

IR (Chapter 06) Classwork Solution

Dell Zhang
Birkbeck, University of London

1. Computing rank of document 1 (inner product of both vectors):
 $q \cdot d_1 = 0 \times 2 + 0 \times 0 + 0 \times 1 + 3 \times 2 + 0 \times 0 + 4 \times 0 = 6$

Computing rank of document 2 (inner product of both vectors):
 $q \cdot d_2 = 0 \times 0 + 0 \times 3 + 0 \times 2 + 3 \times 1 + 0 \times 1 + 4 \times 1 = 7$

Computing the length of document 1:
 $\sqrt{d_1 \cdot d_1} = \sqrt{2 \times 2 + 0 \times 0 + 1 \times 1 + 2 \times 2 + 0 \times 0 + 0 \times 0} = \sqrt{9} = 3$

Computing the length of document 2:
 $\sqrt{d_2 \cdot d_2} = \sqrt{0 \times 0 + 3 \times 3 + 2 \times 2 + 1 \times 1 + 1 \times 1 + 1 \times 1} = \sqrt{16} = 4$

Computing the length of the query:
 $\sqrt{q \cdot q} = \sqrt{0 \times 0 + 0 \times 0 + 0 \times 0 + 3 \times 3 + 4 \times 4 + 0 \times 0} = \sqrt{25} = 5$

So $rank(d_1) = \frac{6}{5 \times 3} = 0.40$ and $rank(d_2) = \frac{7}{5 \times 4} = 0.35$; therefore document 1 will be listed before document 2.