Heap

Binary Heap Operations:

- findmax (O(1))
- insert (O(log n) (Binary Imp))
  - insert item into next place in the BT
  - Swap item up with parent until heap invariant is maintained
- remove-max (O(log n) (Binary Imp))
  - remove the root (and store it to return)
  - place the last element inserted at the root
  - swap item down with child until heap invariant is maintained

Applications:

- heapsort
- graph algorithms
- order stats
- priority queue

Notes:

- tree-based structure that satisfies heap property (max heap parent greater than or equal to children)

sources:

- `http://interactivepython.org/runestone/static/pythonds/Trees/BinaryHeapImplementation.html`