1. Draw the min-heap, which results from adding the following numbers to an empty min-heap, draw both linked and array representation:7,3,9,5,4,1,6,13

Find parent: (n-1)/2

Parent’s children: 2n+1 and 2n+2

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proccess | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Add 7 | 7 |  |  |  |  |  |  |  |  |  |
| Add 3 | 7 | 3 |  |  |  |  |  |  |  |  |
| Reorder | 3 | 7 |  |  |  |  |  |  |  |  |
| Add 9 | 3 | 7 | 9 |  |  |  |  |  |  |  |
| Add 5 | 3 | 7 | 9 | 5 |  |  |  |  |  |  |
| Reorder | 3 | 5 | 9 | 7 |  |  |  |  |  |  |
| Add 4 | 3 | 5 | 9 | 7 | 4 |  |  |  |  |  |
| Reorder | 3 | 4 | 9 | 7 | 5 |  |  |  |  |  |
| Add 1 | 3 | 4 | 9 | 7 | 5 | 1 |  |  |  |  |
| Reorder | 3 | 4 | 1 | 7 | 5 | 9 |  |  |  |  |
| Reorder | 1 | 4 | 3 | 7 | 5 | 9 |  |  |  |  |
| Add 6 | 1 | 4 | 3 | 7 | 5 | 9 | 6 |  |  |  |
| Add 13 | 1 | 4 | 3 | 7 | 5 | 9 | 6 | 13 |  |  |

2. Consider the following min-heap:

A picture containing clock

Description automatically generated

Draw the resulting min-heap after the following operations:

• removeMin()

Diagram

Description automatically generatedDiagram

Description automatically generated

• add(8)

A picture containing text

Description automatically generated

• removeMin()

Diagram

Description automatically generated with low confidenceDiagram

Description automatically generated

• add(4)

Diagram

Description automatically generated

•add(6)

Diagram

Description automatically generated with medium confidence

•add(11)

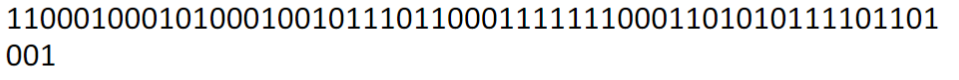
Diagram

Description automatically generated with medium confidence

Hoffman treeeDiagram

Description automatically generated

B, Decode





Where is waldo.