**Heap sort**

Uses data structure to sort **heap**

**Heap** is a complete binary tree

two types of heaps **max heap and min heap**

in heap parent of a node is always greater or equal to the node

for heap sort we use max heaps

min heaps are for priority queue

**Dynamic programming**

**optimal substructure:**

optimal solutions to a problem incorporate

optimal solutions to related subproblems, which we may solve independently.

* Dynamic programming thus uses additional memory to save computation time
* There are usually **two** equivalent ways to implement a dynamic-programmingapproach.
* The first approach is **top-down** with memorization
* The second approach is the **bottom-up** method