Bonous Exercise 1: Fibonacci heap

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1 Project Defination

This project implements a **Fibonacci Heap**. The operations performed by the code include:

- Inserting the values: first '3', then '7', followed by '17' and finally '24'
- Removing the minimum node from the root list and restructuring the heap
- Retrieving the current minimum value in the heap without removing it

2 Step by step Operations Performing by the Kotlin code

2.1 Insertion

When inserting a value, it creates a new node and adds it to the root list.

After Inserting 7:

Figure 1: Root list after Inserting 7

After Inserting 3:

Figure 2: Root list after Inserting 3

Root list after Inserting 17 and 24:

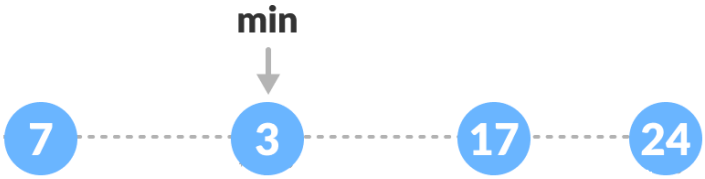

Figure 3: Root list after Inserting 17 and 24

2.2 Extract Minimum

The `extractMin` operation removes the minimum node from the root list and restructures the heap.

After Extracting 3:

- Remove 3
- Add its children (if any) back to the root list (assumed here that 3 has no children)

Figure 4: Root list after extracting minimum

2.3 Get Minimum

The `getMin` operation retrieves the current minimum value in the heap without removing it.

Figure 5: Root List after retrieving the current minimum value

Output

Figure 6: Screanshot of output