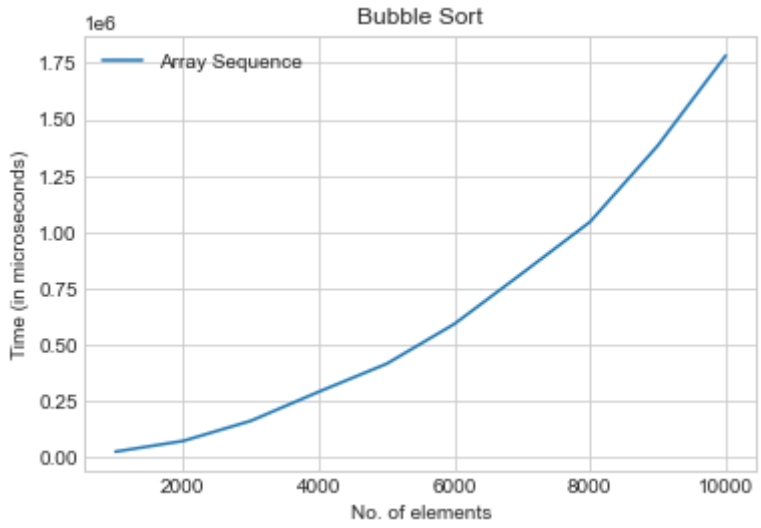
In [11]:
```
import matplotlib.pyplot as plt
import numpy as np

%matplotlib inline
plt.style.use('seaborn-whitegrid')
```

Bubble Sort

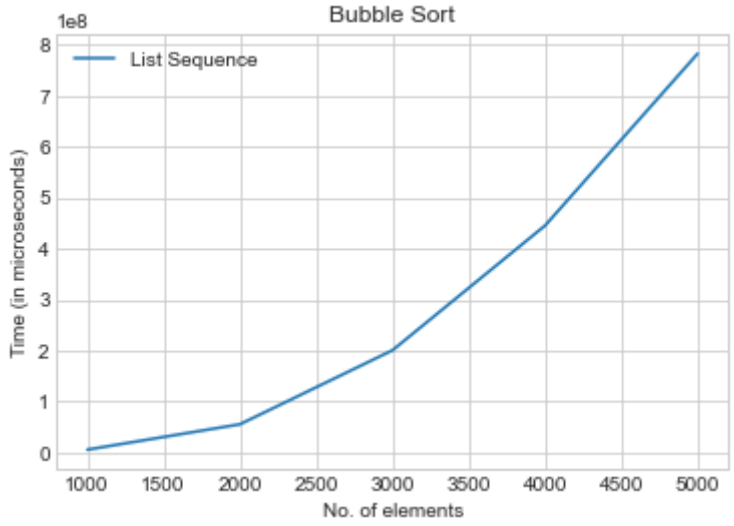
Array Sequence

In [36]:
```
array_time = [25000, 72500, 162000, 291000, 415000, 592000, 817000, 1045000, 1384000

Elem_no = [1000,2000,3000,4000,5000,6000,7000,8000,9000,10000]

plt.plot(Elem_no, array_time, label="Array Sequence")
plt.title('Bubble Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



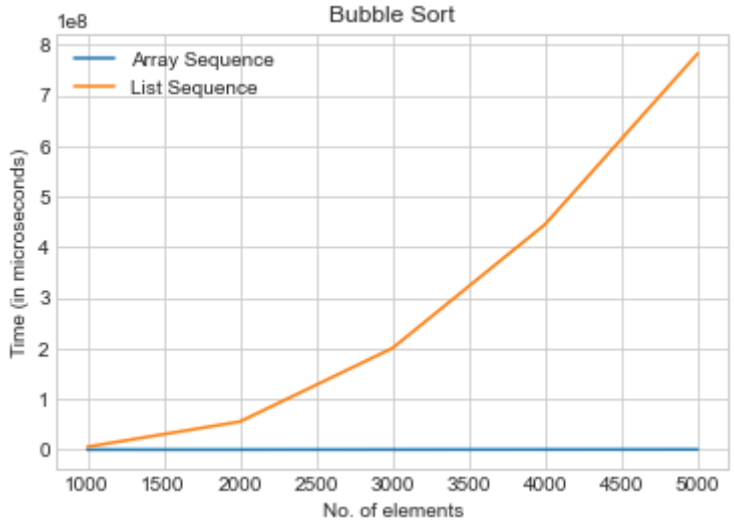
Linked list

In [55]:
```
list_time = [5690007, 55434797, 200659268, 445324136, 782644000]
Elem_no = [1000,2000,3000,4000, 5000]

plt.plot(Elem_no, list_time, label="List Sequence")

plt.title('Bubble Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



Array V/s List

In [54]:
```
array_time = [25000, 72500, 162000, 291000, 415000]
list_time = [5690007, 55434797, 200659268, 445324136, 782644000]
Elem_no = [1000,2000,3000,4000, 5000]

plt.plot(Elem_no, array_time, label="Array Sequence")
plt.plot(Elem_no, list_time, label="List Sequence")

plt.title('Bubble Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```

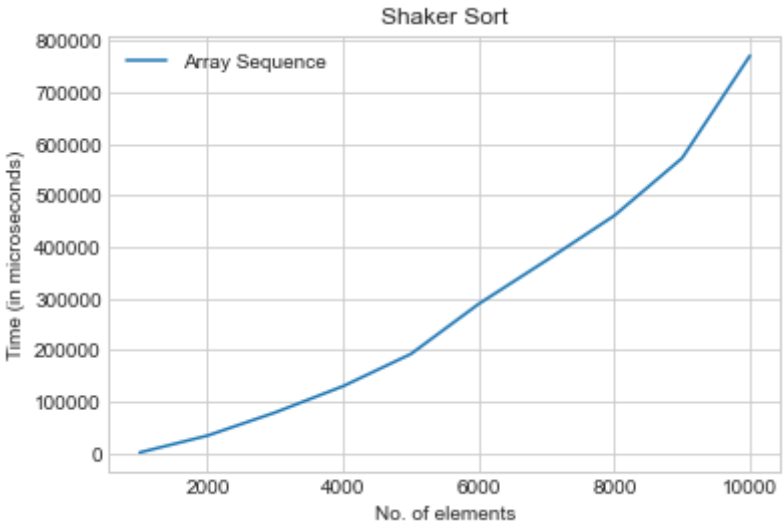


Cocktiail-Shaker Sort

Array Sequence

In [33]:
```
array_time = [1221, 34000, 79000, 130000, 192500, 289600, 374200, 461000, 572600, 77

Elem_no = [1000,2000,3000,4000,5000,6000,7000,8000,9000,10000]
```

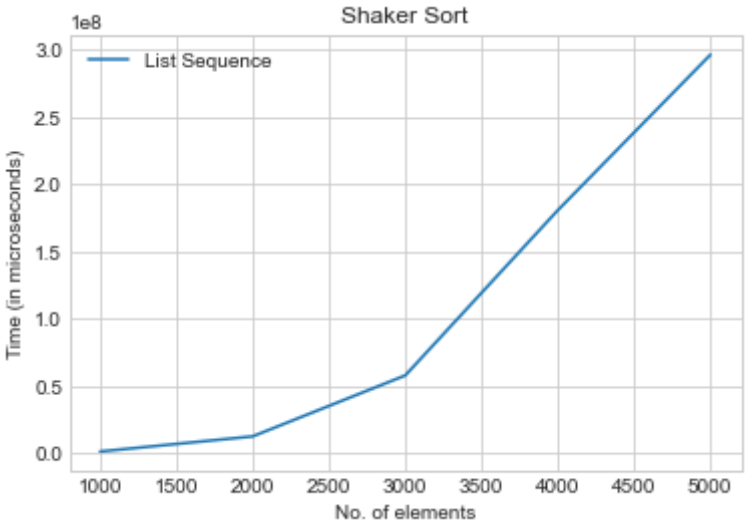
```
plt.plot(Elem_no, array_time, label="Array Sequence")
plt.title('Shaker Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



List Sequence

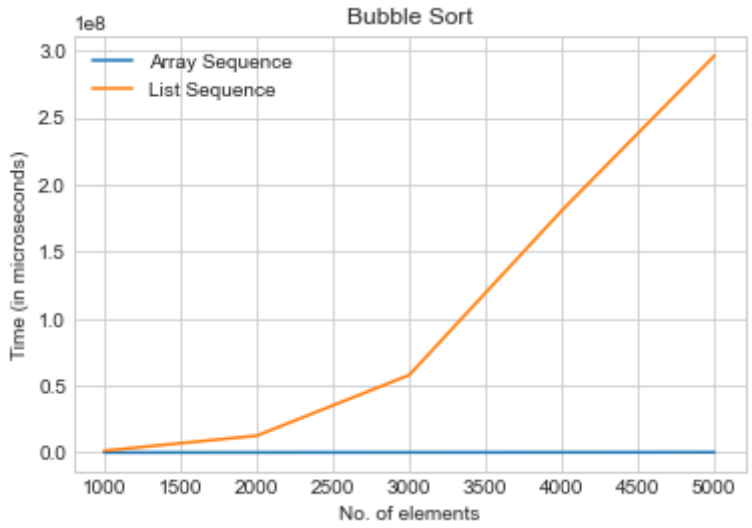
In [50]:

```
list_time = [1319000, 12555000, 57886000,  180740000, 296322000]

Elem_no = [1000,2000,3000,4000,5000]

plt.plot(Elem_no, list_time, label="List Sequence")
plt.title('Shaker Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



Array V/s List

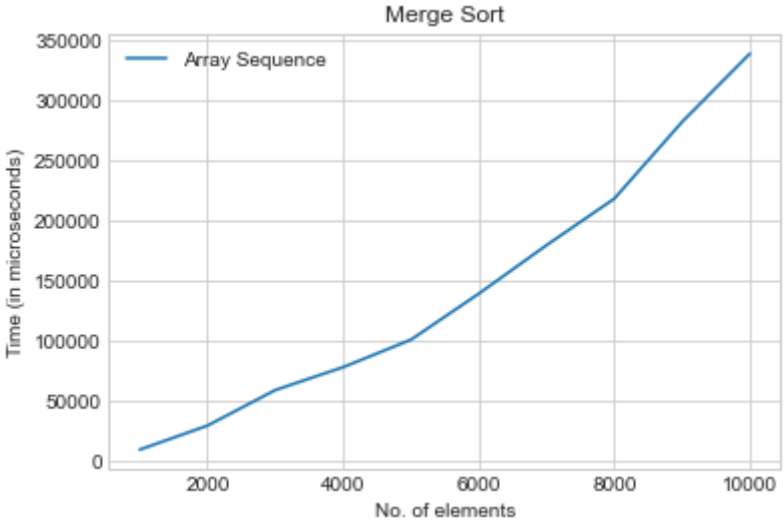
In [44]:
```
array_time = [1221, 34000, 79000, 130000, 192500]
list_time = [1319000, 12555000, 57886000,  180740000, 296322000]

Elem_no = [1000,2000,3000,4000,5000]

plt.plot(Elem_no, array_time, label="Array Sequence")
plt.plot(Elem_no, list_time, label="List Sequence")

plt.title('Bubble Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



Merge Sort

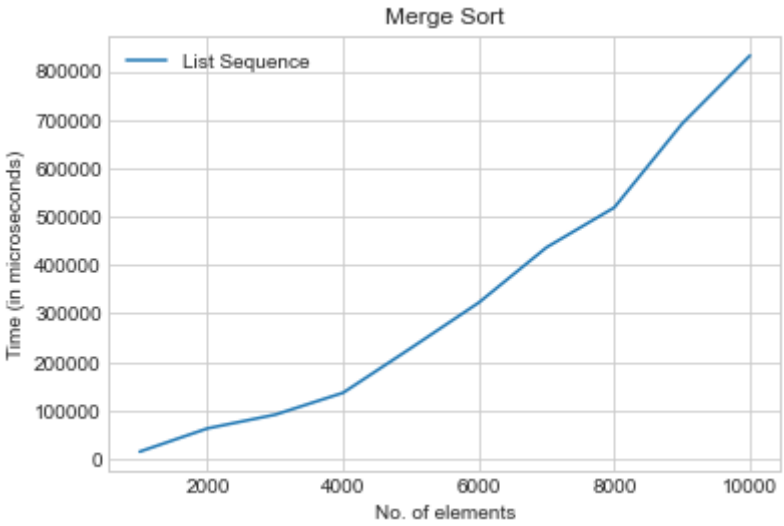
Array Sequence

In [61]:
```
array_time = [9860, 29842, 59420, 78442, 101264, 139520, 179902, 218629, 282438, 339

Elem_no = [1000,2000,3000,4000,5000,6000,7000,8000,9000,10000]

plt.plot(Elem_no, array_time, label="Array Sequence")
plt.title('Merge Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



List Sequence

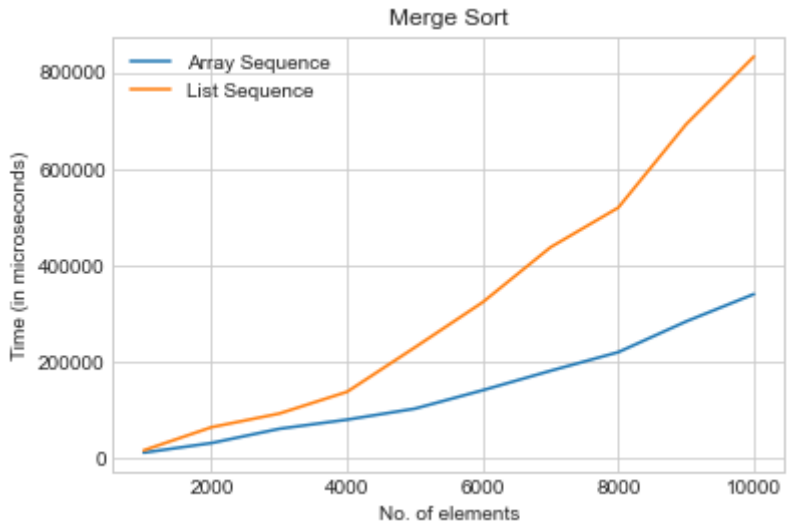
In [62]:
```
list_time = [14672, 62698, 91094, 136279, 228575, 322380, 436537, 518923, 691931, 83

Elem_no = [1000,2000,3000,4000,5000,6000,7000,8000,9000,10000]

plt.plot(Elem_no, list_time, label="List Sequence")
plt.title('Merge Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



Array V/s List

In [63]:
```
array_time = [9860, 29842, 59420, 78442, 101264, 139520, 179902, 218629, 282438, 339
list_time = [14672, 62698, 91094, 136279, 228575, 322380, 436537, 518923, 691931, 83

Elem_no = [1000,2000,3000,4000,5000,6000,7000,8000,9000,10000]

plt.plot(Elem_no, array_time, label="Array Sequence")
plt.plot(Elem_no, list_time, label="List Sequence")

plt.title('Merge Sort')
```

```
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```

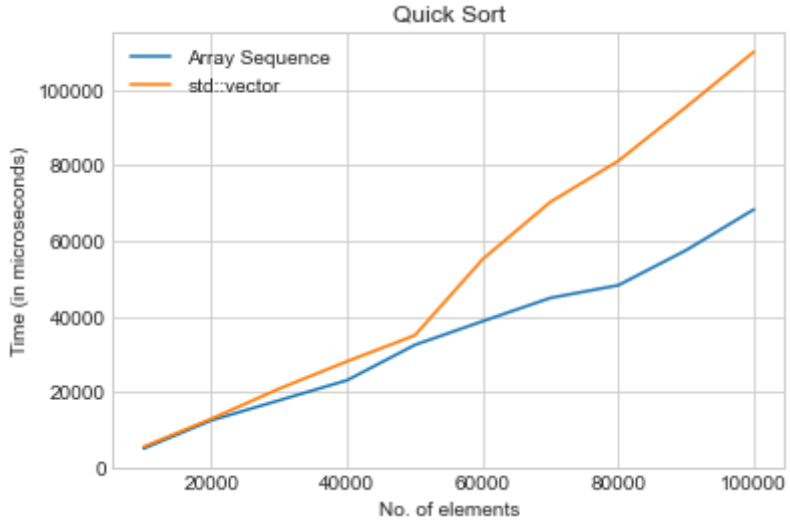


Quick sort

Array Sequence V/s std::vector

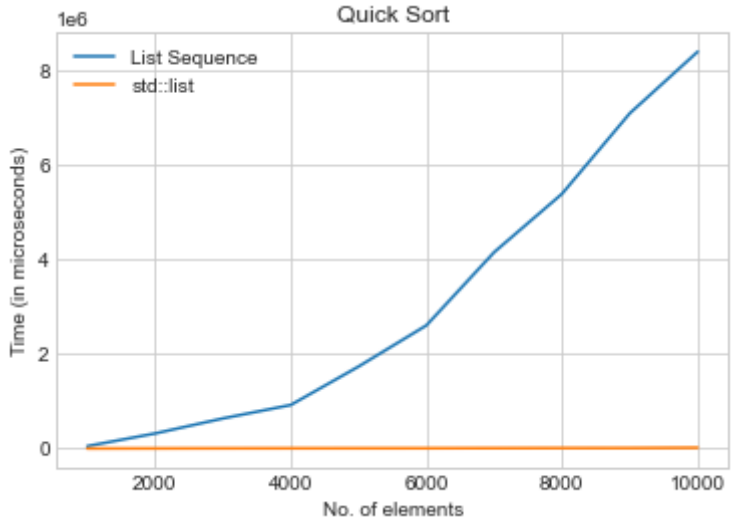
In [71]:

```
array_time = [5167, 12628, 17912, 23218, 32565, 38827, 44987, 48329, 57590, 68375]
vector_time = [5637, 13048, 21003, 28220, 35104, 55243, 70369, 81202, 95450, 110074]

Elem_no = [10000,20000,30000,40000,50000,60000,70000,80000,90000,100000]

plt.plot(Elem_no, array_time, label="Array Sequence")
plt.plot(Elem_no, vector_time, label="std::vector")

plt.title('Quick Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



List Sequence V/s std::list

In [74]:
```
list_time = [50976, 319696, 638247, 923019, 1738458, 2610040, 4161408, 5397113, 7104
stdlist_time = [803, 2214, 4347, 5409, 5873, 6325, 8461, 10746, 11596, 17876]

Elem_no = [1000,2000,3000,4000,5000,6000,7000,8000,9000,10000]

plt.plot(Elem_no, list_time, label="List Sequence")
plt.plot(Elem_no, stdlist_time, label="std::list")

plt.title('Quick Sort')
plt.xlabel('No. of elements')
plt.ylabel('Time (in microseconds)')

plt.legend()
plt.show()
```



In [ ]: