Insertion Sort for random array

|  |  |
| --- | --- |
| Iteration 0 | [101, 0, -1, 20, 3, 37, 21, 10, 4] |
| Iteration 1 | [101, 0, -1, 20, 3, 37, 21, 10, 4] |
| Iteration 2 | [0, 101, -1, 20, 3, 37, 21, 10, 4] |
| Iteration 3 | [-1, 0, 101, 20, 3, 37, 21, 10, 4] |
| Iteration 4 | [-1, 0, 20, 101, 3, 37, 21, 10, 4] |
| Iteration 5 | [-1, 0, 3, 20, 101, 37, 21, 10, 4] |
| Iteration 6 | [-1, 0, 3, 20, 37, 101, 21, 10, 4] |
| Iteration 7 | [-1, 0, 3, 20, 21, 37, 101, 10, 4] |
| Iteration 8 | [-1, 0, 3, 10, 20, 21, 37, 101, 4] |
| Iteration 9 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |

Insertion Sort for sorted array

|  |  |
| --- | --- |
| Iteration 0 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 1 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 2 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 3 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 4 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 5 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 6 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 7 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 8 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 9 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |

Insertion Sort for reversed array

|  |  |
| --- | --- |
| Iteration 0 | [101, 37, 21, 20, 10, 4, 3, 0, -1] |
| Iteration 1 | [101, 37, 21, 20, 10, 4, 3, 0, -1] |
| Iteration 2 | [37, 101, 21, 20, 10, 4, 3, 0, -1] |
| Iteration 3 | [21, 37, 101, 20, 10, 4, 3, 0, -1] |
| Iteration 4 | [20, 21, 37, 101, 10, 4, 3, 0, -1] |
| Iteration 5 | [10, 20, 21, 37, 101, 4, 3, 0, -1] |
| Iteration 6 | [4, 10, 20, 21, 37, 101, 3, 0, -1] |
| Iteration 7 | [3, 4, 10, 20, 21, 37, 101, 0, -1] |
| Iteration 8 | [0, 3, 4, 10, 20, 21, 37, 101, -1] |
| Iteration 9 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |

Quicksort for random array

|  |  |
| --- | --- |
| Iteration 0 | [101, 0, -1, 20, 3, 37, 21, 10, 4] |
| Iteration 1 | [0, -1, 20, 3, 37, 21, 10, 4, 101] |
| Iteration 2 | [-1, 0, 20, 3, 37, 21, 10, 4, 101] |
| Iteration 3 | [-1, 0, 3, 10, 4, 20, 37, 21, 101] |
| Iteration 4 | [-1, 0, 3, 10, 4, 20, 21, 37, 101] |
| Iteration 5 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 6 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 7 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |

Quicksort for sorted array

|  |  |
| --- | --- |
| Iteration 0 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 1 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 2 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 3 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 4 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 5 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 6 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 7 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 8 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 9 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |

Quicksort for reversed array

|  |  |
| --- | --- |
| Iteration 0 | [101, 37, 21, 20, 10, 4, 3, 0, -1] |
| Iteration 1 | [37, 21, 20, 10, 4, 3, 0, -1, 101] |
| Iteration 2 | [21, 20, 10, 4, 3, 0, -1, 37, 101] |
| Iteration 3 | [20, 10, 4, 3, 0, -1, 21, 37, 101] |
| Iteration 4 | [10, 4, 3, 0, -1, 20, 21, 37, 101] |
| Iteration 5 | [4, 3, 0, -1, 10, 20, 21, 37, 101] |
| Iteration 6 | [3, 0, -1, 4, 10, 20, 21, 37, 101] |
| Iteration 7 | [0, -1, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 8 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |
| Iteration 9 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |

Cocktail Sort for random array

|  |  |  |
| --- | --- | --- |
| Iteration 0 | [101, 0, -1, 20, 3, 37, 21, 10, 4] |  |
| Iteration 1 | [0, -1, 20, 3, 37, 21, 10, 4, 101] | 8 swaps |
| Iteration 2 | [-1, 0, 3, 20, 4, 37, 21, 10, 101] | 5 swaps |
| Iteration 3 | [-1, 0, 3, 4, 20, 21, 10, 37, 101] | 3 swaps |
| Iteration 4 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] | 2 swaps |
| Iteration 5 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] | No swap |

Cocktail Sort for sorted array

|  |  |  |
| --- | --- | --- |
| Iteration 0 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] |  |
| Iteration 1 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] | No swap |

Cocktail Sort for reversed array

|  |  |  |
| --- | --- | --- |
| Iteration 0 | [101, 37, 21, 20, 10, 4, 3, 0, -1] |  |
| Iteration 1 | [37, 21, 20, 10, 4, 3, 0, -1, 101] | 8 swaps |
| Iteration 2 | [-1, 37, 21, 20, 10, 4, 3, 0, 101] | 7 swaps |
| Iteration 3 | [-1, 21, 20, 10, 4, 3, 0, 37, 101] | 6 swaps |
| Iteration 4 | [-1, 0, 21, 20, 10, 4, 3, 37, 101] | 5 swaps |
| Iteration 5 | [-1, 0, 20, 10, 4, 3, 21, 37, 101] | 4 swaps |
| Iteration 6 | [-1, 0, 3, 20, 10, 4, 21, 37, 101] | 3 swaps |
| Iteration 7 | [-1, 0, 3, 10, 4, 20, 21, 37, 101] | 2 swaps |
| Iteration 8 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] | 1 swap |
| Iteration 9 | [-1, 0, 3, 4, 10, 20, 21, 37, 101] | No swap |