In [7]:

```
from scipy.spatial.distance import cdist
import numpy as np
class CosineSimilarity(object):
    def cosSim(self,a, b):
        dot = np.dot(a, b)
        norma = np.linalg.norm(a)
        normb = np.linalg.norm(b)
        cos = dot / (norma * normb)
        return cos
```

In [12]:

```
if __name__ == "__main__":
    the =np.array([0.131, 0.001, 0.023, 0.918, 0.991, 0.912, 0.787, 0.675, 0.787, 0.987])
    cat = np.array([0.911, 0.891, 0.912, 0.016, 0.099, 0.189, 0.777, 0.776, 0.853, 0.992])
    for_ = np.array([0.112, 0.009, 0.032, 0.819, 0.971, 0.932, 0.788, 0.677, 0.777, 0.988])
    data = np.array([0.954, 0.919, 0.881, 0.812, 0.901, 0.990, 0.012, 0.002, 0.014, 0.909])
    mouse = np.array([0.912, 0.881, 0.922, 0.019, 0.100, 0.199, 0.011, 0.003, 0.016, 0.898])
    it = np.array([0.142, 0.010, 0.026, 0.820, 0.917, 0.923, 0.781, 0.611, 0.722, 0.977])
    dog = np.array([0.922, 0.882, 0.931, 0.011, 0.101, 0.193, 0.769, 0.762, 0.841, 0.989])
    also = np.array([0.121, 0.004, 0.021, 0.919, 0.981, 0.917, 0.790, 0.617, 0.712, 0.969])
    computer = np.array([0.912, 0.923, 0.899, 0.853, 0.910, 0.991, 0.022, 0.010, 0.016, 0.912])


    #3 nearest neighbor of cat
    print(CosineSimilarity().cosSim(cat, the))
    print(CosineSimilarity().cosSim(cat, for_))
    print(CosineSimilarity().cosSim(cat, data))
    print(CosineSimilarity().cosSim(cat, mouse))
    print(CosineSimilarity().cosSim(cat, it))
    print(CosineSimilarity().cosSim(cat, dog))
    print(CosineSimilarity().cosSim(cat, also))
    print(CosineSimilarity().cosSim(cat, computer))
```

```
0.5969642596224372
0.6064200638550592
0.6604214298514217
0.8069059656464488
0.606230088862793
0.9999071932103957
0.5849669075267356
0.6577737671141277
```

In [14]:

```
    #3 nearest neighbor of computer
    print(CosineSimilarity().cosSim(computer, the))
    print(CosineSimilarity().cosSim(computer, for_))
    print(CosineSimilarity().cosSim(computer, data))
    print(CosineSimilarity().cosSim(computer, mouse))
    print(CosineSimilarity().cosSim(computer, it))
    print(CosineSimilarity().cosSim(computer, dog))
    print(CosineSimilarity().cosSim(computer, also))
    print(CosineSimilarity().cosSim(computer, cat))
```

```
0.655148259644331
0.6517125735184346
0.9996640177196193
0.816147502773864
0.663583374559236
0.6619753729437896
0.6642668333372335
0.6577737671141277
```

In [15]:

```
    #3 nearest neighbor of the
    print(CosineSimilarity().cosSim(the, computer))
```

```
    print(CosineSimilarity().cosSim(the, for_))
    print(CosineSimilarity().cosSim(the, data))
    print(CosineSimilarity().cosSim(the, mouse))
    print(CosineSimilarity().cosSim(the, it))
    print(CosineSimilarity().cosSim(the, dog))
    print(CosineSimilarity().cosSim(the, also))
    print(CosineSimilarity().cosSim(the, cat))
```

```
0.655148259644331
0.9990916713931316
0.6473562342495666
0.32060085114877945
0.9988488550590425
0.5933226317859459
0.9993256668326264
0.5969642596224372
```

In [ ]:

```
```