Sorting practice

1. Original

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | 4 | 5 | 6 | 1 | 9 | 2 | 5 | 6 |

Pass 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | 4 | 5 | 6 | 1 | 9 | 2 | 5 | 6 |

Pass 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | 4 | 5 | 6 | 1 | 9 | 2 | 5 | 6 |

Pass 3:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 3 | 4 | 5 | 6 | 9 | 2 | 5 | 6 |

Pass 4:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 3 | 4 | 5 | 6 | 9 | 2 | 5 | 6 |

Pass 5

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 9 | 5 | 6 |

Pass 6:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 5 | 6 | 9 | 6 |

Pass 7

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 5 | 6 | 6 | 9 |

1. Using merge sort

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | 4 | 5 | 6 | 1 | 9 | 2 | 5 | 6 |

Final:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 5 | 6 | 6 | 9 |

3) Using Quick sort

4) Using radix sort

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 34 | 37 | 83 | 51 | 84 | 22 | 43 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1’s |  | 51 | 22 | 83, 43 | 34, 84 |  |  | 37 |  |  |
| 10’s |  |  | 22 | 34, 37 | 43 | 51 |  |  | 83,84 |  |

5)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Identical | Sorted | Reverse |
| Insertion Sort | O(n) | O(n) | O(n^2) |
| Selection Sort | O(n^2) | O(n^2) | O(n^2) |
| Heapsort | O(n) | O(nlogn) | O(nlogn) |
| MergeSort | O(nlogn) | O(nlogn) | O(nlogn) |
| Quicksort | O(n^2) | O(nlogn) | O(nlogn) |
| Bucketsort | O(n+k) | O(n+k) | O(n+k) |
| radixsort | O(P(B+n)) | O(P(B+n)) | O(P(B+n)) |