

## Assignment 4

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*Code is zipped in a separate file.*

### Task 1

Result:

20\_newsgroups/comp.graphics/37261:

```
>>> print (arrGraphics[arrGraphics.nonzero()])  
[ 8.  2.  6.  3. 12.  4.  3.  6.  2.  1.  1.  5.  2.  2.  2.  3.  1.  1.  
  1.  1.  3.  1.  1.  2.  3.  4.  1.  1.  1.  1.  1.  3.  1.  1.  1.  2.  
  1.  1.  1.  2.  1.  1.  2.  1.  1.  1.  1.  1.  1.  1.  2.  1.  1.  
  2.  2.  1.  2.  1.  1.  1.  3.  4.  1.  1.  1.  1.  2.  1.  1.  1.  1.  
  1.  1.  1.  1.  2.  1.  1.  1.  1.  5.  2.  2.  1.  1.  5.  1.  4.  1.  
  1.  1.  2.  1.  2.  1. 11.  1.  1.  1.  1.  2.  2.  2.  5.  1.  2.  1.  
  1.  1.  1.  2.  1.  2.  2.  4.  1.  1.  1.  5.  1.  1.  1.  1.  2.  4.  
  1.  1.  1.  3.  1.  1.  1.  1.  3.  2.  2.  1.  1.  6.  1.  6.  1.  1.  
  3.  1.  1.  2.  1.  1.  1.  1.  7.  2.  1.  1.  1.  1.  1.  1.]
```

20\_newsgroups/talk.politics.mideast/75944:

```
>>> print (arrMideast[arrMideast.nonzero()])  
[135.  37.  71.  28.  49.  19.  46.  16.  13.  22.  9.  22.  11.  7.  
  7.  6.  4.  6. 12. 11. 10.  3. 10.  4.  2. 21.  5.  4.  
  2.  2.  1.  1.  1.  5.  1. 23.  5.  2.  1.  6.  8.  4.  
  7.  3.  3.  2.  1.  1.  6.  4.  4.  7.  1.  8.  7. 13.  
  4.  4. 10.  3.  3.  2.  2.  3.  7.  4.  1.  2.  4.  8.  
  4.  7.  2.  1.  1.  2.  1.  2.  2.  1.  5.  3.  3.  3.  
  1.  1.  1.  2.  1.  4.  3.  1.  3.  3.  4.  7.  1.  2.  
  1.  3.  2.  1.  4.  6.  3. 11.  1.  6.  3.  1.  3.  1.  
  2.  1.  1.  1.  3.  3.  2.  5.  2.  2.  2.  2.  1.  1.  
  1.  1.  1.  3.  1.  1.  1.  1.  3.  3.  4.  1.  1.  5.  
  1.  1.  2.  6.  2.  2.  1.  1.  1.  1.  1.  1.  3.  5.  
  1.  1.  1.  1.  2.  1.  1.  1.  6.  1.  1.  2.  1.  3.  
  2.  1.  1.  3.  2.  2.  3.  8.  1.  1.  1.  1.  2.  3.]
```

1. 2. 6. 1. 1. 2. 1. 13. 4. 1. 1. 1. 1. 1.  
 3. 1. 1. 2. 2. 1. 1. 1. 2. 1. 1. 1. 1. 3.  
 1. 2. 4. 26. 1. 1. 3. 2. 2. 1. 3. 1. 1. 1.  
 1. 1. 1. 1. 1. 2. 6. 1. 1. 1. 6. 1. 1. 1.  
 4. 2. 1. 1. 1. 1. 1. 4. 1. 1. 1. 1. 1. 1.  
 1. 3. 4. 4. 4. 3. 1. 3. 1. 1. 1. 1. 1. 1.  
 4. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 2.  
 1. 1. 2. 1. 9. 1. 1. 2. 1. 1. 1. 5. 1. 1.  
 2. 1. 1. 2. 1. 1. 1. 1. 6. 1. 1. 1. 1. 1.  
 3. 1. 2. 1. 1. 1. 2. 1. 2. 9. 1. 1. 1. 2.  
 1. 1. 2. 2. 2. 1. 1. 2. 4. 1. 1. 1. 2. 1.  
 1. 1. 1. 11. 2. 1. 1. 1. 1. 1. 1. 1. 2. 1.  
 1. 1. 1. 1. 1. 2. 9. 1. 2. 7. 3. 3. 2. 1.  
 1. 2. 1. 1. 1. 2. 2. 1. 1. 1. 3. 8. 1. 1.  
 1. 1. 1. 1. 1. 8. 1. 2. 1. 1. 1. 1. 1. 1.  
 1. 1. 1. 1. 1. 10. 1. 1. 1. 2. 1. 2. 3. 4.  
 1. 1. 1. 1. 1. 1. 1. 3. 1. 1. 1. 1. 1. 1.  
 8. 1. 1. 1. 1. 1. 1. 1. 6. 1. 1. 1. 1. 1.  
 1. 1. 1. 1. 2. 1. 1. 1. 1. 1. 11. 2. 1. 1.  
 1. 1. 1. 2. 1. 1. 3. 3. 1. 1. 1. 1. 1. 1.  
 1. 1. 1. 1. 1. 2. 1. 3. 1. 1. 1. 1. 1. 1.  
 1. 1. 1. 1. 1. 2. 1. 4. 2. 3. 1. 1. 1. 4.  
 1. 1. 4. 1. 1. 1. 2. 4. 1. 1. 1. 1. 2. 3.  
 1. 1. 1. 2. 1. 2. 1. 1. 1. 1. 1. 1. 1. 1.  
 1. 1. 2. 1. 1. 1. 1. 1. 2. 1. 2. 1. 2. 2.  
 1. 1. 1. 1. 1. 4. 1. 1. 1. 1. 8. 1. 2. 1.  
 1. 1. 2. 3. 1. 1. 1. 1. 1. 3. 1. 1. 1. 1.  
 1. 4. 1. 1. 1. 3. 2. 1. 1. 1. 1. 2. 1. 1.  
 1. 1. 2. 1. 1. 1. 1. 1. 1. 1. 1. 2. 1.  
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 2. 1. 1.  
 1. 1. 1. 4. 3. 2. 1. 2. 1. 2. 1.]

20\_newsgroups/sci.med/58763:

```

>>> print (arrMed[arrMed.nonzero()])
[4. 4. 3. 2. 1. 1. 4. 3. 1. 2. 1. 5. 1. 2. 1. 1. 1. 2. 1. 1. 1. 1. 1.
 2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 2. 2. 1. 1. 1. 1. 1.
 1. 1. 1. 1. 1. 1. 1. 2. 1. 1. 1. 1. 2. 1. 1. 1. 2. 1. 5. 1. 1. 1. 1.
 1. 1. 2. 1. 2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 3. 1. 1.]

```

## Task 2

### Result:

20\_newsgroups/comp.graphics/37261:

```
>>> print(arrComp[arrComp.nonzero()])  
[1.92555059e-03 8.50478606e-04 3.65947527e-03 1.27515309e-03  
7.26881462e-03 2.19975741e-03 2.66216132e-03 6.35871363e-03  
3.43014584e-03 1.65693809e-03 9.44999233e-03 3.95217425e-03  
4.19787791e-03 5.18781198e-03 6.54906258e-03 9.61804463e-06  
9.42766276e-03 2.87951994e-03 5.38035007e-04 6.14710796e-03  
9.49332595e-03 1.50258572e-02 3.37418661e-03 4.94317579e-03  
5.98488082e-03 4.54842076e-03 4.99141867e-03 1.65903978e-02  
4.91237317e-03 7.28885166e-03 6.36745621e-03 1.33917572e-02  
6.28356577e-03 7.13964429e-03 7.13821425e-03 1.59751652e-02  
6.41882998e-03 7.64721754e-03 1.62776158e-02 8.57654687e-03  
7.64721754e-03 8.98232287e-03 8.13687431e-03 7.89645803e-03  
8.90098531e-03 8.51964347e-03 8.08508990e-03 1.72643992e-02  
8.86948389e-03 9.22023607e-03 2.01086375e-02 2.13909906e-02  
1.05521284e-02 1.99249503e-02 1.03349188e-02 9.82126974e-03  
1.04846708e-02 3.22766724e-02 4.18291549e-02 1.12750179e-02  
1.09072460e-02 1.15831427e-02 1.14176787e-02 2.29934203e-02  
1.12501771e-02 1.20844660e-02 1.10766217e-02 1.17285929e-02  
1.13455801e-02 1.16161455e-02 1.18747446e-02 1.17746633e-02  
2.43627756e-02 1.30455569e-02 1.22276075e-02 1.23083739e-02  
1.35702072e-02 6.68355875e-02 2.64048707e-02 2.64227453e-02  
1.24333419e-02 1.27369322e-02 6.59676107e-02 1.24404248e-02  
5.50191332e-02 1.27837904e-02 1.36103441e-02 1.34238833e-02  
2.67718630e-02 1.36407694e-02 3.04637923e-02 1.38510787e-02  
1.67550858e-01 1.46863490e-02 1.49479000e-02 1.46724068e-02  
1.51344992e-02 3.01422477e-02 2.99871466e-02 2.96874341e-02  
8.16808649e-02 1.54008745e-02 3.19745942e-02 1.59666661e-02  
1.61138574e-02 1.61138574e-02 1.61354292e-02 3.41042871e-02  
1.63132576e-02 3.39910789e-02 3.56393971e-02 7.18675593e-02  
1.78924764e-02 1.74457237e-02 1.71389064e-02 1.04179133e-01  
1.97732182e-02 1.82007228e-02 2.02620792e-02 1.83663202e-02  
4.20396654e-02 7.50891528e-02 1.88696852e-02 1.89194795e-02  
1.91265005e-02 5.63168646e-02 1.92350761e-02 1.93473329e-02  
1.88206286e-02 1.92350761e-02 5.97170587e-02 3.92916929e-02]
```

3.99479240e-02 2.01148879e-02 2.02620792e-02 1.32024656e-01  
2.13165617e-02 1.40466044e-01 2.11158179e-02 2.34110073e-02  
6.81339249e-02 2.11158179e-02 2.17587186e-02 4.35174373e-02  
2.21339792e-02 2.27113083e-02 2.27113083e-02 2.28728651e-02  
2.04083036e-01 4.64434820e-02 2.30427105e-02 2.42992986e-02  
2.40539080e-02 2.48524578e-02 2.42992986e-02]

20\_newsgroups/talk.politics.mideast/75944:

```
>>> print(arrTalk[arrTalk.nonzero()])  
[5.54725111e-03 2.68605086e-03 7.39273306e-03 2.03178717e-03  
5.06707738e-03 1.94545485e-03 4.31868710e-03 2.42388609e-03  
2.46472840e-03 4.14154280e-03 1.62831955e-03 6.62550483e-03  
3.22073049e-03 2.43657927e-03 1.69721414e-03 1.15698386e-03  
1.93593964e-03 4.04824180e-03 3.94159141e-03 2.94504525e-03  
9.88048494e-04 4.42826235e-03 1.49072312e-03 5.28678488e-04  
1.04214371e-02 1.86094552e-03 1.49772974e-03 1.04087154e-03  
1.64197257e-06 2.22622265e-03 4.73573904e-05 1.23392775e-02  
1.00104738e-03 9.83171309e-04 9.65207547e-04 3.03599781e-03  
3.98260227e-03 2.13198368e-03 3.57653570e-03 1.57413222e-03  
2.17955958e-03 1.07444211e-03 5.40226952e-04 5.59517954e-04  
3.84777461e-03 1.44634481e-03 2.21205679e-03 6.24049705e-03  
5.63104209e-04 4.86079553e-03 4.90455048e-03 7.84729739e-03  
1.77626038e-03 2.30413648e-03 7.10498595e-03 1.96850758e-03  
2.16703483e-03 1.31035475e-03 1.36934217e-03 1.94164808e-03  
5.81927334e-03 2.86998439e-03 1.36267792e-03 1.45303972e-03  
3.47796655e-03 6.75110950e-03 2.96447004e-03 5.13676332e-03  
1.55299386e-03 1.39374925e-03 7.44483602e-04 1.48960041e-03  
8.19877288e-04 1.73294509e-03 1.59879298e-03 8.04183656e-04  
5.12938309e-03 2.50805724e-03 2.55637383e-03 2.43592804e-03  
8.68439688e-04 8.90132820e-04 1.51500388e-03 1.87415561e-03  
1.47175815e-03 3.73352652e-03 2.91159940e-03 8.95481969e-04  
2.74919301e-03 2.73594560e-03 3.94921536e-03 6.43284322e-03  
9.41246420e-04 2.15148451e-03 9.90881645e-04 2.99283121e-03  
2.01554418e-03 9.63339843e-04 4.03647370e-03 6.18664562e-03  
3.09437419e-03 1.14412419e-02 1.04727765e-03 6.46812994e-03  
2.94738368e-03 8.38630128e-04 3.02887238e-03 1.24561624e-03  
2.07560755e-03 1.04475964e-03 1.06858419e-03 9.54857618e-04  
3.66614576e-03 3.47542870e-03 2.19044071e-03 5.46533058e-03  
2.17407776e-03 2.28621293e-03 2.17989452e-03 2.14543455e-03  
1.21594255e-03 1.35797367e-03 1.14847082e-03 1.20463876e-03]
```

1.23571864e-03 3.65586326e-03 1.48294476e-03 1.19122644e-03  
1.72118288e-03 1.19472526e-03 4.10036054e-03 3.68466389e-03  
5.05531136e-03 1.23345898e-03 1.23120831e-03 6.42692941e-03  
1.26171657e-03 1.22971283e-03 2.77888071e-03 8.50936495e-03  
2.67244625e-03 2.57242105e-03 1.30665677e-03 1.32609646e-03  
1.36646971e-03 1.33113712e-03 1.39175645e-03 1.34196217e-03  
4.06737502e-03 6.66015665e-03 1.33203133e-03 1.35516979e-03  
1.47751669e-03 1.40044312e-03 2.74441105e-03 1.77340069e-03  
1.40789911e-03 1.49754646e-03 9.17519717e-03 1.79193649e-03  
1.55162439e-03 2.80764004e-03 1.41476369e-03 4.55867309e-03  
2.84412471e-03 1.46947107e-03 1.52289276e-03 4.36336743e-03  
2.94734231e-03 3.08925841e-03 4.56617143e-03 1.48000188e-02  
1.48294476e-03 1.51417984e-03 1.65512923e-03 1.48607009e-03  
3.03248439e-03 4.51193830e-03 1.53771952e-03 3.30814720e-03  
9.82160631e-03 1.65301994e-03 1.64310687e-03 3.16100856e-03  
1.45076350e-03 2.28045094e-02 6.28527927e-03 1.58375442e-03  
1.55915286e-03 1.65883955e-03 1.99742033e-03 1.66418261e-03  
5.26825408e-03 1.60462324e-03 1.63591216e-03 3.35883510e-03  
3.65182541e-03 1.64725962e-03 1.80143740e-03 1.66471970e-03  
3.48471461e-03 1.94125903e-03 1.70249386e-03 1.62229003e-03  
1.67886632e-03 5.49065092e-03 1.62981732e-03 3.51850320e-03  
7.18938406e-03 6.82825870e-02 1.83673546e-03 1.84112325e-03  
7.45846129e-03 3.46394698e-03 3.56254061e-03 1.92484759e-03  
5.31435087e-03 1.76371529e-03 1.79734601e-03 1.80212219e-03  
1.75988711e-03 1.85524697e-03 1.71351579e-03 1.81110074e-03  
1.85902314e-03 3.59062274e-03 1.59576275e-02 1.81810567e-03  
1.76886018e-03 1.74112573e-03 1.21087323e-02 1.99838912e-03  
1.81529327e-03 1.91555955e-03 7.20301378e-03 3.92903592e-03  
2.03030115e-03 2.05654965e-03 2.34281276e-03 1.89338843e-03  
1.91976248e-03 7.71648164e-03 2.03441986e-03 1.84185787e-03  
1.93256207e-03 1.94477563e-03 1.94213613e-03 1.82949731e-03  
1.91305272e-03 5.48418222e-03 8.20480615e-03 8.00912394e-03  
8.13354947e-03 5.95776745e-03 2.10946125e-03 6.04535353e-03  
1.90559822e-03 1.92145244e-03 2.04170062e-03 2.01312387e-03  
1.92229932e-03 2.20154005e-03 8.24779536e-03 2.01611747e-03  
1.98687176e-03 2.14854661e-03 2.10009803e-03 2.06630563e-03  
2.00619983e-03 2.01611747e-03 2.01113690e-03 2.01411998e-03  
2.01014603e-03 1.95906495e-03 2.11658686e-03 3.97945835e-03  
1.99548771e-03 2.15746909e-03 5.10374880e-03 2.13727797e-03  
2.08962793e-02 2.24034273e-03 2.11064263e-03 5.25250669e-03  
2.36648380e-03 2.05120154e-03 2.06521328e-03 1.10922888e-02  
2.07623295e-03 2.01212951e-03 4.13261127e-03 2.02825299e-03  
2.45923005e-03 4.92725845e-03 2.30488266e-03 2.10125999e-03  
2.10476025e-03 2.13234090e-03 1.39000653e-02 2.03961082e-03

2.20154005e-03 2.10593184e-03 2.20993562e-03 2.50247258e-03  
6.33903847e-03 2.38155912e-03 4.51083611e-03 2.33221324e-03  
2.31159243e-03 2.26466008e-03 4.34884514e-03 2.13851901e-03  
4.69998231e-03 2.40214731e-02 2.26466008e-03 2.59476063e-03  
2.36093261e-03 4.90972969e-03 2.35543541e-03 2.07958118e-03  
4.43691552e-03 4.36484421e-03 4.39477714e-03 2.34459883e-03  
2.26933837e-03 4.41987124e-03 9.23963003e-03 2.19190026e-03  
2.32180881e-03 2.34999115e-03 4.53243042e-03 2.21702845e-03  
2.41702455e-03 2.23002422e-03 2.25085309e-03 2.55588260e-02  
4.77078324e-03 2.31667754e-03 2.37397121e-03 2.23295320e-03  
2.22132726e-03 2.40296685e-03 2.41095697e-03 2.29332887e-03  
4.66442648e-03 2.29990209e-03 2.34999115e-03 2.24482326e-03  
2.77338907e-03 2.37209004e-03 2.29496502e-03 5.41022468e-03  
2.24798561e-02 2.40894882e-03 4.71452376e-03 1.66575680e-02  
7.05540026e-03 7.23891680e-03 5.09859807e-03 2.33396608e-03  
2.62039535e-03 4.72925468e-03 2.30488266e-03 2.46806290e-03  
2.55706059e-03 5.02402716e-03 5.00968555e-03 2.47253163e-03  
2.37965257e-03 2.46362922e-03 7.49328537e-03 2.17505363e-02  
2.57559639e-03 2.37021511e-03 2.52910792e-03 2.53159272e-03  
2.45923005e-03 2.37209004e-03 2.68843588e-03 2.17228767e-02  
2.64116954e-03 4.99552358e-03 2.49308994e-03 2.39704752e-03  
2.42728420e-03 2.46362922e-03 2.35361483e-03 2.53659533e-03  
2.62039535e-03 2.42110609e-03 2.74001794e-03 2.61172064e-03  
2.69838260e-03 2.63815465e-02 2.43353057e-03 2.61172064e-03  
2.53159272e-03 5.12458961e-03 2.51684516e-03 4.94506326e-03  
8.18795431e-03 1.16250166e-02 2.55967164e-03 2.52910792e-03  
2.62920526e-03 2.65339253e-03 2.59755220e-03 2.51684516e-03  
2.54929904e-03 9.54212225e-03 2.55187440e-03 2.66905257e-03  
2.68515882e-03 2.54418324e-03 2.55967164e-03 2.87798371e-03  
2.18914302e-02 2.71535959e-03 2.76204506e-03 2.70173746e-03  
2.92093787e-03 2.60035762e-03 2.58100591e-03 2.72579603e-03  
1.72955902e-02 2.81293604e-03 2.68515882e-03 2.67223731e-03  
2.84236304e-03 2.78496540e-03 2.77338907e-03 2.65031192e-03  
2.93601319e-03 2.74001794e-03 6.08428374e-03 2.83379786e-03  
2.75831375e-03 2.74726536e-03 2.75092422e-03 2.86436158e-03  
3.33298306e-02 5.72872316e-03 2.75831375e-03 2.69838260e-03  
2.89667272e-03 2.70511234e-03 2.74363004e-03 5.54677814e-03  
2.77722157e-03 2.80885450e-03 8.82338696e-03 8.29740347e-03  
2.96206809e-03 3.04831997e-03 2.79281680e-03 3.12114805e-03  
2.99500698e-03 2.79678377e-03 2.77722157e-03 2.83379786e-03  
2.82956345e-03 2.83379786e-03 2.89194223e-03 6.16053165e-03  
2.81293604e-03 8.60659775e-03 2.76204506e-03 2.81293604e-03  
2.91110647e-03 2.82956345e-03 2.76958238e-03 2.81293604e-03  
2.81293604e-03 3.17291018e-03 2.82956345e-03 2.97829766e-03

3.05456635e-03 6.33043804e-03 2.96206809e-03 1.21932799e-02  
5.96762547e-03 9.26063248e-03 3.12825873e-03 3.08687749e-03  
2.93601319e-03 1.22182654e-02 2.94112899e-03 2.95150159e-03  
1.30977132e-02 2.92591844e-03 3.17291018e-03 3.37564268e-03  
6.54885662e-03 1.35930294e-02 3.16521902e-03 3.00642740e-03  
3.02400263e-03 3.14275417e-03 6.10913270e-03 9.18264755e-03  
3.08026583e-03 3.06088252e-03 3.08026583e-03 6.27091997e-03  
3.02998460e-03 6.10913270e-03 3.03603055e-03 3.22139340e-03  
3.15014370e-03 3.10033744e-03 3.21301856e-03 3.20476599e-03  
3.10718954e-03 3.18070742e-03 3.20476599e-03 3.15014370e-03  
6.31526221e-03 3.16521902e-03 3.22139340e-03 3.34333154e-03  
3.12114805e-03 3.17291018e-03 6.42603712e-03 3.15014370e-03  
6.36141484e-03 3.17291018e-03 6.39326433e-03 6.47704949e-03  
3.32277323e-03 3.17291018e-03 3.18070742e-03 3.24728912e-03  
3.21301856e-03 1.38883831e-02 3.22989418e-03 3.33295894e-03  
3.45910000e-03 3.43397182e-03 3.10178184e-02 3.25619153e-03  
7.42920637e-03 3.30293642e-03 3.49901949e-03 3.37564268e-03  
6.68666308e-03 1.16316819e-02 3.38683693e-03 3.31276782e-03  
3.36466581e-03 3.42181455e-03 3.32277323e-03 1.03773000e-02  
3.32277323e-03 3.34333154e-03 3.40991324e-03 3.36466581e-03  
3.71460318e-03 1.38883831e-02 3.47209577e-03 3.54197365e-03  
3.42181455e-03 1.03773000e-02 7.20969702e-03 3.51297800e-03  
3.40991324e-03 3.45910000e-03 3.52728994e-03 7.05457987e-03  
3.44639630e-03 3.55704897e-03 3.54197365e-03 3.47209577e-03  
7.11409794e-03 3.52728994e-03 3.51297800e-03 3.75649576e-03  
3.57253737e-03 3.60484851e-03 3.71460318e-03 4.35619727e-03  
3.82580177e-03 3.71460318e-03 7.51299152e-03 3.67560213e-03  
3.73516149e-03 3.77866688e-03 3.73516149e-03 3.77866688e-03  
3.71460318e-03 3.77866688e-03 3.87722731e-03 3.90480795e-03  
3.82580177e-03 3.82580177e-03 3.90480795e-03 7.99335692e-03  
3.93380360e-03 4.14832571e-03 4.10643313e-03 4.10643313e-03  
4.03094902e-03 1.67742926e-02 1.32683369e-02 8.71239453e-03  
4.29663790e-03 8.38714629e-03 4.10643313e-03 8.59327580e-03  
4.14832571e-03]

20\_newsgroups/sci.med/58763:

```
>>> print(arrSci[arrSci.nonzero()])  
[2.34482371e-03 4.14265386e-03 4.42577019e-03 2.92148526e-03  
1.33936842e-03 2.16121698e-03 1.08191180e-02 8.05687963e-03  
2.58109075e-03 8.59275516e-03 4.17703243e-03 4.12642026e-03  
9.62545664e-03 4.20143956e-03 6.31741620e-03 5.31671210e-03
```

1.48492077e-02 2.34245926e-05 6.75606643e-04 2.85621422e-03  
1.39301109e-02 7.98215533e-03 5.15843543e-03 7.88937191e-03  
8.61158132e-03 6.33508993e-03 9.41006605e-03 1.04688183e-02  
1.10776054e-02 1.06254158e-02 1.15837546e-02 1.47099141e-02  
1.39793137e-02 1.47149138e-02 1.53791960e-02 1.36221220e-02  
1.58114516e-02 3.46935867e-02 3.42222836e-02 1.70775536e-02  
1.82594869e-02 1.83374808e-02 2.12790916e-02 1.99693017e-02  
2.16014850e-02 2.17616535e-02 2.77570110e-02 2.30871061e-02  
2.31437988e-02 2.52717384e-02 2.50165686e-02 5.76677542e-02  
2.58076567e-02 2.72681028e-02 3.02984539e-02 2.82909350e-02  
6.64934520e-02 3.03504273e-02 3.12699320e-02 3.30500207e-02  
6.64437477e-02 4.11898951e-02 2.22132596e-01 3.43093815e-02  
3.48071684e-02 3.87869947e-02 3.79869411e-02 4.06113152e-02  
3.78096918e-02 3.85914817e-02 8.45144911e-02 4.43275669e-02  
8.94617535e-02 4.18132151e-02 4.35768377e-02 4.37580704e-02  
4.41332318e-02 4.24887787e-02 4.76963992e-02 4.50471728e-02  
5.07453196e-02 4.99174635e-02 1.62708477e-01 5.61201497e-02  
5.70171306e-02]

### Task 3

#### Result:

'comp.graphics'  
'talk.religion.misc'  
'alt.atheism'  
'alt.atheism'  
'sci.space'  
'talk.politics.misc'  
'talk.politics.guns'  
'talk.politics.mideast'