Q1.

b) Output:

[66, 51, 56, 70, 72, 13, 7, 63, 67, 41]

[7, 13, 41, 51, 56, 63, 66, 67, 70, 72]

Min time: 107267

Average time: 149330.14

Max time: 2071438

c)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Minimum time | Average Time | Maximum time |
| Sorting 1000 integers | 106967 ns | 123545.66 ns | 3749262 ns |
| Sorting 10000 integers | 112075 ns | 10691641.70 ns | 1596696 ns |

d) When the input size increased from 1000 to 10000, the value of average time increased by about 86-fold.

Q2.

b) Output:

[97, 46, 80, 99, 20, 53, 26, 19, 24, 84]

[19, 20, 24, 26, 46, 53, 80, 84, 97, 99]

Min time: 286648

Average time: 428986.67

Max time: 2827421

c)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Minimum time | Average Time | Maximum time |
| Sorting 1000 integers | 283343 ns | 418608.73 ns | 2250519 ns |
| Sorting 10000 integers | 344338 ns | 28088040.94 ns | 2218368 ns |

d) When the input size increased from 1000 to 10000, the value of average time increased by about 67-fold.

3. Insertion sort is faster than selection sort. Because selection compares each element with the other.