In [3]:
```python
import nltk
import numpy as np
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.metrics.pairwise import cosine_similarity

# Read in sentences from file
with open('book.txt', 'r') as f:
    sentences = [line.strip() for line in f]

print("Text FILE :")
print(sentences)

# Add input sentence to list of sentences
input_sentence = input("Enter the text  :")
sentences.append(input_sentence)

# Convert sentences to Bag of Words vectors
vectorizer = CountVectorizer().fit_transform(sentences)
vectors = vectorizer.toarray()

# Calculate pairwise cosine similarity between vectors
cosine_similarities = cosine_similarity(vectors)

# Find index of most similar sentence to input sentence
input_sentence_index = len(sentences) - 1
similar_sentence_index = np.argmax(cosine_similarities[input_sentence_index][:-1])

# Print most similar sentence and its cosine similarity score
print("Input sentence: ", input_sentence)
print("Most similar sentence: ", sentences[similar_sentence_index])
print("Cosine similarity score: ", cosine_similarities[input_sentence_index][similar_sentence_index])

cosine_similarities
```

```
Text FILE :
['Once upon a time there was a dog.', 'His name was Charlie.', 'He was an orphan.', 'Someone should
adopt him.', 'He likes to eat chicken.']
Enter the text  :I like to eat icecream.
Input sentence:  I like to eat icecream.
Most similar sentence:  He likes to eat chicken.
Cosine similarity score:  0.4472135954999579
```

Out[3]:
```
array([[1.        , 0.20412415, 0.20412415, 0.        , 0.        ,
        0.        ],
       [0.20412415, 1.        , 0.25      , 0.        , 0.        ,
        0.        ],
       [0.20412415, 0.25      , 1.        , 0.        , 0.2236068 ,
        0.        ],
       [0.        , 0.        , 0.        , 1.        , 0.        ,
        0.        ],
       [0.        , 0.        , 0.2236068 , 0.        , 1.        ,
        0.4472136 ],
       [0.        , 0.        , 0.        , 0.        , 0.4472136 ,
        1.        ]])
```