

11791 Homework 4 Report

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Execution Result before Improvement:

```
qid=1 rel=99 Classical music is dying
qid=1 rel=0 Pop music has absorbed influences from most other genres of popular music
qid=1 rel=1 Classical music may never be the most popular music
qid=1 rel=0 Everybody knows classical music when they hear it
qid=2 rel=99 Energy plays an important role in climate change
qid=2 rel=0 Old wine and friends improve with age
qid=2 rel=0 With clothes the new are the best, with friends the old are the best
qid=2 rel=1 Climate change and energy use are two sides of the same coin.
qid=3 rel=99 One's best friend is oneself
qid=3 rel=1 The best mirror is an old friend
qid=3 rel=0 My best friend is the one who brings out the best in me
qid=3 rel=0 The best antiques are old friends
qid=4 rel=99 The shortest distance between new friends is a smile
qid=4 rel=0 Wear a smile and have friends; wear a scowl and have wrinkles
qid=4 rel=1 If you see a friend without a smile, give him one of yours
qid=4 rel=0 Behind every girls smile is a best friend who put it there
qid=5 rel=99 It takes a long time to grow an old friend
qid=5 rel=0 Old wine and friends improve with age
qid=5 rel=0 With clothes the new are the best, with friends the old are the best
qid=5 rel=1 Old friends are best
```

Console Declaration Problems @ Javadoc Outline Utils.java

<terminated> VectorSpaceRetrieval [Java Application] /usr/lib/jvm/java-6-openjdk-i386/bin/java (2013年10月27)

Score: 0.45226701686664544 Rank: 1 rel: 1 qid: 1 sent: 3
Score: 0.07216878364870323 Rank: 1 rel: 1 qid: 2 sent: 3
Score: 0.5070925528371099 Rank: 1 rel: 1 qid: 3 sent: 3
Score: 0.24343224778007383 Rank: 3 rel: 1 qid: 4 sent: 3
Score: 0.0 Rank: 2 rel: 1 qid: 5 sent: 3
(MRR) Mean Reciprocal Rank ::0.6
Total time taken: 0.587

Error Analysis:

Case 5: We notice the upper-lower case letter difference of the same word may lead to failed match in the cosine similarity computation process.

Therefore introducing such rule that for every word in the dictionary it should be lower cased.

Performance after improvement:

```

qid=1 rel=99 Classical music is dying
qid=1 rel=0 Pop music has absorbed influences from most other genres of popular music
qid=1 rel=1 Classical music may never be the most popular music
qid=1 rel=0 Everybody knows classical music when they hear it
qid=2 rel=99 Energy plays an important role in climate change
qid=2 rel=0 Old wine and friends improve with age
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qid=3 rel=0 The best antiques are old friends
qid=4 rel=99 The shortest distance between new friends is a smile
qid=4 rel=0 Wear a smile and have friends; wear a scowl and have wrinkles
qid=4 rel=1 If you see a friend without a smile, give him one of yours
qid=4 rel=0 Behind every girl's smile is a best friend who put it there
qid=5 rel=99 It takes a long time to grow an old friend
qid=5 rel=0 Old wine and friends improve with age
qid=5 rel=0 With clothes the new are the best, with friends the old are the best
qid=5 rel=1 Old friends are best

```

Console Declaration Problems @ Javadoc Outline Utils.java "1

<terminated> VectorSpaceRetrieval [Java Application] /usr/lib/jvm/java-6-openjdk-i386/bin/java (2013年10月27日)

```

Score: 0.45226701686664544 Rank: 1 rel: 1 qid: 1 sent: 3
Score: 0.21650635094610968 Rank: 1 rel: 1 qid: 2 sent: 3
Score: 0.5070925528371099 Rank: 1 rel: 1 qid: 3 sent: 3
Score: 0.24343224778007383 Rank: 3 rel: 1 qid: 4 sent: 3
Score: 0.11785113019775793 Rank: 1 rel: 1 qid: 5 sent: 3
(MRR) Mean Reciprocal Rank ::0.8
Total time taken: 0.56

```