

Algorithmen & Datastrukturen

Sorting

Ajeet Sandu (1234567)
Thilo Ritzerfeld (2462966)

Fontys Hogeschool Techniek en Logistiek, Venlo
Informatik
Algorithmen & Datastrukturen (ALDA)

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Revision History

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Chapter 1

Introduction

Sample citation:

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Chapter 2

Heapsorter

2.1 Was ist ein sogenannter "heap"?

Ein "heap" (deutsch: "Haufen/Menge") ist ein binärer Baum, der bis zu einem gewissen Grad sortiert ist. Ein sogenannter Haufen hat eine bestimmte Bedingung, nämlich dass der "Schlüssel" in jedem "Vaterknoten" niemals größer ist, als der von "Schlüssel" von den beiden "Kinderknoten". Man spricht nur von einem "Haufen", wenn diese Bedingung wirklich eingehalten worden ist. Solch ein "Haufen" heißt "minimal heap". Falls der "Schlüssel" von dem "Vaterknoten" niemals kleiner als der "Kinderknoten" ist, dann heißt der "Haufen" "maximaler Haufen".

```

1  @Override
2  public Queue<E> sort(Comparator<E> comparator) {
3
4      Queue<E> queue = new Queue<>();
5      setComparator(comparator);
6      heapify();
7      while(!stack.isEmpty()) {
8          queue.put(root.item);
9          TNode<E> n = stack.pop();
10         TNode<E> lastNode = null;
11         if(n.left != null) lastNode = n.left;
12         if (n.right != null) lastNode = n.right;
13         exchangeItems(root, lastNode);
14         if (!(n.left == null && n.right == null) && root.parent != null) stack.push(root.parent);
15         root.parent = null;
16         removeLastNode();
17         sink(root);
18     }
19     queue.put(root.item);
20     return queue;
21 }

```

```

1  private TNode fillTree(E[] arr) {
2      Queue<TNode<E>> itemNodesQ = new Queue<>();
3      for (E it : arr) itemNodesQ.put(new TNode<>(it));
4      Queue<TNode<E>> heapQ = new Queue<>();
5      TNode<E> heapY = itemNodesQ.get();
6      heapQ.put(heapY);
7      TNode<E> parent, left, right;
8      while (!itemNodesQ.isEmpty()) {
9          parent = heapQ.get();

```

```
10         left = itemNodesQ.get();
11         parent.left = left;
12         heapQ.put(left);
13         if (!itemNodesQ.isEmpty()) {
14             right = itemNodesQ.get();
15             parent.right = right;
16             heapQ.put(right);
17             right.parent= parent;
18         }
19     }
20     return heapQ;
21 }
```

Chapter 3

Selectionsorter

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Chapter 4

Insertion Sorter

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Chapter 5

Quicksort

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Chapter 6

Week 13

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Chapter 7

Week 14

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Chapter 8

Conclusions

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