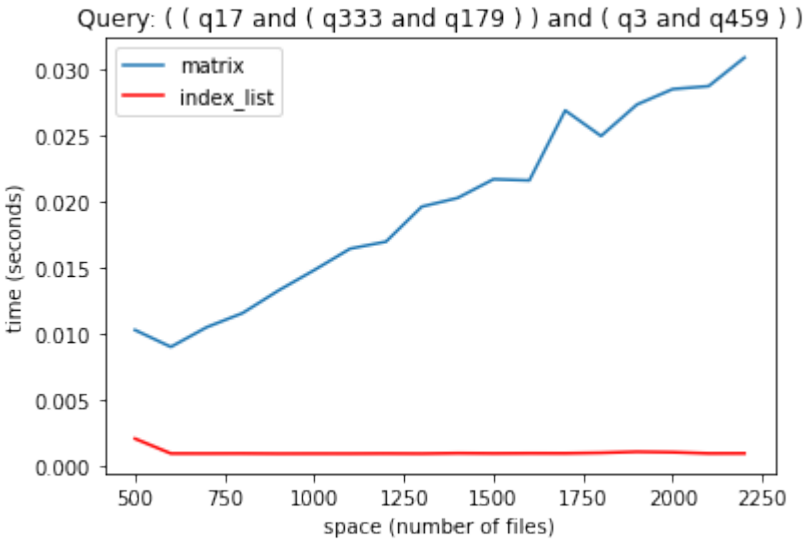
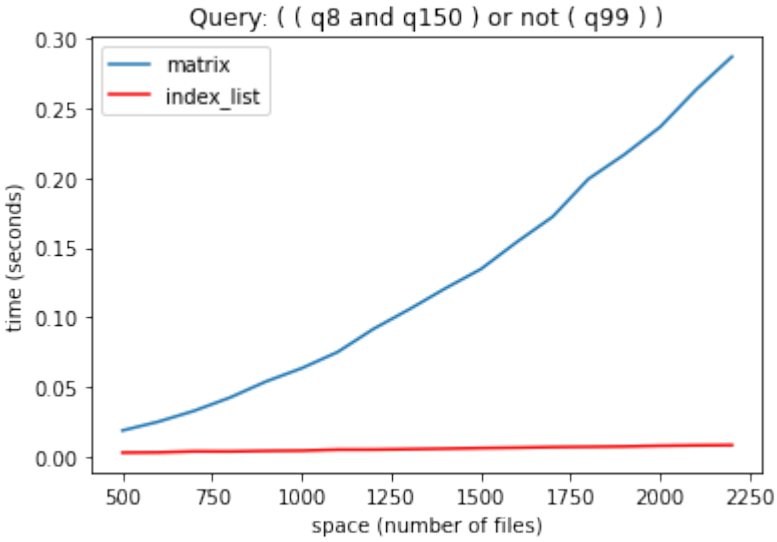
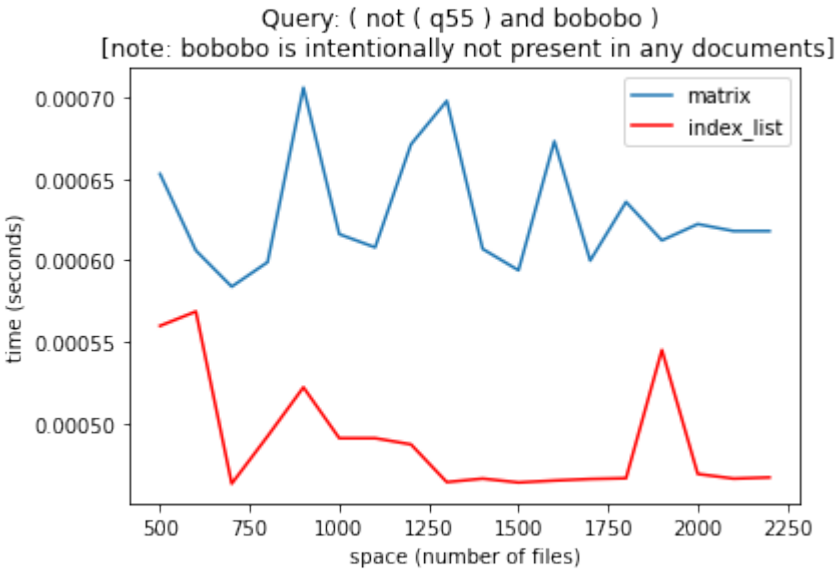
```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt

df_inv    = pd.read_csv('time_data_I.csv')
df_matrix = pd.read_csv('time_data_M.csv')

arr_inv    = df_inv.to_numpy()
arr_matrix = df_matrix.to_numpy()

first_query_time_I  = arr_inv[0::4]
second_query_time_I = arr_inv[1::4]
third_query_time_I  = arr_inv[2::4]
fourth_query_time_I = arr_inv[3::4]

first_query_time_M  = arr_matrix[0::4]
second_query_time_M = arr_matrix[1::4]
third_query_time_M  = arr_matrix[2::4]
fourth_query_time_M = arr_matrix[3::4]

def plot_for_query(query, time_inv, time_matrix):
    x_inv = np.arange(500, 2300, 100)
    x_matrix = np.arange(500, 2300, 100)
    plt.title('Query: ' + query)
    plt.xlabel("space (number of files)")
    plt.ylabel("time (seconds)")
    plt.plot(x_matrix, time_matrix, label = 'matrix')
    plt.plot(x_inv,    time_inv, label = 'index_list', color='red')
    plt.legend()
    plt.show()

plot_for_query(
    '( ( q17 and ( q333 and q179 ) ) and ( q3 and q459 ) )',
    first_query_time_I,
    first_query_time_M
)
```



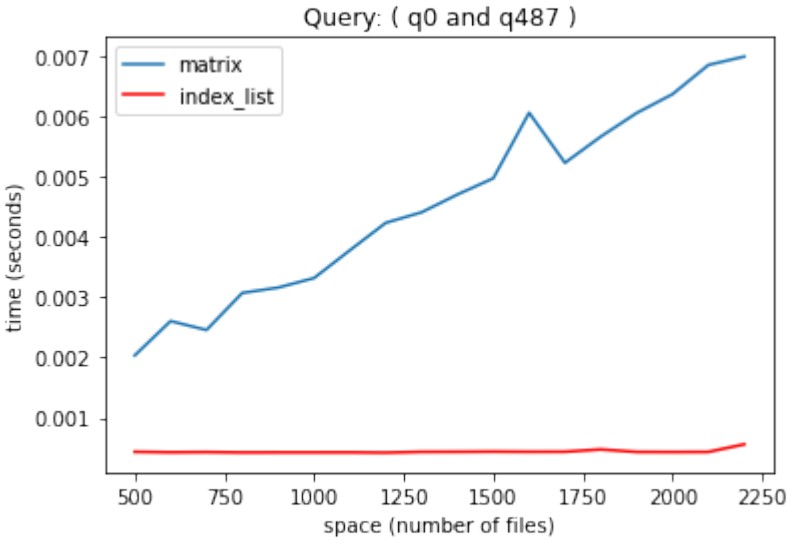

```
plot_for_query(
    '( ( q8 and q150 ) or not ( q99 ) )',
    second_query_time_I,
    second_query_time_M
)
```




```
plot_for_query(
    '( not ( q55 ) and bobobo ) \n [note: bobobo is intentionally not
present in any documents]',
    third_query_time_I,
    third_query_time_M
)
```




```
plot_for_query(
    '( q0 and q487 )',
    fourth_query_time_I,
    fourth_query_time_M
)
```



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