



Quick Sort

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A ideia envolve a escolha de um elemento, chamado pivô. Depois o pivô é colocado em sua correta posição na lista, isto é, elementos menores à esquerda e maiores à direita. O mesmo processo é realizado nas sub-listas esquerda e direita.

Exemplo

5	3	1	2	4
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Iteração 1

5	3	1	2	4
---	---	---	---	---

i, j

$5 < 4 ?$

p

Árvore

5	3	1	2	4
---	---	---	---	---

Iteração 1

5	3	1	2	4
---	---	---	---	---

i

j

$3 < 4 ?$

p

Árvore

5	3	1	2	4
---	---	---	---	---

Iteração 1

3	5	1	2	4
---	---	---	---	---

i

j

Permuta i e j

p

Árvore

3	5	1	2	4
---	---	---	---	---

Iteração 1

3	5	1	2	4
---	---	---	---	---

i, j

Incrementa i

p

Árvore

3	5	1	2	4
---	---	---	---	---

Iteração 1

3	5	1	2	4
---	---	---	---	---

i

j

$1 < 4 ?$

p

Árvore

3	5	1	2	4
---	---	---	---	---

Iteração 1

3	1	5	2	4
---	---	---	---	---

i

j

Permuta *i* e *j*

p

Árvore

3	1	5	2	4
---	---	---	---	---

Iteração 1

3	1	5	2	4
---	---	---	---	---

i, j

Incrementa i

p

Árvore

3	1	5	2	4
---	---	---	---	---

Iteração 1

3	1	5	2	4
---	---	---	---	---

i

j

2 < 4 ?

p

Árvore

3	1	5	2	4
---	---	---	---	---

Iteração 1

3	1	2	5	4
---	---	---	---	---

i

j

Permuta *i* e *j*

p

Árvore

3	1	2	5	4
---	---	---	---	---

Iteração 1

3	1	2	5	4
---	---	---	---	---

i, j

Incrementa *i*

p

Árvore

3	1	2	5	4
---	---	---	---	---

Iteração 1

3	1	2	5	4
---	---	---	---	---

i

j

Fim do laço

p

Árvore

3	1	2	5	4
---	---	---	---	---

Iteração 1

3	1	2	4	5
---	---	---	---	---

i

Permuta *i* e *p*

p

Árvore

3	1	2	4	5
---	---	---	---	---

Iteração 1

3	1	2	4	5
---	---	---	---	---

p

Árvore

3	1	2	4	5
---	---	---	---	---

Iteração 2

3	1	2	4	5
---	---	---	---	---

i, j

$3 < 2 ?$

p

Árvore

3	1	2	4	5
---	---	---	---	---



3	1	2
---	---	---

Iteração 2

3	1	2	4	5
---	---	---	---	---

i

j

$1 < 2 ?$

p

Árvore

3	1	2	4	5
---	---	---	---	---



3	1	2
---	---	---

Iteração 2

1	3	2	4	5
---	---	---	---	---

i

j

Permuta i e j

p

Árvore

3	1	2	4	5
---	---	---	---	---



1	3	2
---	---	---

Iteração 2

1	3	2	4	5
---	---	---	---	---

i, j

Incrementa i

p

Árvore

3	1	2	4	5
---	---	---	---	---



1	3	2
---	---	---

Iteração 2

1	3	2	4	5
---	---	---	---	---

i

j

Fim do laço

p

Árvore

3	1	2	4	5
---	---	---	---	---



1	3	2
---	---	---

Iteração 2



i

Permuta i e p

p

Árvore



Iteração 2



p

Árvore



Iteração 3



p

Árvore

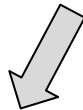


Iteração 4



p

Árvore



Iteração 5



p

Árvore



Resultado

1	2	3	4	5
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*Se a sub-lista (esquerda ou direita)
tiver um ou nenhum elemento,
considera-se já ordenada.*

Exercício

- ▶ Ordene as listas a seguir utilizando Quick Sort;

9	12	2	3	8	0	6
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21	23	2	34	245	33	66
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Implementação em sala



Características

- ▷ Algoritmo do tipo dividir para conquistar;
- ▷ Bom desempenho;
- ▷ In place
- ▷ Não é Stable;
- ▷ Muito usado na prática;

Laboratório23

- ▷ Implemente o algoritmo Quick Sort para ordenar uma lista encadeada;