ORDENAÇÃO: HEAPSORT

PUC MINAS

ENGENHARIA DE SOFTWARE

HEAPSORT

- Problema do método de ordenação Seleção:
 - custo para se selecionar o elemento que ocupará a posição de referência.
- E se...
 - a seleção puder ser feita a baixo custo?

HEAP

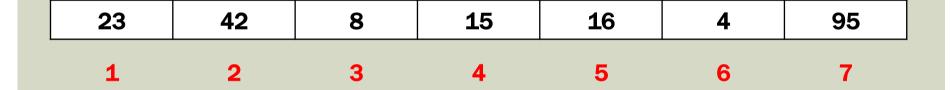
- Estrutura de dados que não garante a ordem FIFO;
 - mas sim a ordem de prioridade préestabelecida;
 - o primeiro que sai;
 - é o elemento que apresenta a maior prioridade.

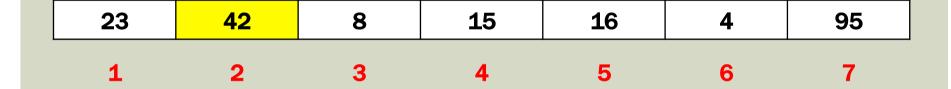
HEAP

- Em geral, implementado em um vetor ou em uma árvore, com as seguintes regras:
 - $A[i] \ge A[2 * i];$
 - $A[i] \ge A[2 * i + 1].$
- Exemplo:
 - A[2] é maior ou igual a A[4] e A[5].

HEAP

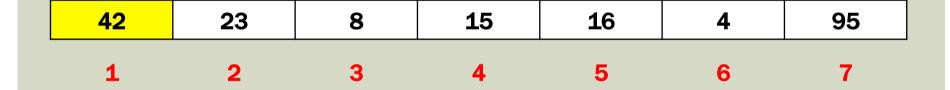
- Operações:
 - construir o heap em um vetor;
 - refazer o heap a cada inserção ou retirada.

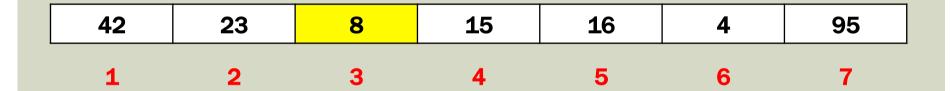


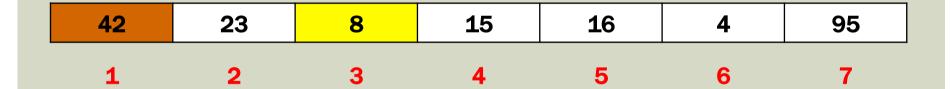


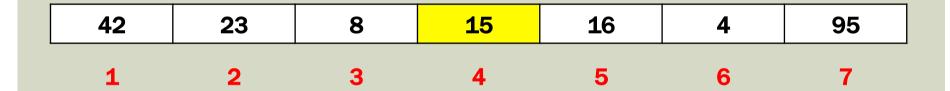


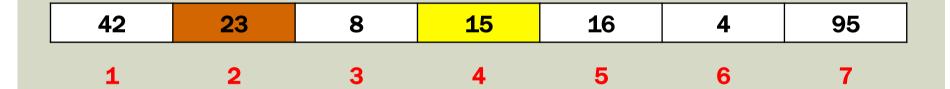




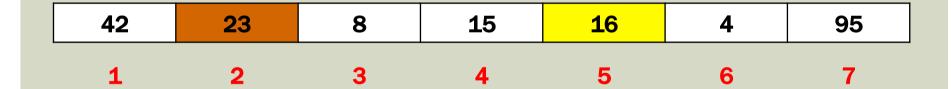




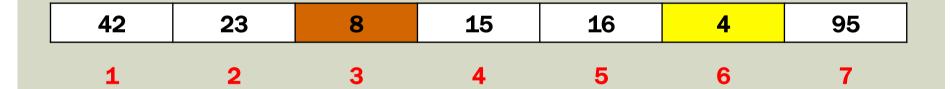


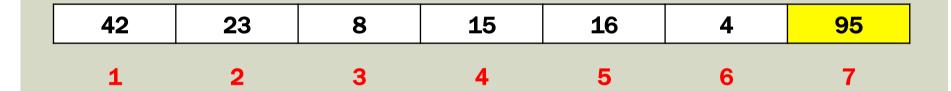


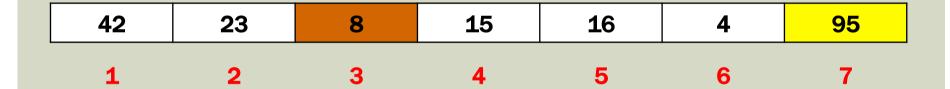


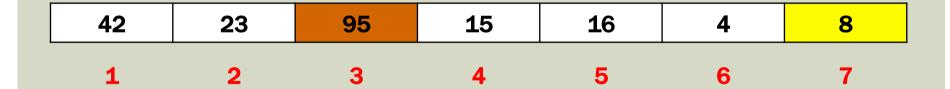


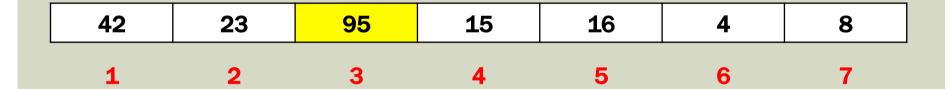




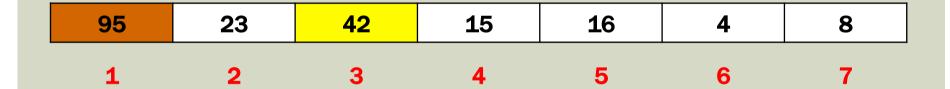


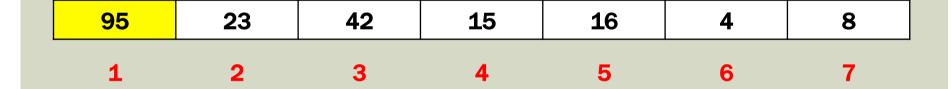


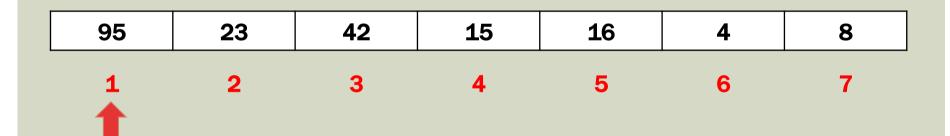






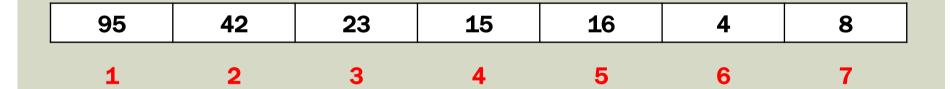


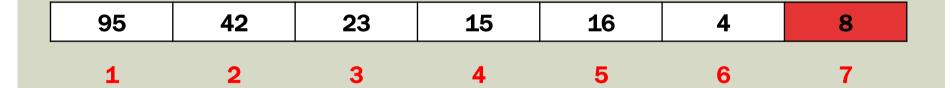


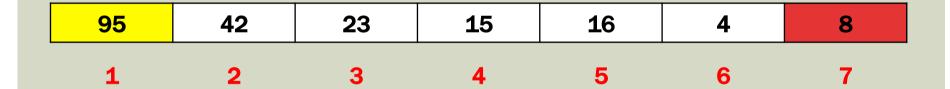


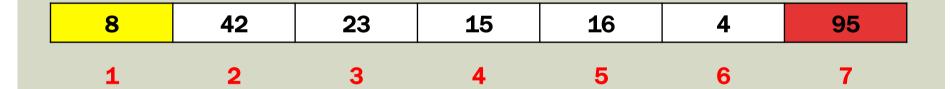
ALGORITMO HEAPSORT

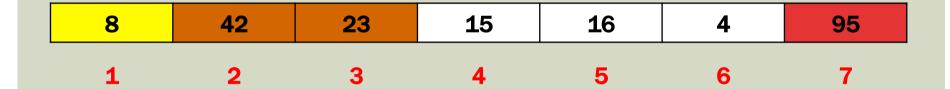
- Construir o heap;
- Para cada posição de referência, a partir do fim do conjunto:
 - trocar o elemento que ocupa a posição de referência com o primeiro;
 - refazer o heap a partir da primeira posição.

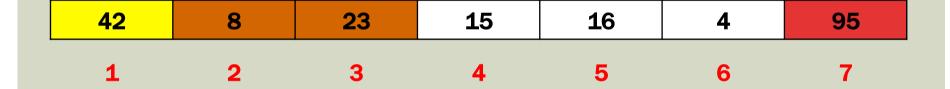


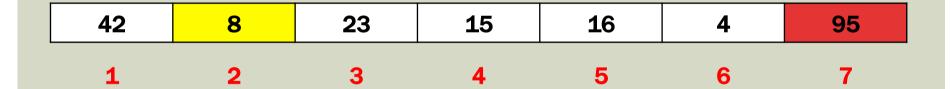


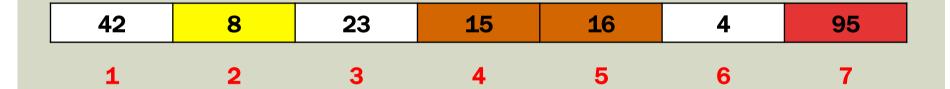


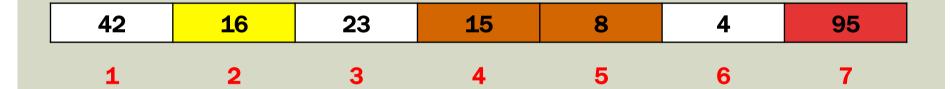


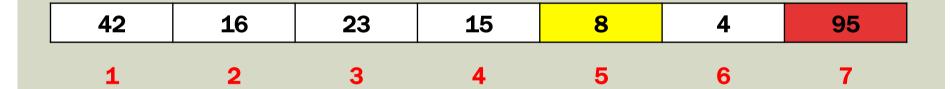




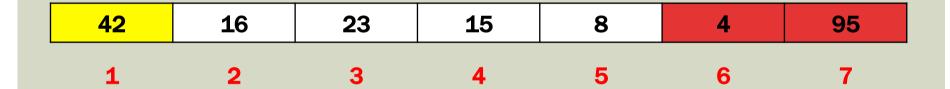


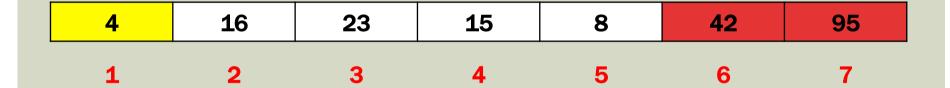


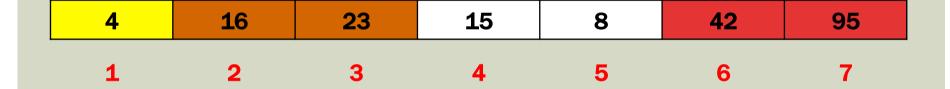


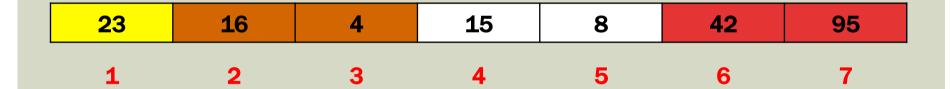


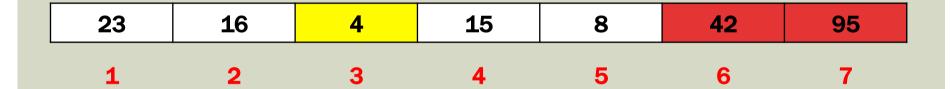


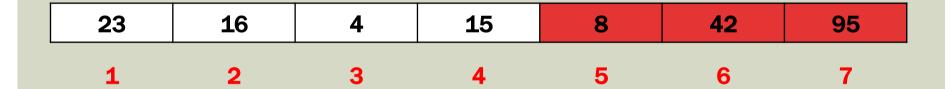


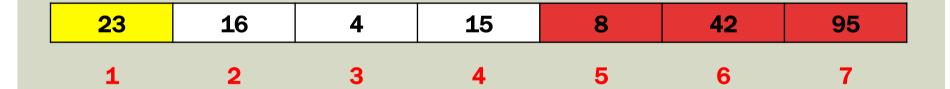


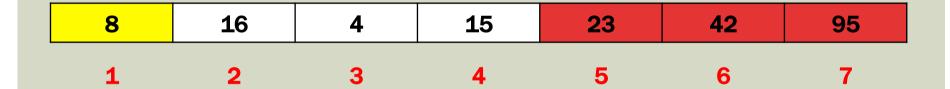


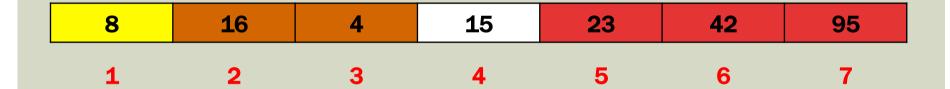


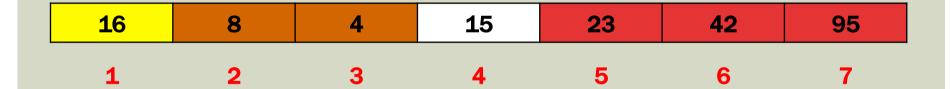


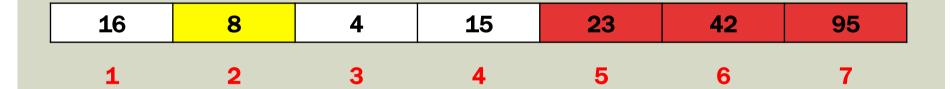


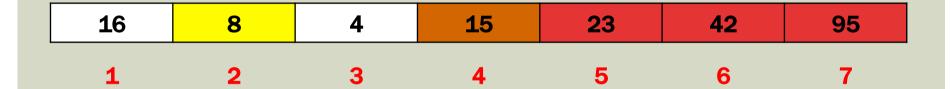


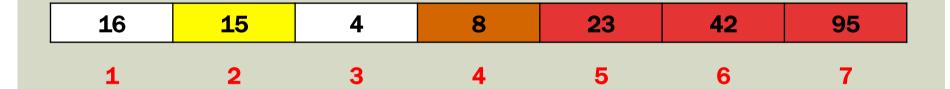


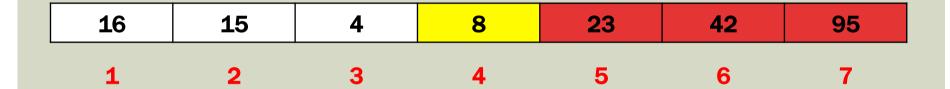


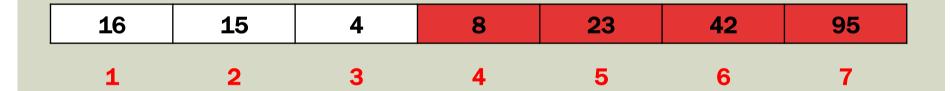


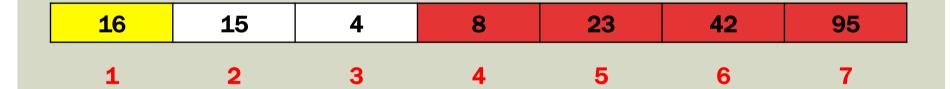


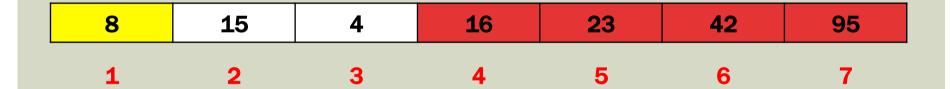


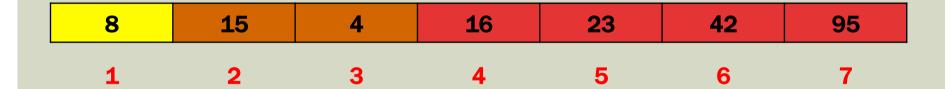


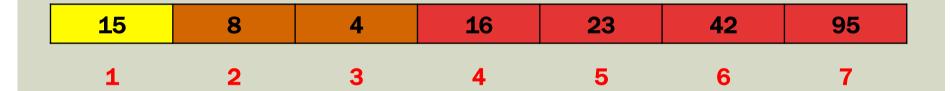


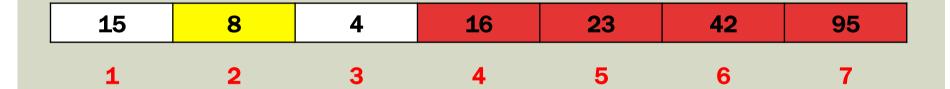


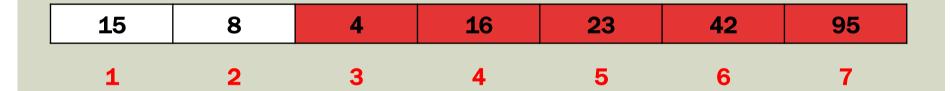


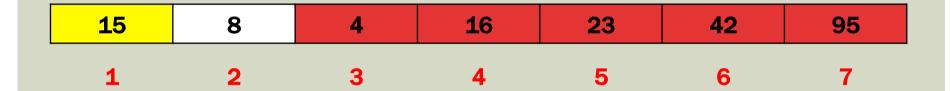


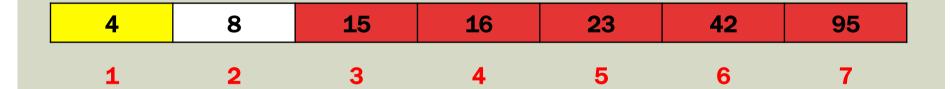


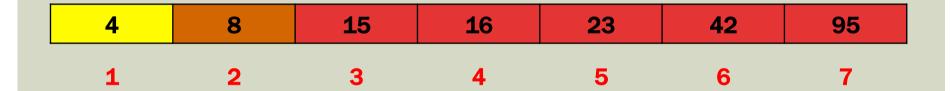


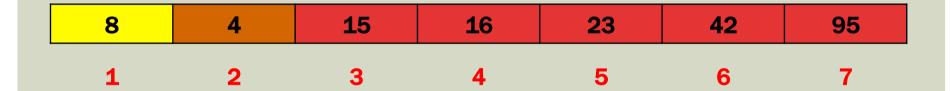


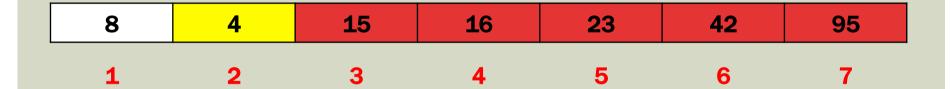


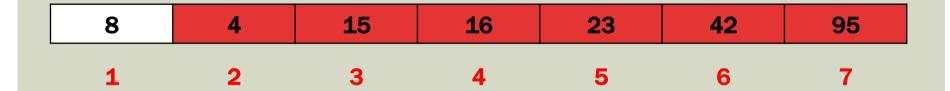


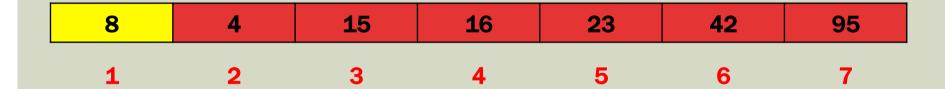


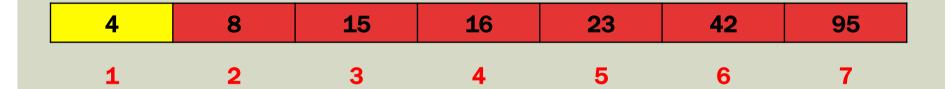


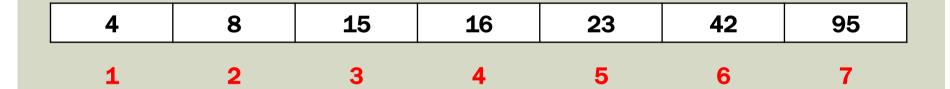












CONSIDERAÇÕES

- Método não-estável.
- Custo alto para construir o heap.