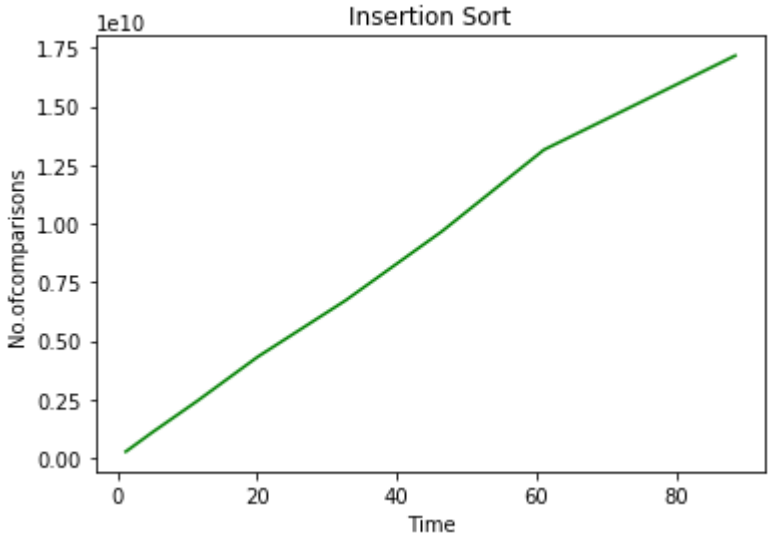
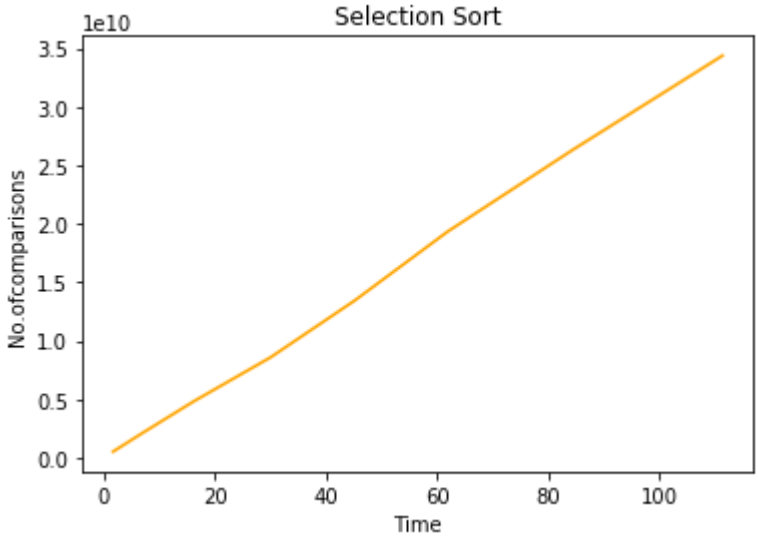
In [1]:

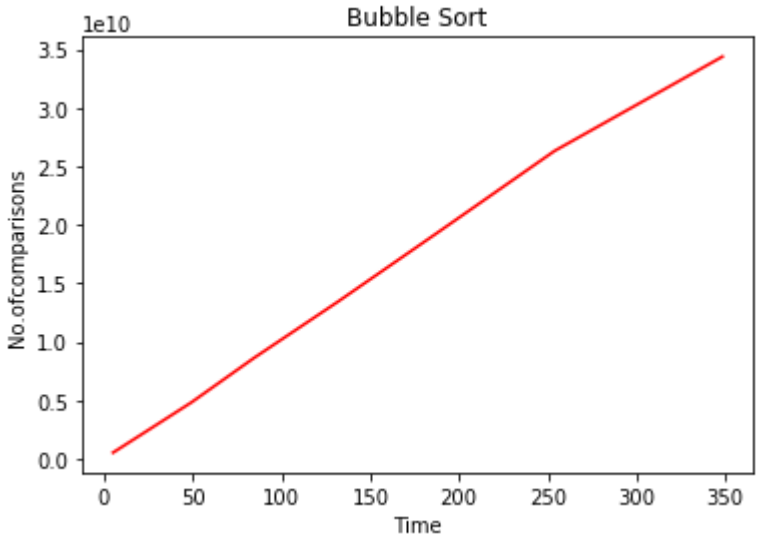
```
import matplotlib.pyplot as plt
```

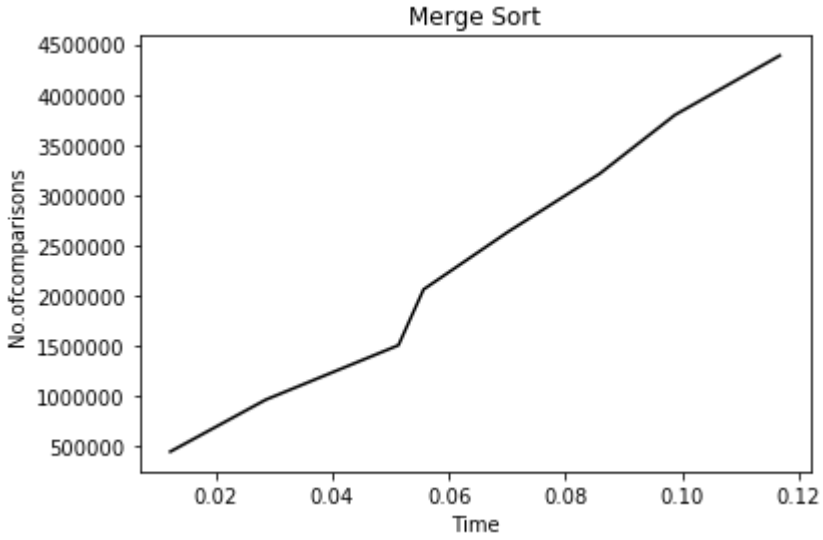
In [32]:

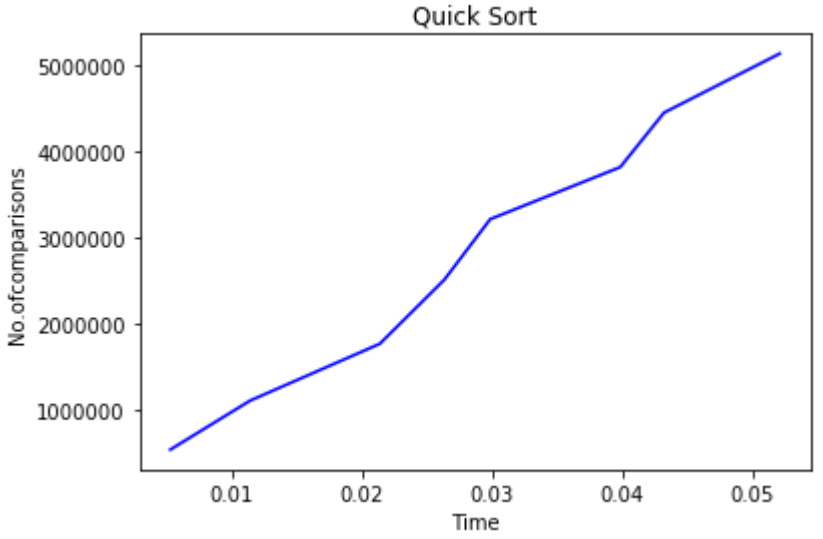
```
time_insertion =[1.213662,4.924401,11.422887,20.073533,32.678339,46.511465,61.06
8314,88.458829]
comp_insertion= [267341977,1072415784,2422904686,4306647181,6718796086,967417540
2,13144101795,17162068525]
time_selection=[1.677365,7.043099,16.199409,30.015441,45.091063,61.857123,84.352
395,111.309391]
comp_selection=[536854528,2147450880,4831789056,8589869056,13421690880,193272545
28,26306560000,34359607296]
time_bubble=[4.989203,21.608758,49.196713,84.105952,131.633027,187.840668,253.76
2812,348.361223]
comp_bubble=[536735700,2147449050,4831754340,8589616651,13421440602,19327231737,
26306465170,34359463916]
time_merge=[0.012200,0.028557,0.051357,0.055669,0.070141,0.085870,0.098831,0.116
804]
comp_merge=[450148,965681,1507862,2062674,2634279,3212110,3797939,4387202]
time_quick=[0.005300,0.011425,0.021387,0.026328,0.029865,0.039842,0.043202,0.052
085]
comp_quick=[538339,1106160,1765053,2505682,3209671,3812197,4443279,5127725]
plt.plot( time_insertion,comp_insertion, color='g')
plt.xlabel('Time')
plt.ylabel('No.ofcomparisons')
plt.title('Insertion Sort')
plt.show()
plt.plot(time_selection,comp_selection, color='orange')
plt.xlabel('Time')
plt.ylabel('No.ofcomparisons')
plt.title('Selection Sort')
plt.show()
plt.plot(time_bubble,comp_bubble,color='red')
plt.xlabel('Time')
plt.ylabel('No.ofcomparisons')
plt.title('Bubble Sort')
plt.show()
plt.plot(time_merge,comp_merge,color='black')
plt.xlabel('Time')
plt.ylabel('No.ofcomparisons')
plt.title('Merge Sort')
plt.show()
plt.plot(time_quick,comp_quick,color='blue')
plt.xlabel('Time')
plt.ylabel('No.ofcomparisons')
plt.title('Quick Sort')
plt.show()
```


Insertion Sort
1e10
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
No.ofcomparisons
0
20
40
60
80
Time


Selection Sort
1e10
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
No.ofcomparisons
0
20
40
60
80
100
Time

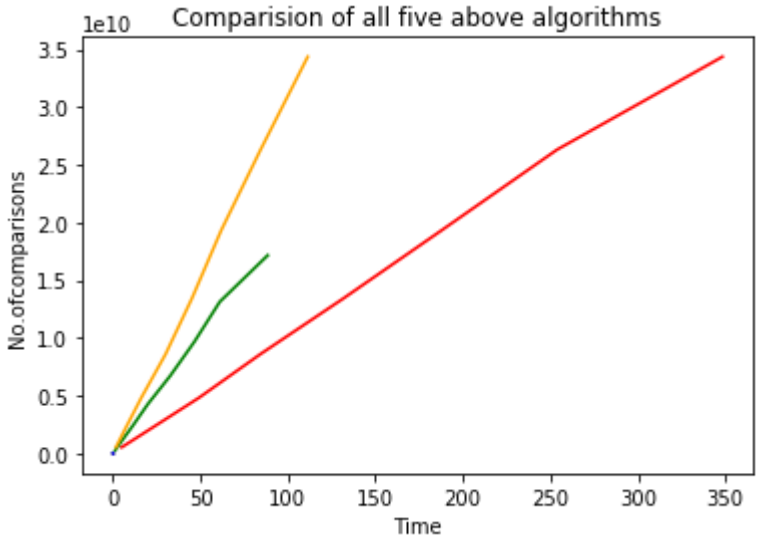

Bubble Sort
1e10
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
No.ofcomparisons
0
50
100
150
200
250
300
350
Time


Merge Sort
No.ofcomparisons
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0.02
0.04
0.06
0.08
0.10
0.12
Time


Quick Sort
No.ofcomparisons
5000000
4000000
3000000
2000000
1000000
0.01
0.02
0.03
0.04
0.05
Time

In [38]:

```
plt.plot( time_insertion,comp_insertion, color='g')
plt.plot(time_selection,comp_selection, color='orange')
plt.plot(time_bubble,comp_bubble,color='red')
plt.plot(time_merge,comp_merge,color='black')
plt.plot(time_quick,comp_quick,color='blue')
plt.xlabel('Time')
plt.ylabel('No.ofcomparisons')
plt.title('Comparision of all five above algorithms')
plt.show()
print('Yellow=Selection-Sort,Green=Insertion-Sort,Red=Bubble-Sort,Black=Merge-So
rt,Blue=Quick-Sort')
print('\n')
print('Note:Quick Sort and Merge Sort are so small that they invisible in the gr
aph')
```




```
Yellow=Selection-Sort,Green=Insertion-Sort,Red=Bubble-Sort,Black=Mer
ge-Sort,Blue=Quick-Sort


Note:Quick Sort and Merge Sort are so small that they invisible in t
he graph
```

In [ ]: