binary heap demo
Binary heap demo

heap ordered
Binary heap demo

**Insert.** Add node at end; repeatedly exchange element in child with element in parent until heap order is restored.

**insert 7**

[Diagram of a binary heap with numbers 6, 8, 10, 12, 18, 21, 17, 19, 11, 25, and 7, illustrating the insertion process.]
Binary heap demo

**Insert.** Add node at end; repeatedly exchange element in child with element in parent until heap order is restored.

```
insert 7
```

[Diagram of a binary heap with nodes labeled from 6 to 25, with a small circle marked 7 which violates the heap order (swim up).]
**Binary heap demo**

**Insert.** Add node at end; repeatedly exchange element in child with element in parent until heap order is restored.

**insert 7**

![Binary heap diagram](image-url)
Binary heap demo

**Insert.** Add node at end; repeatedly exchange element in child with element in parent until heap order is restored.

*insert 7*
Binary heap demo

heap ordered
**Binary heap demo**

**Extract min.** Exchange root node with last node; repeatedly exchange element in parent with element in larger child until heap order is restored.

extract the minimum
**Binary heap demo**

**Extract min.** Exchange root node with last node; repeatedly exchange element in parent with element in larger child until heap order is restored.

extract the minimum

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**extract the minimum**

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Binary heap demo

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**Binary heap demo**

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Binary heap demo

Extract min. Exchange root node with last node; repeatedly exchange element in parent with element in larger child until heap order is restored.

e extract the minimum

violates heap order (sink down)
**Binary heap demo**

**Extract min.** Exchange root node with last node; repeatedly exchange element in parent with element in larger child until heap order is restored.

*extract the minimum*

```plaintext
violates heap order
(sink down)
```
**Binary heap demo**

**Extract min.** Exchange root node with last node; repeatedly exchange element in parent with element in larger child until heap order is restored.

extract the minimum

violates heap order (sink down)
Binary heap demo

heap ordered