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BSIT 2C

Quick Sort

1. 2 10 3 8 7 15 1 25 9 4

2 10 3 8 7 15 1 25 9 4

{2, 3, 1} **(4)** {10, 8, 7, 15, 25, 9}

{} **(1)** {2, 3} {8, 7} **(9)** {10, 15, 25}

{2} (3) {} {} **(7) {8}** {10, 15} **(25)** {}

**{2} (3)** {} **{10}** **(15)** {}

Output: 1 2 3 4 7 8 9 10 15 25

1. 25 10 15 20 18 10 30 35 6

25 10 15 20 18 10 30 35 6

{} (6) {25 10 15 20 18 10 30 35}

{} **(35)** {25 10 15 20 18 10 30}

{} **(30)** {25 10 15 20 18 10}

**{10} (10)** {25 15 20 18}

**{15} (18)** {25 20}

{} **(20) {25}**

6 10 10 15 18 20 25 30 35

1. 8 8 3 4 20 1 6 17 5

8 8 3 4 20 1 6 17 5

{3 4 1} **(5)** {8 8 20 6 17}

{} **(1)** {3 4} {8 8 6} **(17) {20}**

**{3} (4)** {} {8 8} **(6)** {}

**{8} (8)** {}

1 3 4 5 6 8 8 17 20

1. 4 7 8 25 1 11 35 10

4 7 8 25 1 11 35 10

{4 7 8 1} **(10)** {25 11 35}

{} **(1)** {4 7 8} {11 25} **(35)** {}

{4 7} **(8)** {} **{11} (25)** {}

**{4} (7)** {}

1 4 7 8 10 11 25 35

Insertion sort

a. 2 10 3 8 7 15 1 25 9 4

2 3 10 8 7 15 1 25 9 4

2 3 8 10 7 15 1 25 9 4

2 3 8 7 10 15 1 25 9 4

1 2 3 7 8 10 15 25 9 4

1 2 3 7 8 9 10 15 25 4

1 2 3 4 7 8 9 10 15 25

b. 25 10 15 20 18 10 30 35 6

10 25 15 20 18 10 30 35 6

10 15 25 20 18 10 30 35 6

10 15 20 25 18 10 30 35 6

10 15 20 18 25 10 30 35 6

10 15 18 20 25 10 30 35 6

10 10 15 18 20 25 30 35 6

6 10 10 15 18 20 25 30 35

c. 8 8 3 4 20 1 6 17 5

3 8 8 4 20 1 6 17 5

3 4 8 8 20 1 6 17 5

1 3 4 8 8 20 6 17 5

1 3 4 6 8 8 20 17 5

1 3 4 6 8 8 17 20 5

1 3 4 5 6 8 8 17 20

d. 4 7 8 25 1 11 35 10

1 4 7 8 25 11 35 10

1 4 7 8 11 25 35 10

1 4 7 8 10 11 25 35

Merging sort

a. 2 10 3 8 7 15 1 25 9 4

[2, 10, 3, 8, 7] [15, 1, 25, 9, 4]

[2,10,3] – [8,7] [15,1,25] – [9,4]

[2] – [10,3] – [8] – [7] [15] – [1,25] – [9] – [4]

[2] – [10] – [3] – [8] – [7] [15] – [1] – [25] – [9] – [4]

[2] – [3,10] – [7,8] [15] – [1,25] – [4,9]

[2,3,10] – [7,8] [1,15,25] – [4,9]

[2,3,7,8,10] [1,4,9,15,25]

1,2,3,4,7,8,9,10,15, 25

b. 25 10 15 20 18 10 30 35 6  
[25] [10 15 20 18] [10 30 35 6]

[25] [10,15] – [20,18] [10,30] – [35,6]

[25] [10] – [15] – [20] – [18] [10] – [30] – [35] – [6]

[25] [10,15] – [18, 20] [10,30] – [6,35]

[25] [10,15,18, 20] [6,10,30,35]

6, 10, 10, 15, 18, 20, 25, 30, 35

c. 8 8 3 4 20 1 6 17 5

[8] [8,3,4,20] [1,6,17,5]

[8] [8,3] – [4,20] [1,6] – [17,5]

[8] [8] – [3] – [4] – [20] [1] – [6] – [17] – [5]

[8] [3,8] – [4,20] [1,6] – [5,17]

[8] [4,3,8,20] [1,5,6,17]

1, 3, 4, 5, 6, 8, 8, 17, 20

d. 4 7 8 25 1 11 35 10

[4,7,8,25] [1,11,35,10]

[4,7] – [8,25] [1,11] – [35,10]

[4] – [7] – [8] – [25] [1] – [11] – [35] – [10]

[4,7,8,25] [1,10,11,35]

1, 4, 7, 8, 11, 25, 35

Counting sorting

a. 2 10 3 8 7 15 1 25 9 4

1,2,10,3,8,7,15,25,9,4

1,2,3,4,10,8,7,15,25,9

1,2,3,4,7,8,10,15,25,9

1,2,3,4,7,8,9,10,15,25

b. 25 10 15 20 18 10 30 35 6

6,10,25,15,20,18,10,30,35

6,10,10, 15,20,18,25,30,35

6,10,10,15,18,20,25,30,35

c. 8 8 3 4 20 1 6 17 5

1, 3, 8, 8, 4, 20, 6, 17, 5

1, 3, 4, 5, 8, 8, 20, 6, 17

1, 3, 4, 5, 6, 8, 8, 17, 20

d. 4 7 8 25 1 11 35 10

1, 4, 7, 8, 25, 11, 35, 10

1, 4, 7, 8, 10, 11, 25, 35

Heap sort

1. 2 10 3 8 7 15 1 25 9 4

2 10 3 8 7 15 1 25 9 4

25 10 15 8 9 3 1 2 7 4

4 10 15 8 9 3 1 2 7 25

15 10 4 8 9 3 1 2 7

7 10 4 8 9 3 1 2 15

10 7 4 8 9 3 1 2

2 7 4 8 9 3 1

9 7 4 8 2 3 1

1 7 4 8 2 3 9

8 7 4 1 2 3

3 7 4 1 2 8

7 3 4 1 2

2 3 4 1 7

4 3 2 1

1 3 2 4

3 1 2

2 1 3

2 1

1

1 2 3 4 7 8 9 10 15 25

b. 25 10 15 20 18 10 30 35 6

25 10 15 20 18 10 30 35 6

35 25 30 20 18 10 15 10 6

6 25 30 20 18 10 15 10 35

30 25 6 20 18 10 15 10 35

10 25 6 20 18 10 15 30 35

25 10 6 20 18 10 15 30 35

15 10 6 20 18 10 25 30 35

20 10 6 15 18 10 25 30 35

10 10 6 15 18 20 25 30 35

6 10 10 15 18 20 25 30 35

c. 8 8 3 4 20 1 6 17 5

8 8 3 4 20 1 6 17 5

20 8 3 4 8 1 6 17 5

5 8 3 4 8 1 6 17 20

8 8 3 4 5 1 6 17 20

1 6 3 4 5 8 8 17 20

6 1 3 4 5 8 8 17 20

5 1 3 4 6 8 8 17 20

5 1 3 4 6 8 8 17 20

4 1 3 5 6 8 8 17 20

4 1 3 5 6 8 8 17 20

3 1 4 5 6 8 8 17 20

3 1 4 5 6 8 8 17 20

1 3 4 5 6 8 8 17 20

d. 4 7 8 25 1 11 35 10

4 7 8 25 1 11 35 10

35 25 11 7 1 8 4 10

10 25 11 7 1 8 4

25 10 11 7 1 8 4

4 10 11 7 1 8 25

11 10 4 7 1 8

8 10 4 7 1 11

10 8 4 7 1

1 8 4 7 10

8 1 7 4

4 1 7 8

7 4 1

1 4 7

4 1

1 4

1

1 4 7 8 10 11 25 35