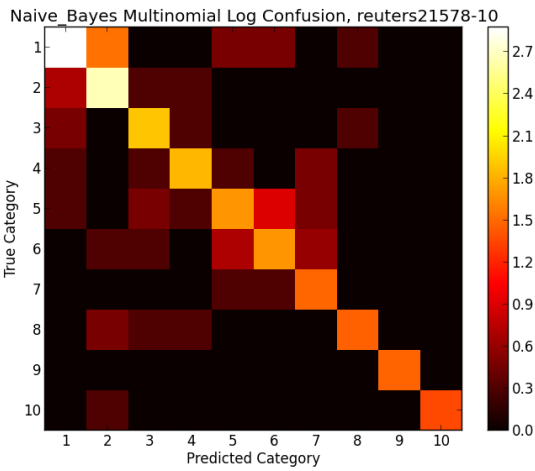

Naive_Bayes Bernoulli Log Confusion, Reuters21578-10

Data 8: Multinomial, Reuters

```
Report File: Naive_Bayes_Multinomial_reuters21578-10_report.txt
--------------------------------------------------------------------------------
Classification Report:
              precision    recall   f1-score     support

       earn        0.99      0.95       0.97         789
        acq        0.93      0.99       0.96         472
      crude        0.93      0.95       0.94          82
      trade        0.94      0.93       0.94          72
   money-fx        0.86      0.79       0.82          61
   interest        0.83      0.84       0.83          57
money-supply       0.81      0.94       0.87          32
       ship        0.93      0.88       0.90          32
      sugar        1.00      1.00       1.00          29
     coffee        1.00      0.96       0.98          23

avg / total        0.95      0.95       0.95        1649


--------------------------------------------------------------------------------
Confusion Matrix:
751   33    0    0    2    2    0    1    0    0
  4  466    1    1    0    0    0    0    0    0
  2    0   78    1    0    0    0    1    0    0
  1    0    1   67    1    0    2    0    0    0
  1    0    2    1   48    7    2    0    0    0
  0    1    1    0    4   48    3    0    0    0
  0    0    0    0    1    1   30    0    0    0
  0    2    1    1    0    0    0   28    0    0
  0    0    0    0    0    0    0    0   29    0
  0    1    0    0    0    0    0    0    0   22
```


Naive_Bayes Multinomial Log Confusion, reuters21578-10

Data 9: TFIDF, Reuters

```
Report File: Naive_Bayes_TFIDF_reuters21578-10_report.txt
--------------------------------------------------------------------------------
Classification Report:
              precision    recall  f1-score   support

        earn       0.98      0.95      0.97       789
         acq       0.92      0.99      0.95       472
       crude       0.93      0.96      0.95        82
       trade       0.92      0.99      0.95        72
    money-fx       0.88      0.84      0.86        61
    interest       0.89      0.84      0.86        57
money-supply       0.94      0.91      0.92        32
        ship       0.96      0.81      0.88        32
       sugar       1.00      1.00      1.00        29
      coffee       1.00      0.91      0.95        23

 avg / total       0.95      0.95      0.95      1649


--------------------------------------------------------------------------------
Confusion Matrix:
750   34    0    1    1    2    0    1    0    0
  5  465    1    1    0    0    0    0    0    0
  2    0   79    1    0    0    0    0    0    0
  1    0    0   71    0    0    0    0    0    0
  4    0    2    2   51    2    0    0    0    0
  0    1    1    0    5   48    2    0    0    0
  0    0    0    0    1    2   29    0    0    0
  1    2    2    1    0    0    0   26    0    0
  0    0    0    0    0    0    0    0   29    0
  0    2    0    0    0    0    0    0    0   21
```


Naive_Bayes TFIDF Log Confusion, reuters21578-10