JMeter Analysis v4

October 18, 2022

[1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
from IPython.display import Image
```

[2]:
```
def load_dataset(results):
    df = pd.read_csv(results,␣
 ↪usecols=['timeStamp','elapsed','success','bytes','Latency',␣
 ↪'IdleTime','Connect'])
    df['totalElapsed'] = df.elapsed.cumsum()
    df['throughput'] = ((df.index+1)/(df.totalElapsed/(df.index+1))*60000)
    return df
```

[3]:
```
def load_summary(summary, label):
    df = pd.read_csv(summary)
    df.insert(0, "Function", label)
    df.drop(columns=["Average","Min","Max", "# Samples"], inplace=True)
    return df
```

[4]:
```
dir1= "NearVotingJMeterTests3/"
dir2= "NearVotingJMeterTests4/"
```

[5]:
```
add = load_dataset(dir1+'Add/Add_1000T.csv')
add_sum = load_summary(dir1+'Add/Add_1000T_Sum.csv',"add")
```

[6]:
```
vote = load_dataset(dir1+'Vote/Vote_1000T.csv')
vote_sum = load_summary(dir1+'Vote/Vote_1000T_Sum.csv', "vote")
```

[7]:
```
get = load_dataset(dir1+'Get/Get_1000T_250.csv')
get_sum = load_summary(dir1+'Get/Get_1000T_250_Sum.csv',"get")
```

[8]:
```
add_v2 = load_dataset(dir2+'Add/Add_1000T.csv')
add_sum_v2 = load_summary(dir2+'Add/Add_1000T_sum.csv',"add")

add_compressed_v2 = load_dataset(dir2+'Add/Add_1KT_compressed.csv')
add_compressed_sum_v2 = load_summary(dir2+'Add/Add_1KT_compressed_sum.
 ↪csv',"add")
```

[9]:
```
vote_v2 = load_dataset(dir2+'Vote/Vote_1000T.csv')
vote_sum_v2 = load_summary(dir2+'Vote/Vote_1000T_sum.csv', "vote")

vote_compressed_v2 = load_dataset(dir2+'Vote/Vote_1KT_compressed.csv')
vote_compressed_sum_v2 = load_summary(dir2+'Vote/Vote_1KT_compressed_sum.csv',␣
 ↪"vote")
```

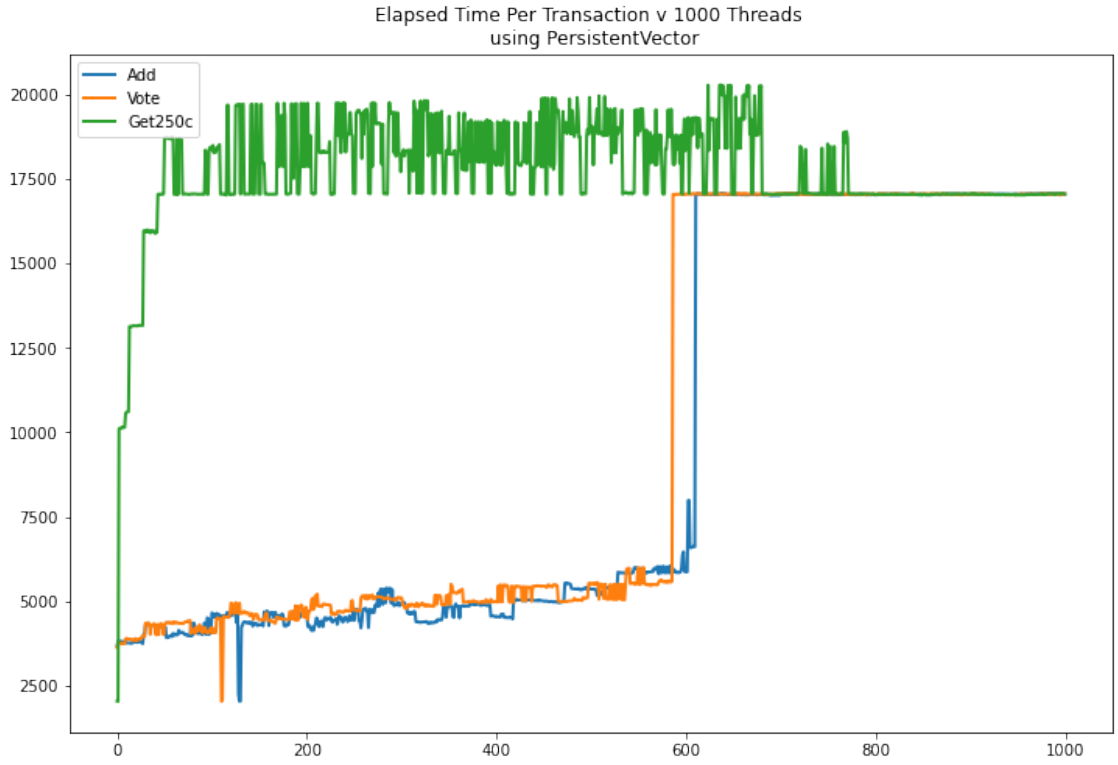
[10]:
```
get_v2 = load_dataset(dir2+'Get/Get_1KT.csv')
get_sum_v2 = load_summary(dir2+'Get/Get_1KT_sum.csv',"get")

get_compressed_v2 = load_dataset(dir2+'Get/Get_1KT_compressed.csv')
get_compressed_sum_v2 = load_summary(dir2+'Get/Get_1KT_compressed_Sum.
 ↪csv',"get")
```

0.0.1 Elapsed Time per Transcation across 1000 Threads Vector vs Map

In this section we test out the elapsed time per transaction for 1k threads.

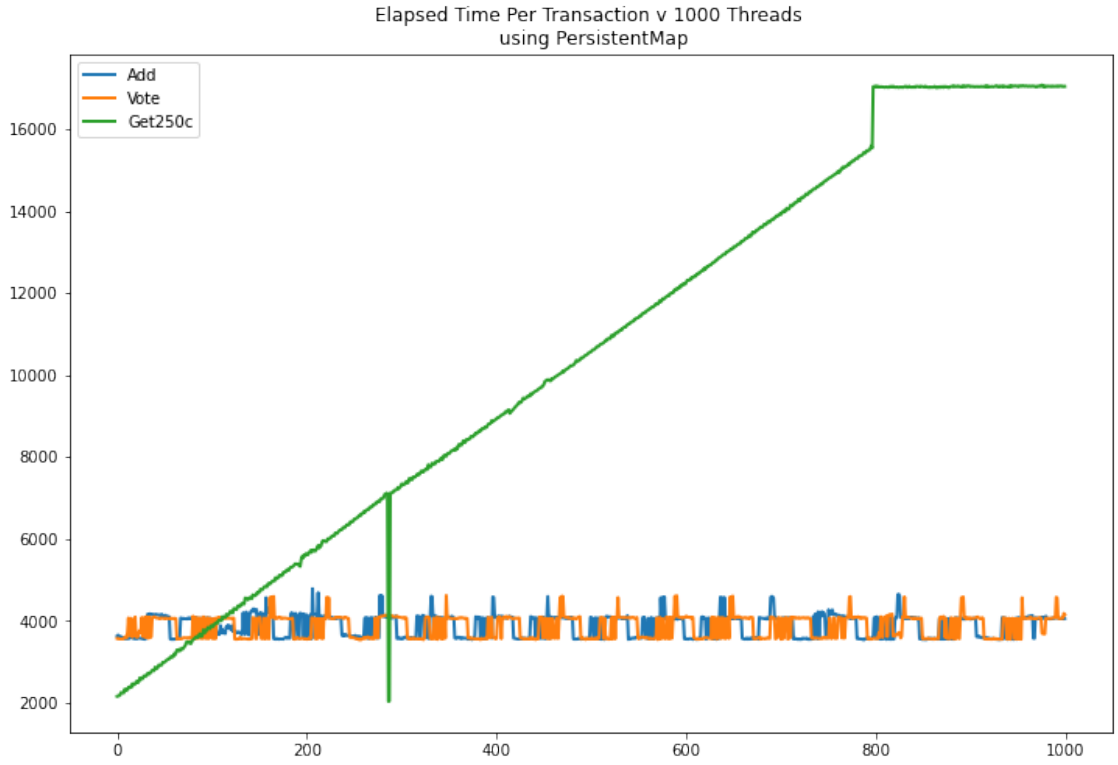
[11]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add.elapsed, linewidth=2.0, label="Add")
ax.plot(range(0,1000), vote.elapsed, linewidth=2.0, label="Vote")
ax.plot(range(0,1000), get.elapsed, linewidth=2.0, label="Get250c")
ax.title.set_text('Elapsed Time Per Transaction v 1000 Threads \n using␣
 ↪PersistentVector')
ax.legend(loc="upper left")
```

[11]:
```
<matplotlib.legend.Legend at 0x298a39d0970>
```



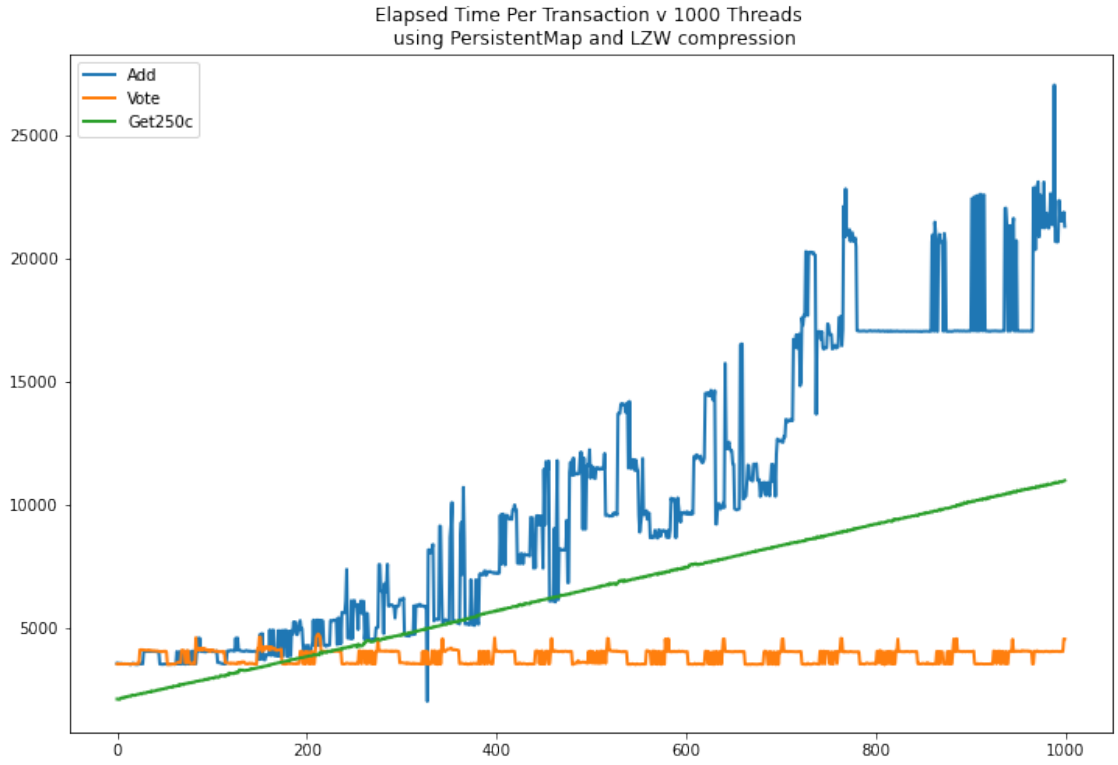
[12]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add_v2.elapsed, linewidth=2.0, label="Add")
ax.plot(range(0,1000), vote_v2.elapsed, linewidth=2.0, label="Vote")
ax.plot(range(0,1000), get_v2.elapsed, linewidth=2.0, label="Get250c")
ax.title.set_text('Elapsed Time Per Transaction v 1000 Threads \n using␣
 ↪PersistentMap')
ax.legend(loc="upper left")
```

[12]:
```
<matplotlib.legend.Legend at 0x298a3a36ee0>
```



[13]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add_compressed_v2.elapsed, linewidth=2.0, label="Add")
ax.plot(range(0,1000), vote_compressed_v2.elapsed, linewidth=2.0, label="Vote")
ax.plot(range(0,1000), get_compressed_v2.elapsed, linewidth=2.0,␣
 ↪label="Get250c")
ax.title.set_text('Elapsed Time Per Transaction v 1000 Threads \n using␣
 ↪PersistentMap and LZW compression')
ax.legend(loc="upper left")
```

[13]:
```
<matplotlib.legend.Legend at 0x298a3ae5ee0>
```

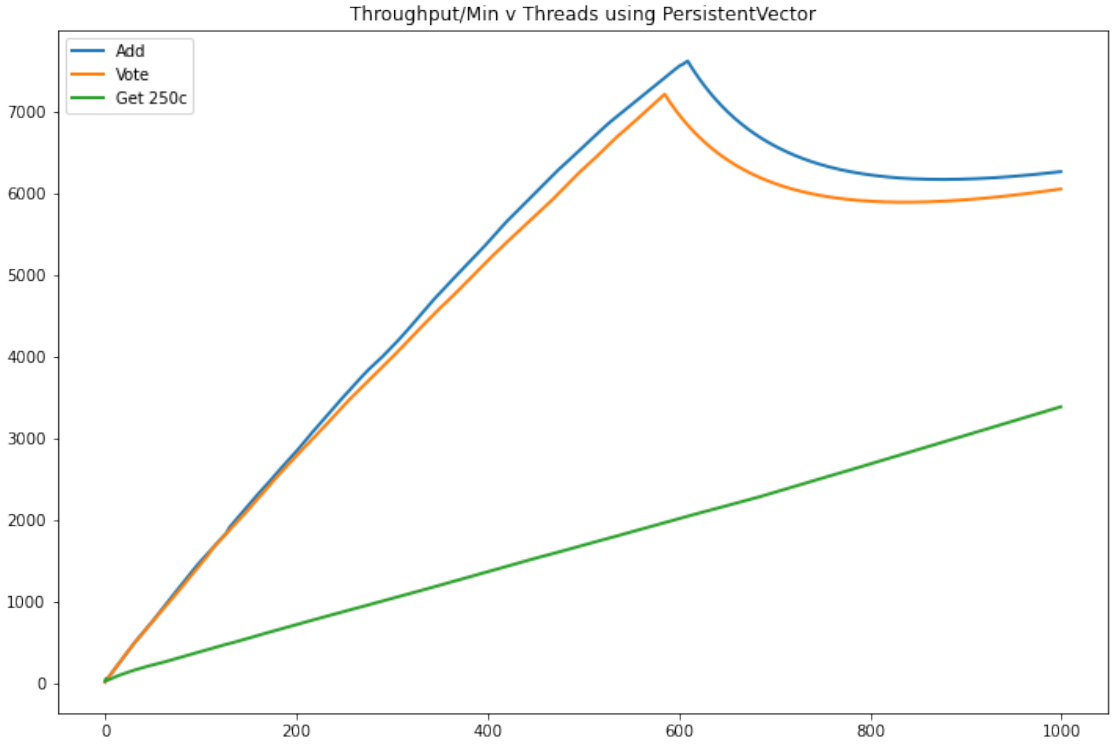


0.0.2 Throughput Per Minute over 1000 Threads

In the following section we calculate the average throughput per minute of each transaction across each the add, vote, and get function. We test the get function while retrieving 250 candidates. Throughput is calculated as (number of requests)/(total elapsed time).

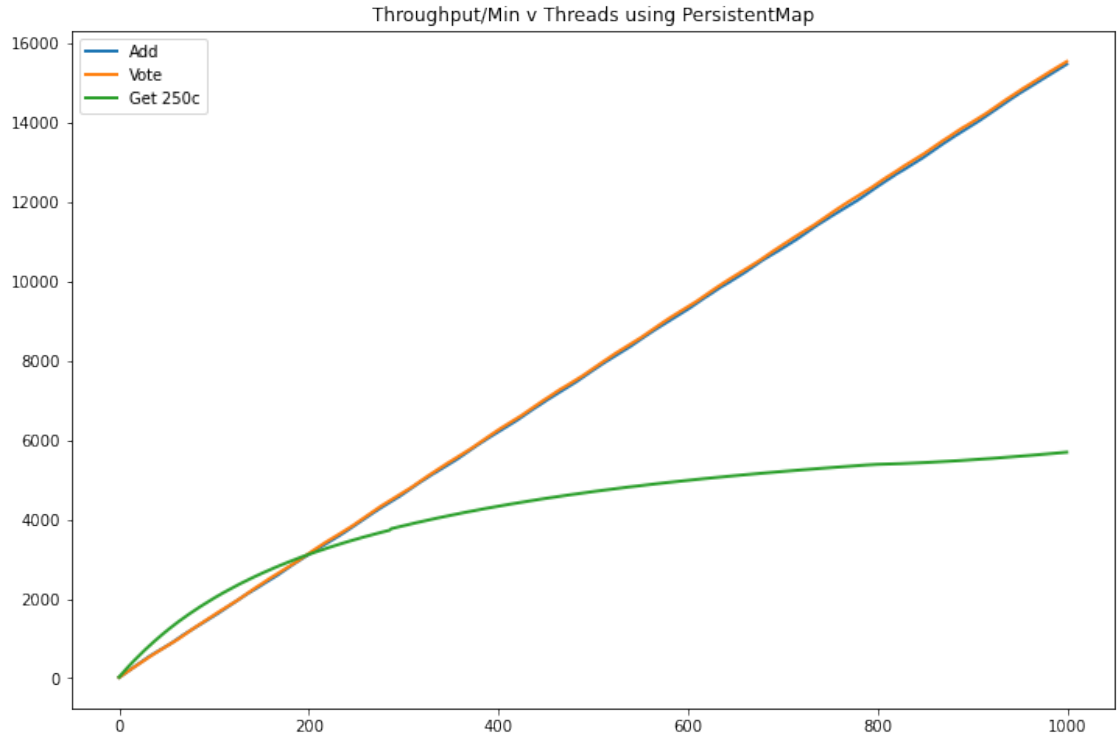
[14]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add.throughput, linewidth=2.0, label="Add")
ax.plot(range(0,1000), vote.throughput, linewidth=2.0, label="Vote")
ax.plot(range(0,1000), get.throughput, linewidth=2.0, label="Get 250c")
ax.title.set_text('Throughput/Min v Threads using PersistentVector')
ax.legend(loc="upper left")
```

[14]:
```
<matplotlib.legend.Legend at 0x298a3b2a640>
```



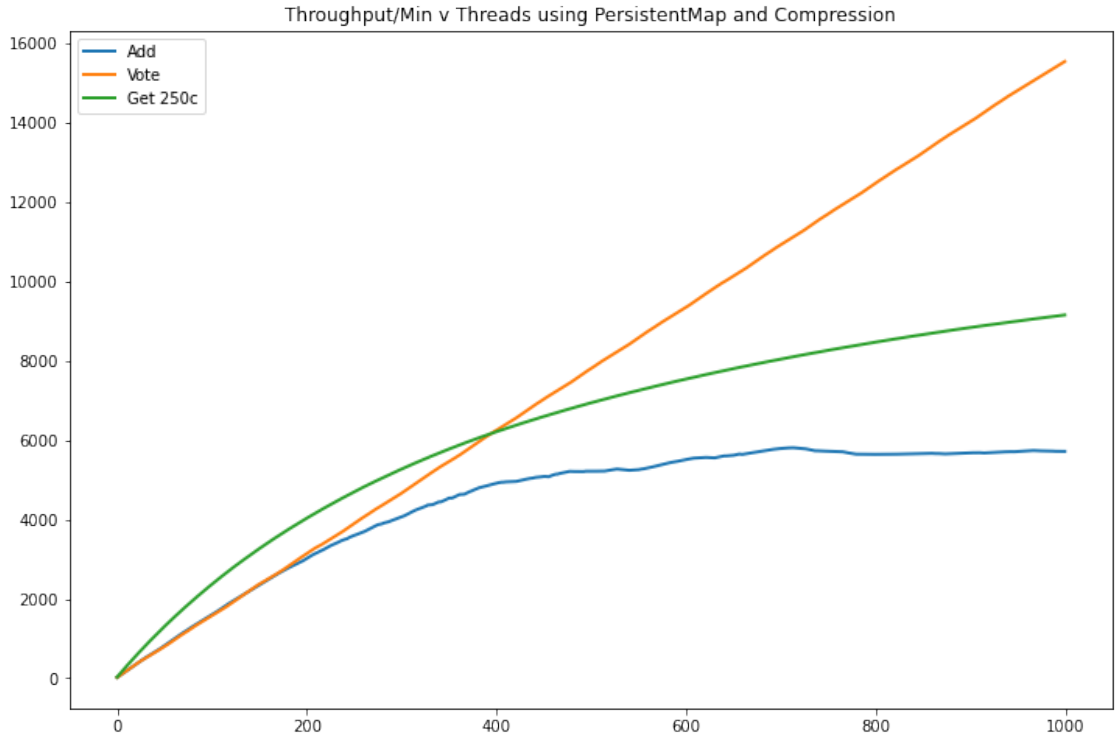
[15]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add_v2.throughput, linewidth=2.0, label="Add")
ax.plot(range(0,1000), vote_v2.throughput, linewidth=2.0, label="Vote")
ax.plot(range(0,1000), get_v2.throughput, linewidth=2.0, label="Get 250c")
ax.title.set_text('Throughput/Min v Threads using PersistentMap')
ax.legend(loc="upper left")
```

[15]: <matplotlib.legend.Legend at 0x298a3bb9940>



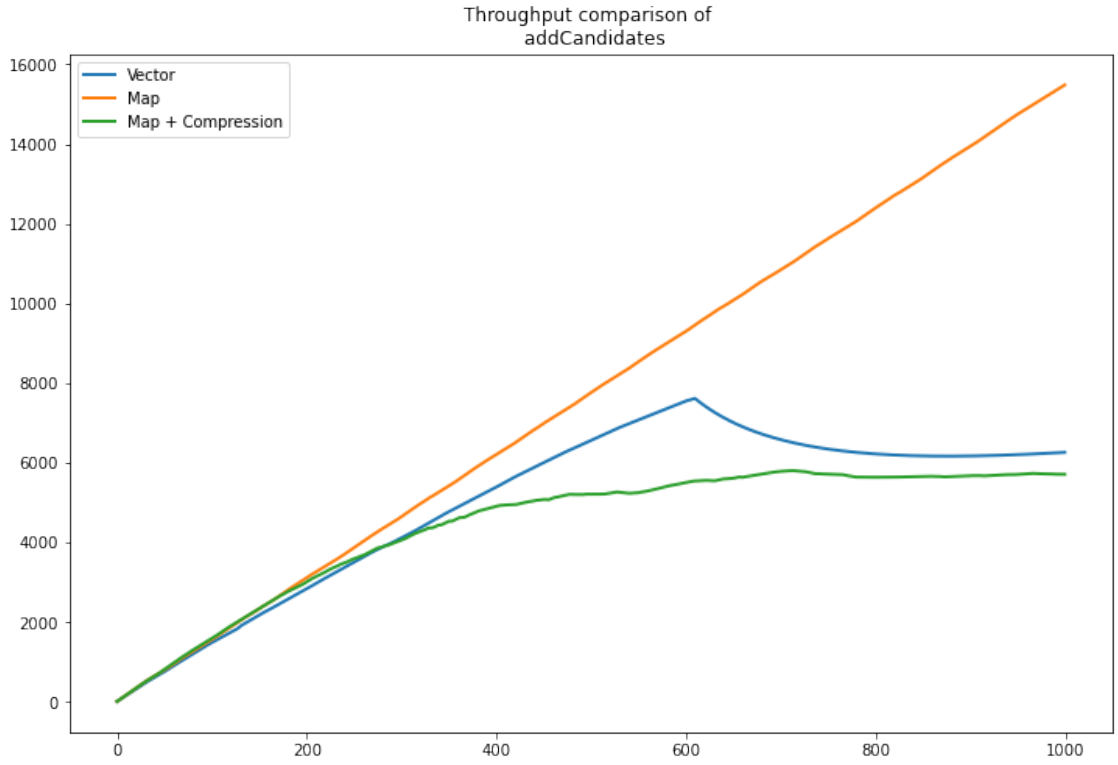
[16]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add_compressed_v2.throughput, linewidth=2.0, label="Add")
ax.plot(range(0,1000), vote_compressed_v2.throughput, linewidth=2.0,␣
 ↪label="Vote")
ax.plot(range(0,1000), get_compressed_v2.throughput, linewidth=2.0, label="Get␣
 ↪250c")
ax.title.set_text('Throughput/Min v Threads using PersistentMap and␣
 ↪Compression')
ax.legend(loc="upper left")
```

[16]:
```
<matplotlib.legend.Legend at 0x298a4108bb0>
```



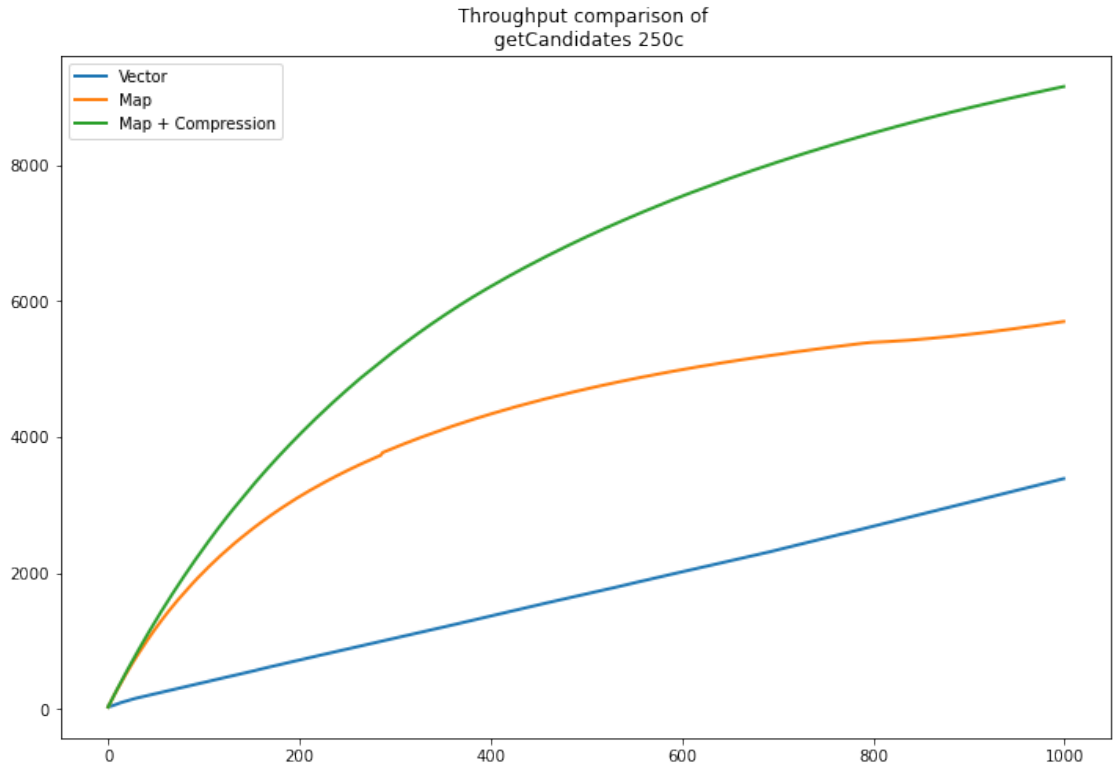
[17]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), add.throughput, linewidth=2.0, label="Vector")
ax.plot(range(0,1000), add_v2.throughput, linewidth=2.0, label="Map")
ax.plot(range(0,1000), add_compressed_v2.throughput, linewidth=2.0, label="Map␣
 ↪+ Compression")
ax.title.set_text('Throughput comparison of \n addCandidates')
ax.legend(loc="upper left")
```

[17]:
```
<matplotlib.legend.Legend at 0x298a4477d30>
```



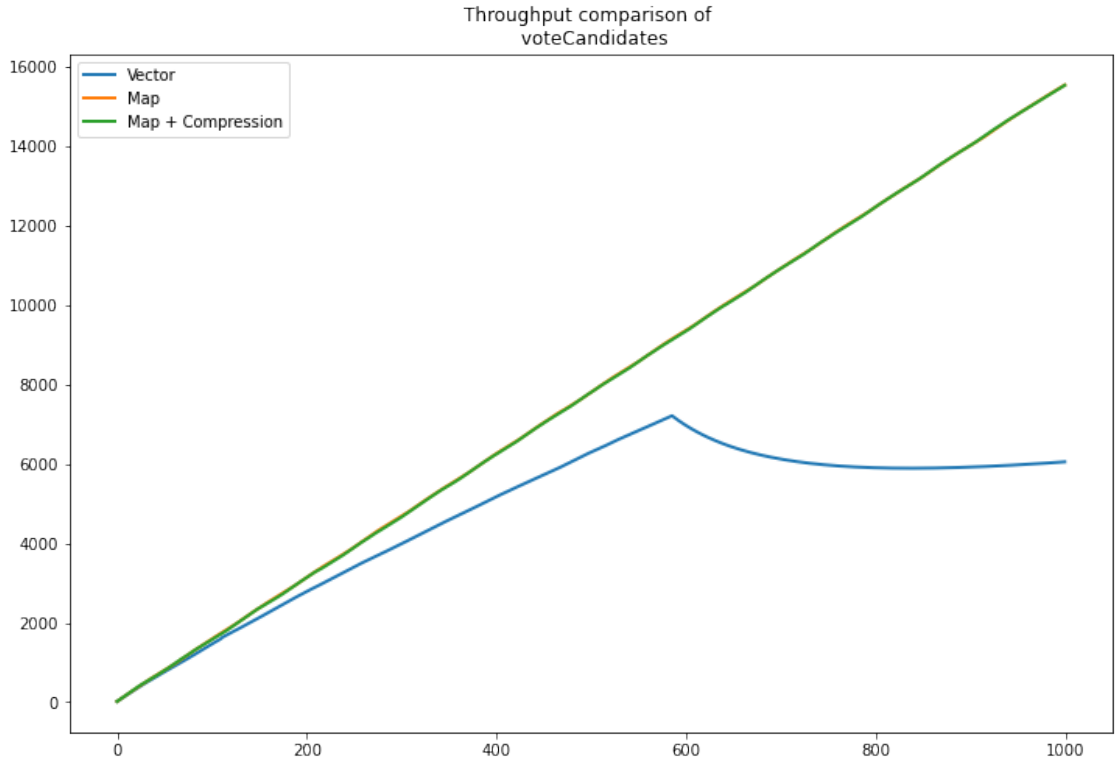
[18]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), get.throughput, linewidth=2.0, label="Vector")
ax.plot(range(0,1000), get_v2.throughput, linewidth=2.0, label="Map")
ax.plot(range(0,1000), get_compressed_v2.throughput, linewidth=2.0, label="Map␣
 ↪+ Compression")
ax.title.set_text('Throughput comparison of \n getCandidates 250c')
ax.legend(loc="upper left")
```

[18]:
```
<matplotlib.legend.Legend at 0x298a47c2eb0>
```



[19]:
```
fig, ax = plt.subplots()
fig.set_figheight(8)
fig.set_figwidth(12)
ax.plot(range(0,1000), vote.throughput, linewidth=2.0, label="Vector")
ax.plot(range(0,1000), vote_v2.throughput, linewidth=2.0, label="Map")
ax.plot(range(0,1000), vote_compressed_v2.throughput, linewidth=2.0, label="Map␣
↪+ Compression")
ax.title.set_text('Throughput comparison of \n voteCandidates')
ax.legend(loc="upper left")
```

[19]:
```
<matplotlib.legend.Legend at 0x298a483f910>
```



[20]:
```
vote_sum.at[0,"Label"]="Vector"
vote_sum_v2.at[0,"Label"]="Map"
vote_compressed_sum_v2.at[0,"Label"]="Map+Compression"
```

[21]:
```
get_sum.at[0,"Label"]="Vector"
get_sum_v2.at[0,"Label"]="Map"
get_compressed_sum_v2.at[0,"Label"]="Map+Decompression"
```

[22]:
```
add_sum.at[0,"Label"]="Vector"
add_sum_v2.at[0,"Label"]="Map"
add_compressed_sum_v2.at[0,"Label"]="Map+Compression"
```

[23]:
```
final_vote_sum = pd.DataFrame((vote_sum.loc[0], vote_sum_v2.loc[0],␣
↪vote_compressed_sum_v2.loc[0]))
```

[24]:
```
final_get_sum = pd.DataFrame((get_sum.loc[0], get_sum_v2.loc[0],␣
↪get_compressed_sum_v2.loc[0]))
```

[25]:
```
final_add_sum = pd.DataFrame((add_sum.loc[0], add_sum_v2.loc[0],␣
↪add_compressed_sum_v2.loc[0]))
```

[26]:
```
final_summary = pd.concat([final_vote_sum,final_get_sum,final_add_sum],␣
↪ignore_index=True)
```

[27]:
```
final_summary
```

[27]:

	Function	Label	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
0	vote	Vector	6007.98	41.600%	45.39265	51.74	5.82	1167.2
1	vote	Map	271.53	0.000%	70.82153	18.05	17.50	261.0
2	vote	Map+Compression	281.96	0.000%	69.28566	17.66	17.66	261.0
3	get	Vector	1585.73	49.300%	45.36793	331.93	4.74	7492.0
4	get	Map	4771.08	20.500%	37.00825	252.34	6.21	6982.1
5	get	Map+Decompression	2572.11	0.000%	47.75321	564.78	10.49	12111.0
6	add	Vector	5992.03	39.300%	45.40295	49.51	6.73	1116.7
7	add	Map	275.46	0.000%	71.35212	18.19	17.42	261.0
8	add	Map+Compression	5762.84	16.500%	33.94664	20.56	7.20	620.3