In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
```

In [2]:
```
par_sort_df = pd.read_csv('par_sort.csv')
par_sort_df
```

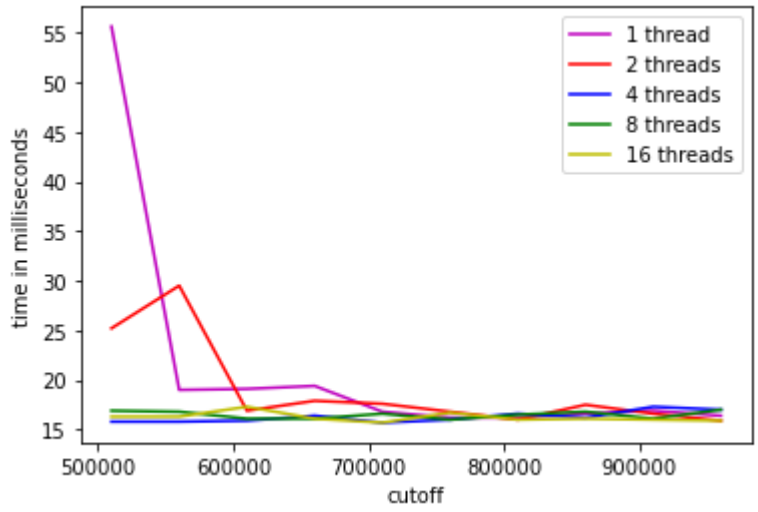
Out[2]:

	size	thread_count	cutoff	time
0	262144	1	510000	55.6
1	262144	1	560000	19.0
2	262144	1	610000	19.1
3	262144	1	660000	19.4
4	262144	1	710000	16.8
...	...	...	...	...
345	16777216	16	760000	670.2
346	16777216	16	810000	672.2
347	16777216	16	860000	665.2
348	16777216	16	910000	665.5
349	16777216	16	960000	663.3

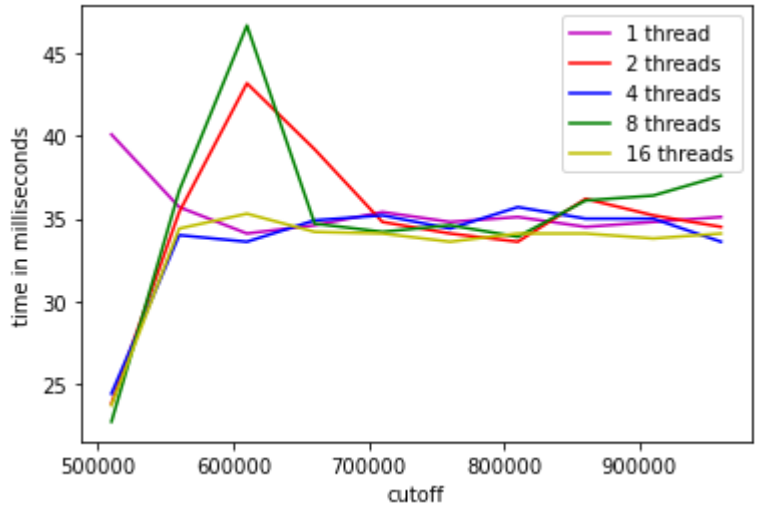
In [3]:
```
def split_on_size(df, size):
    return df.loc[df['size'] == size][['thread_count', 'cutoff', 'time']]

def split_on_thread_count(df, thread_count):
    return df.loc[df['thread_count'] == thread_count][['cutoff', 'time']]

def plot(df):
    thread_1_df = split_on_thread_count(df, 1)
    thread_2_df = split_on_thread_count(df, 2)
    thread_4_df = split_on_thread_count(df, 4)
    thread_8_df = split_on_thread_count(df, 8)
    thread_16_df = split_on_thread_count(df, 16)
    plt.plot(thread_1_df["cutoff"], thread_1_df["time"], 'm', label = '1 thread')
    plt.plot(thread_2_df["cutoff"], thread_2_df["time"], 'r', label = '2 threads'
    plt.plot(thread_4_df["cutoff"], thread_4_df["time"], 'b', label = '4 threads'
    plt.plot(thread_8_df["cutoff"], thread_8_df["time"], 'g', label = '8 threads'
    plt.plot(thread_16_df["cutoff"], thread_16_df["time"], 'y', label = '16 threa
    plt.xlabel("cutoff")
    plt.ylabel("time in milliseconds")
    plt.legend()
    plt.show()
```

In [4]:
```
for i in par_sort_df['size'].unique():
    print("Array Size: " + str(i))
    plot(par_sort_df.loc[par_sort_df['size'] == i])
```

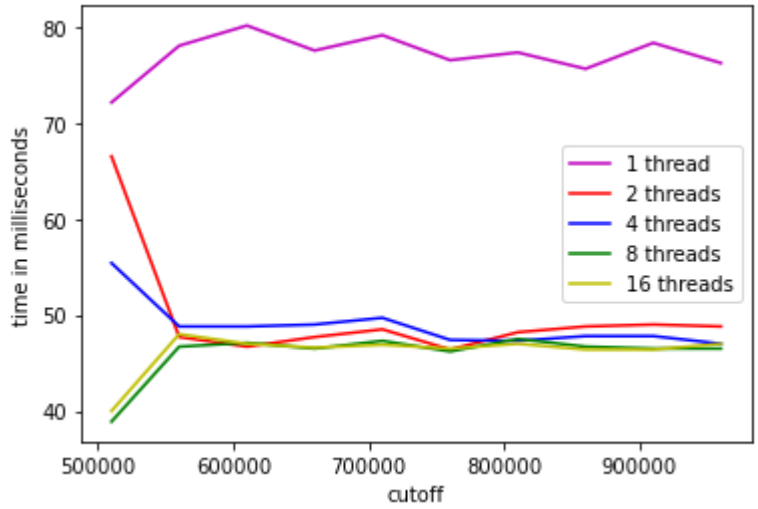
```
Array Size: 262144
```



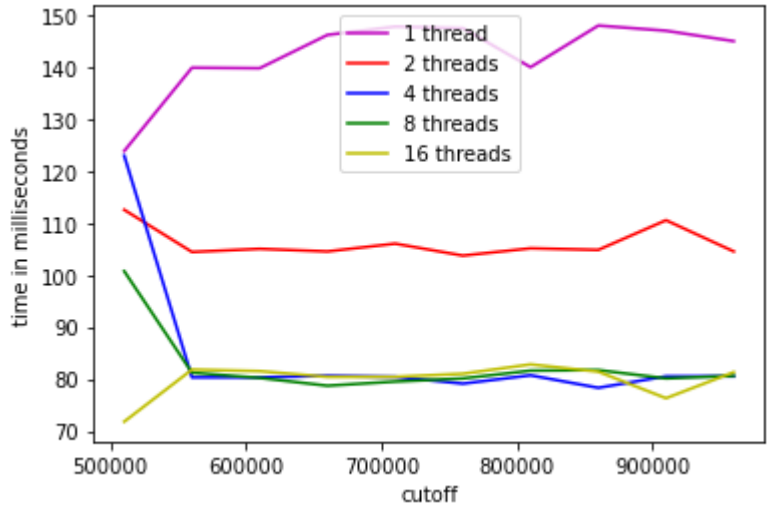

```
Array Size: 524288
```



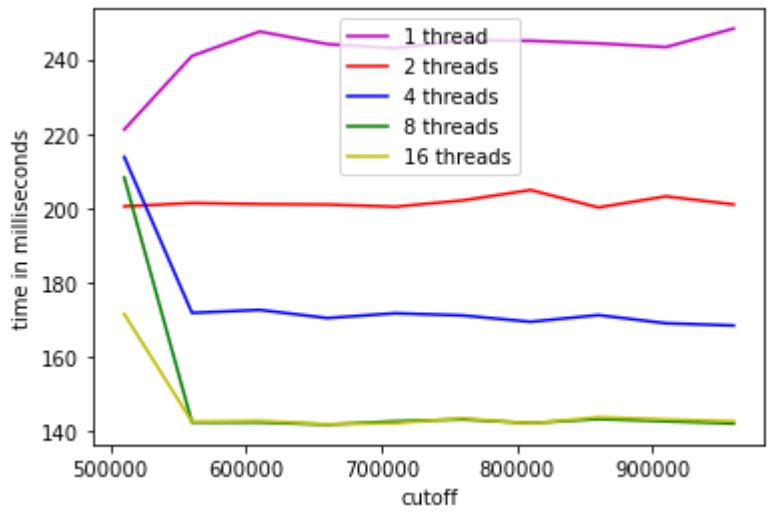

```
Array Size: 1048576
```



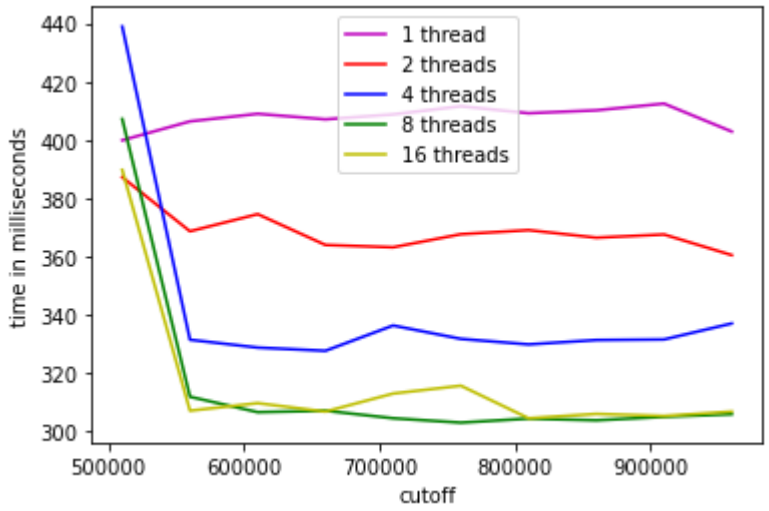

```
Array Size: 2097152
```




```
Array Size: 4194304
```



```
Array Size: 8388608
```




```
Array Size: 16777216
```