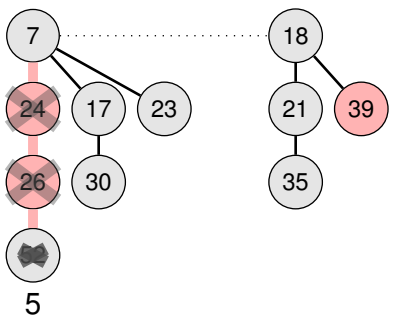
# Microchallenge 5

- Implement the Fibonacci Heap priority queue
- Implement a procedure, which for any given $k \geq 5$, performs a sequence of operations which includes a CASCADING CUT of length exactly $k$ (that is, in addition to the node whose key is being decreased, another $k-1$ (marked) ancestors have to be cut from the tree.) Your procedure should start with an empty Fibonacci Heap.
- Submit your program and include the full sequence of operations for the case $k = 6$. Fancy graphical output is not strictly required but will be appreciated (and may be uploaded to the course webpage later)
- Deadline: Submission by email before Friday February 27



# Solution Microchallenge 5

Insert(25)

# Solution Microchallenge 5

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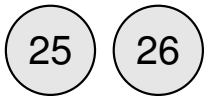

# Solution Microchallenge 5

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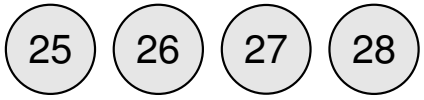

# Solution Microchallenge 5

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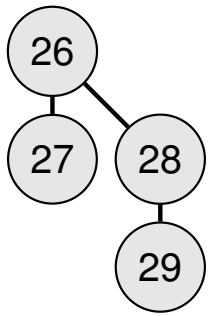

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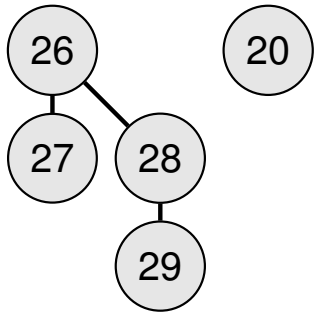

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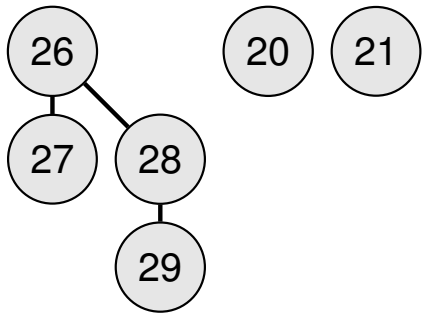

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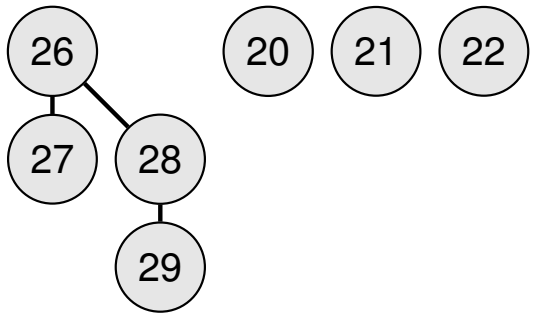

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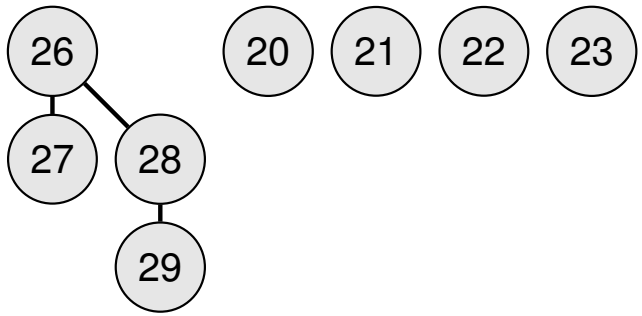

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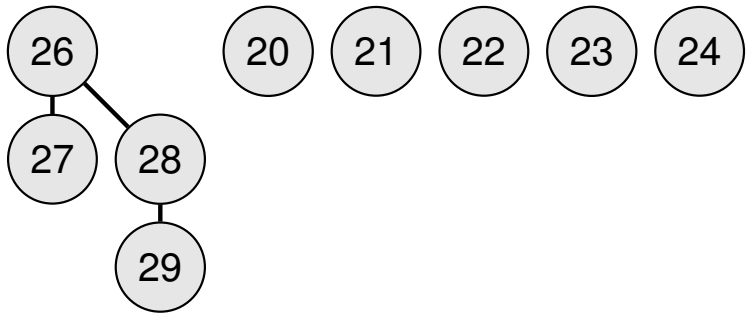

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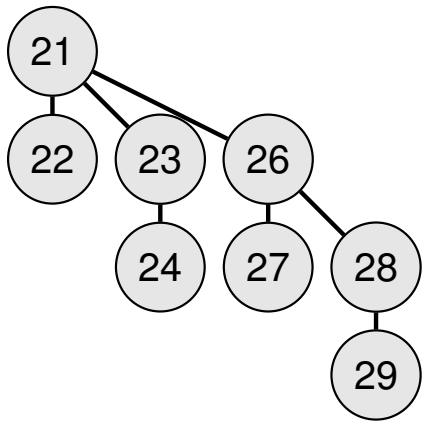

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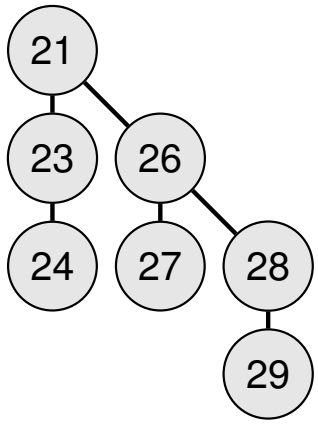

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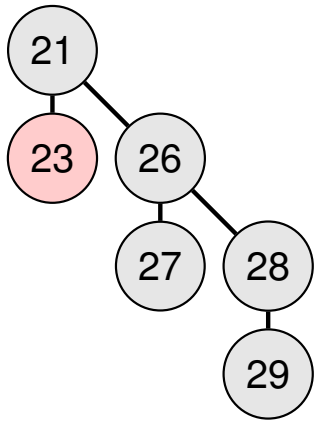

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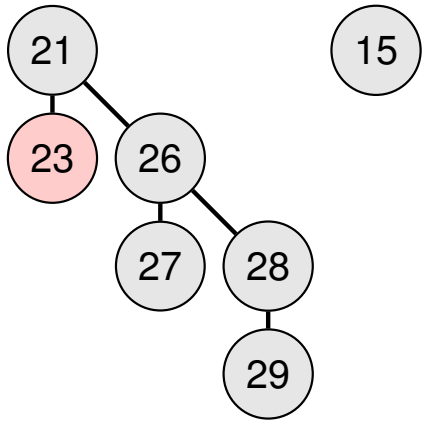

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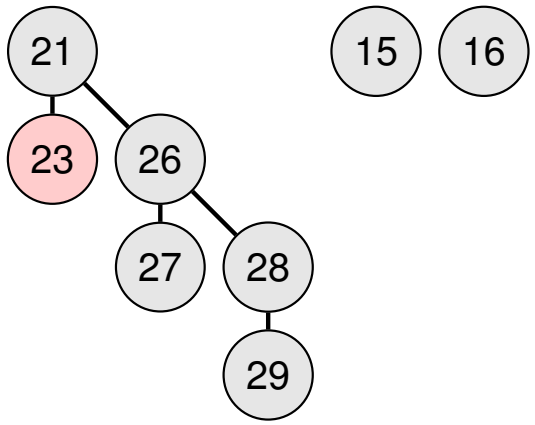

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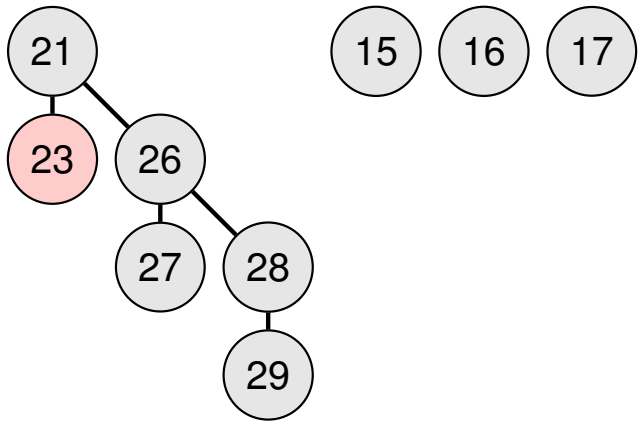

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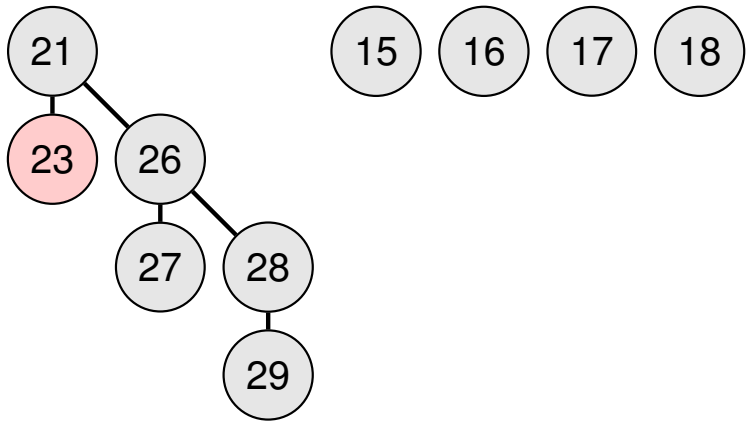

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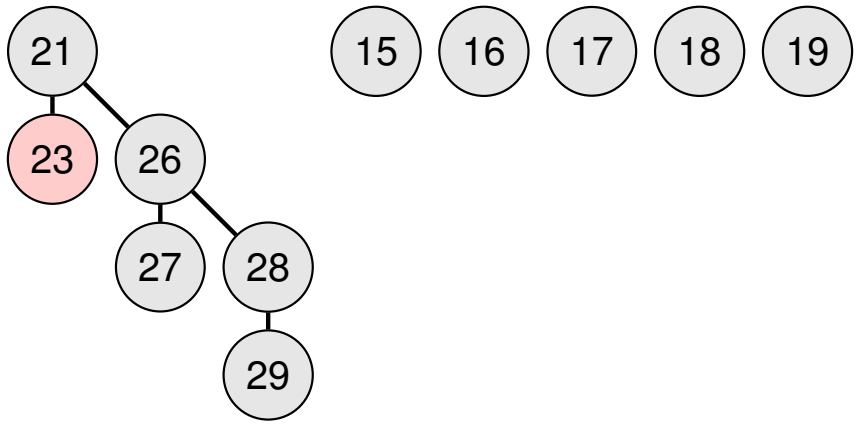

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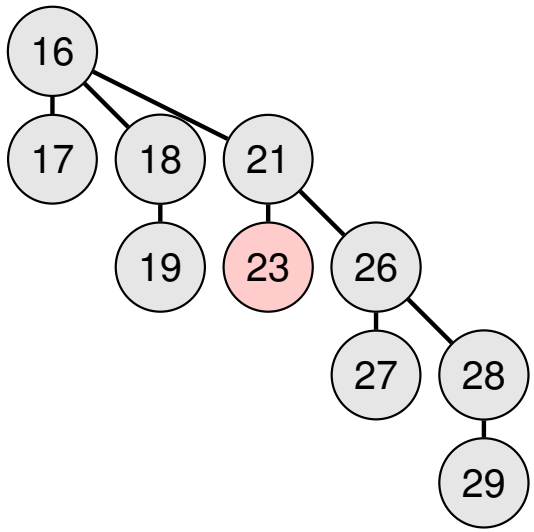

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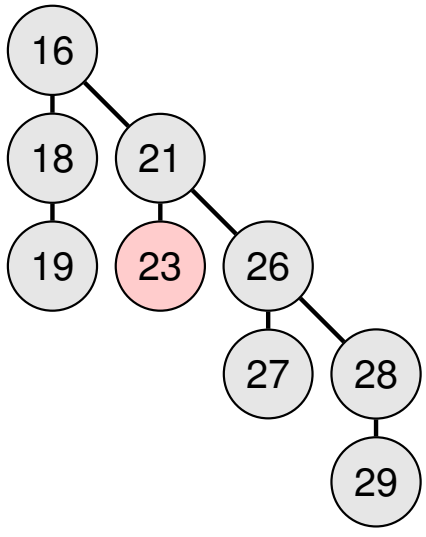

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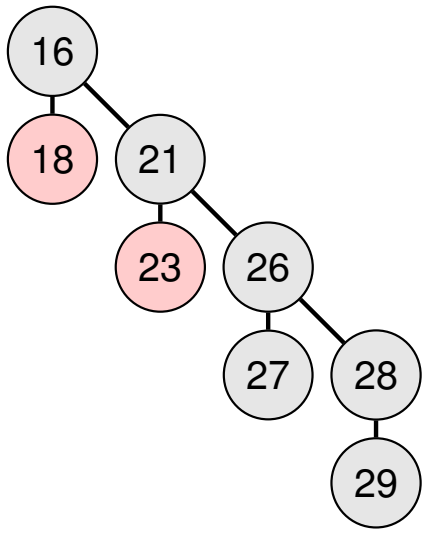

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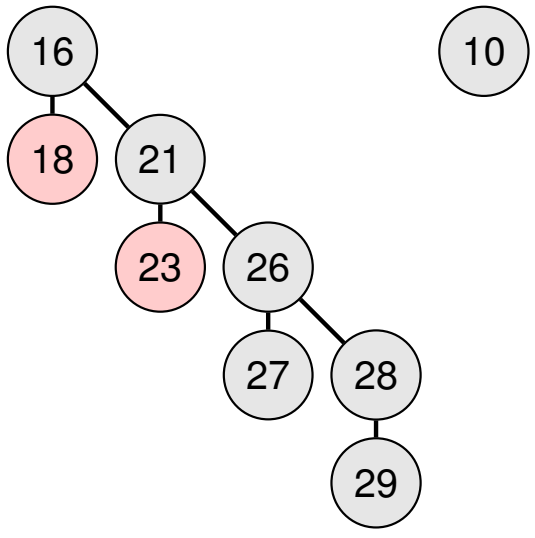

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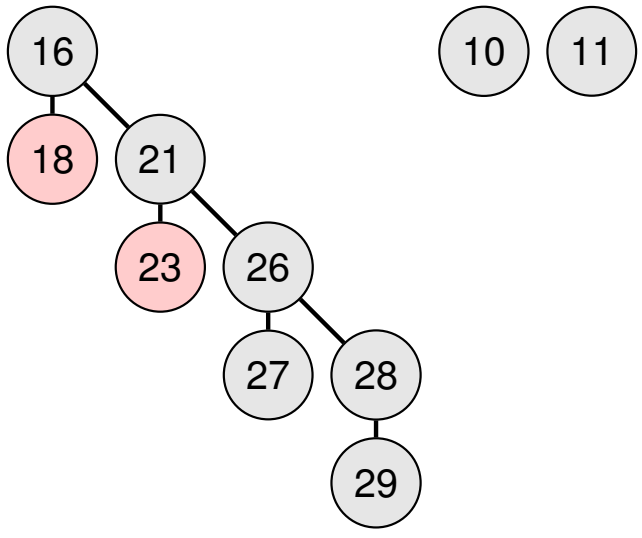

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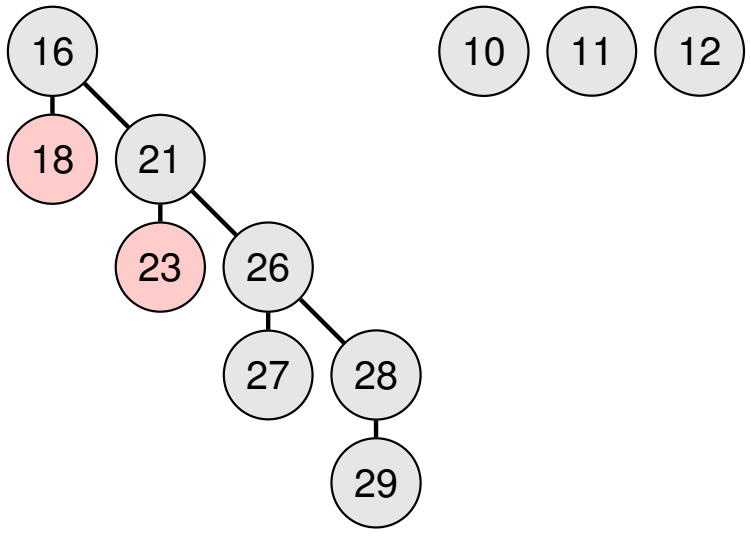

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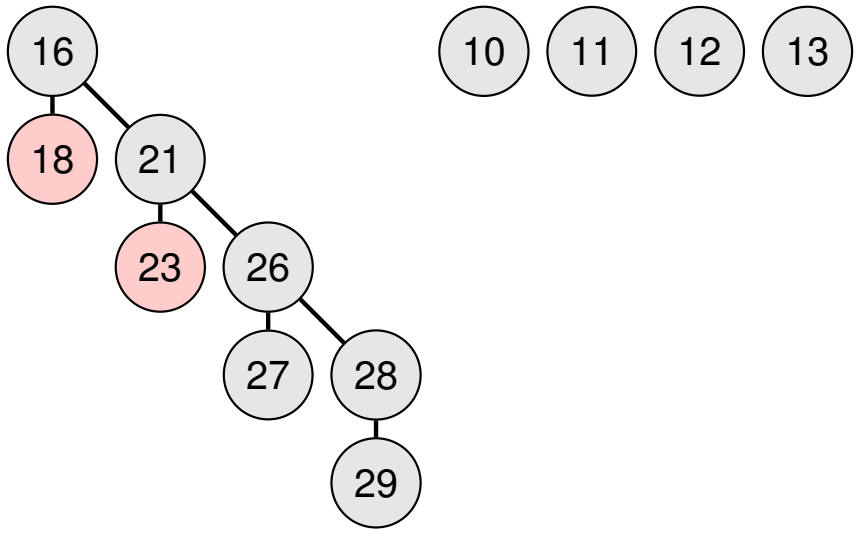

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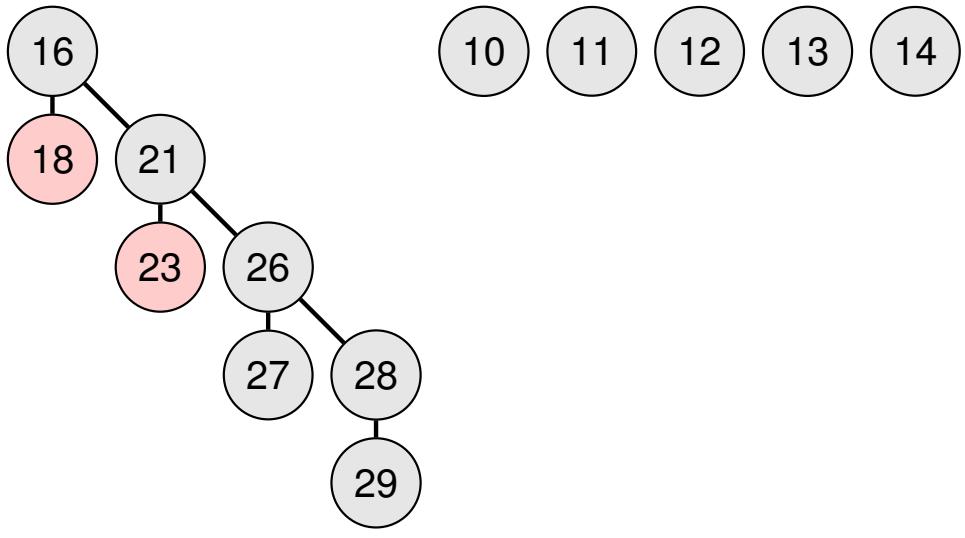

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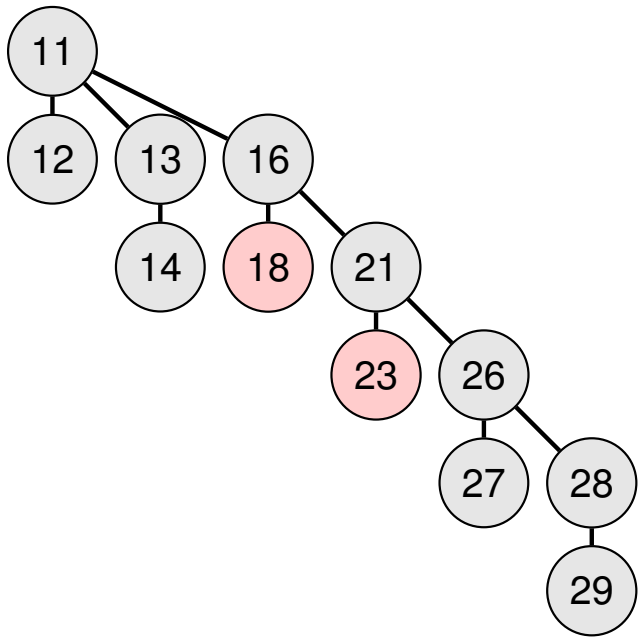

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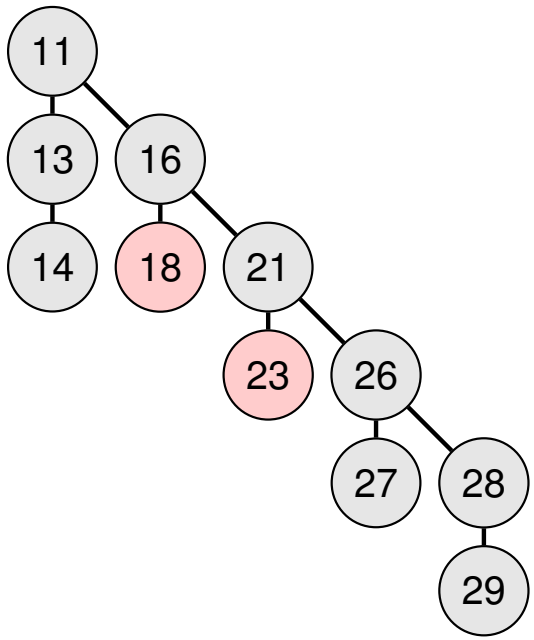

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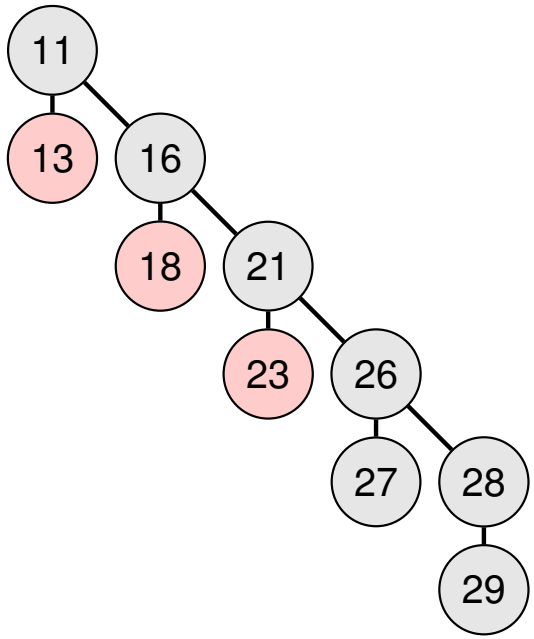

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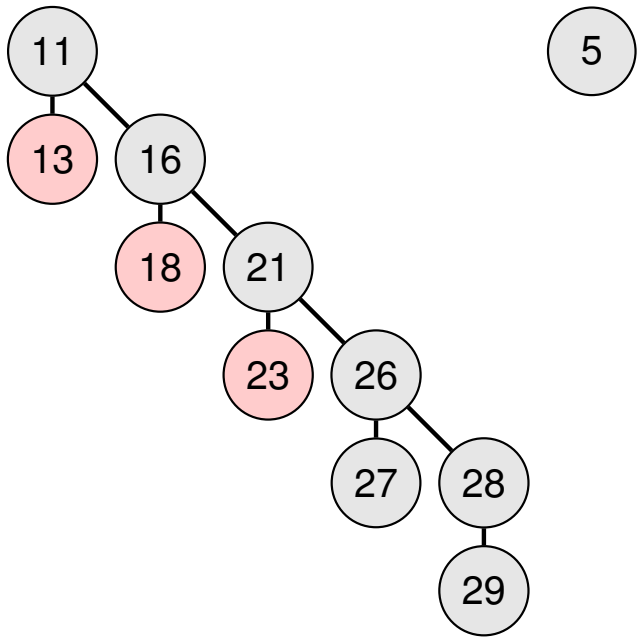

# Solution Microchallenge 5

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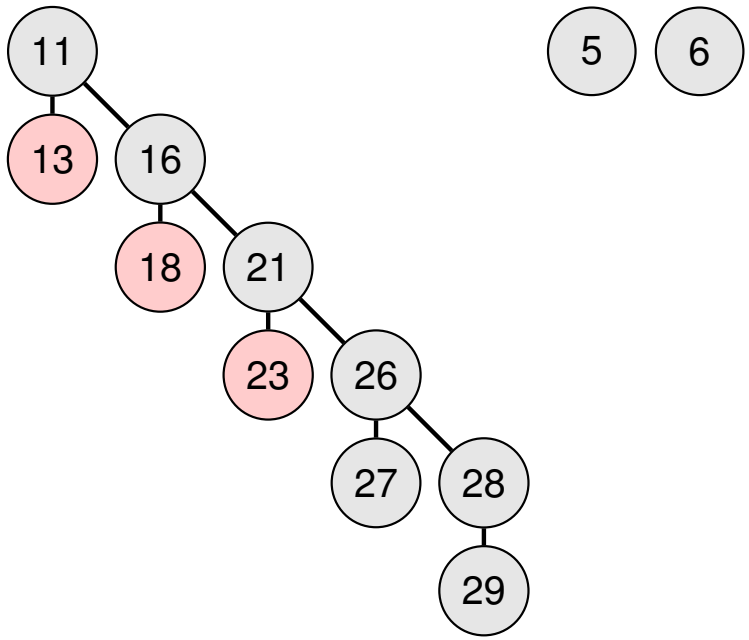

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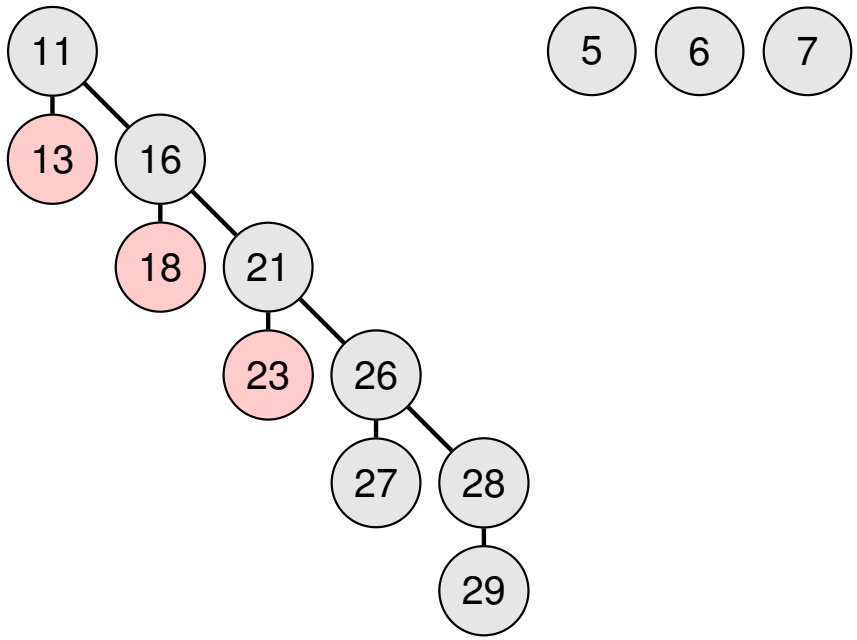

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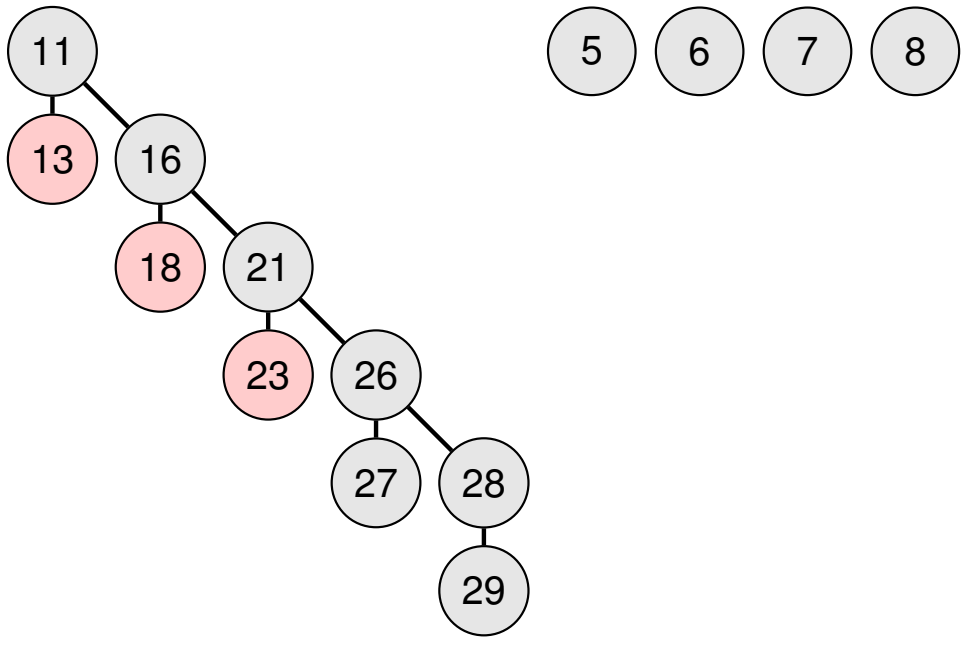

# Solution Microchallenge 5

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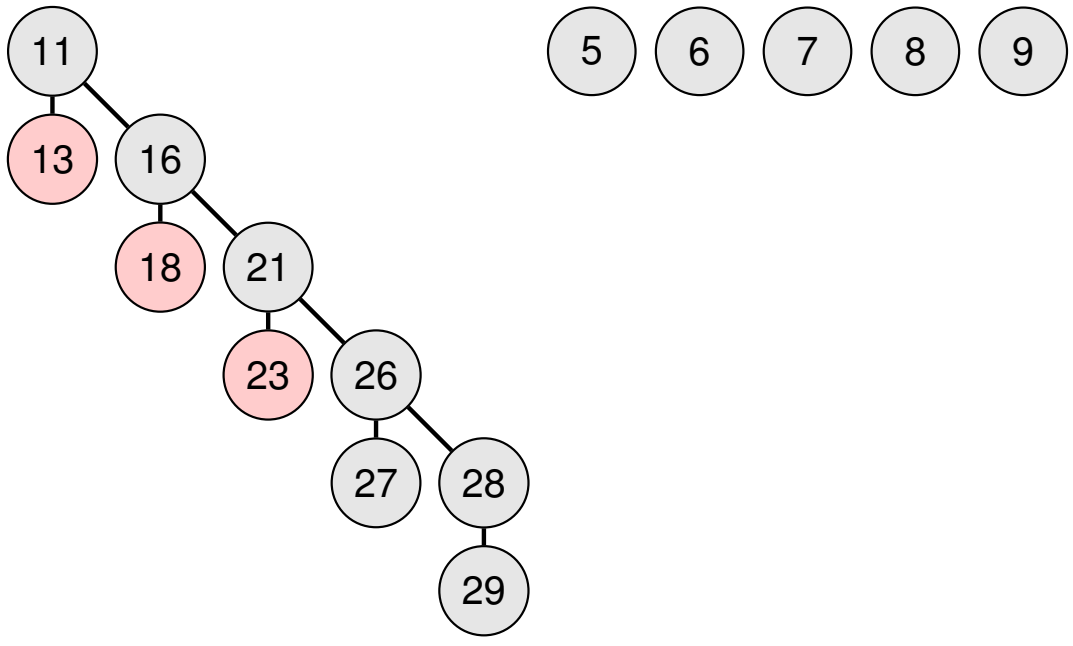

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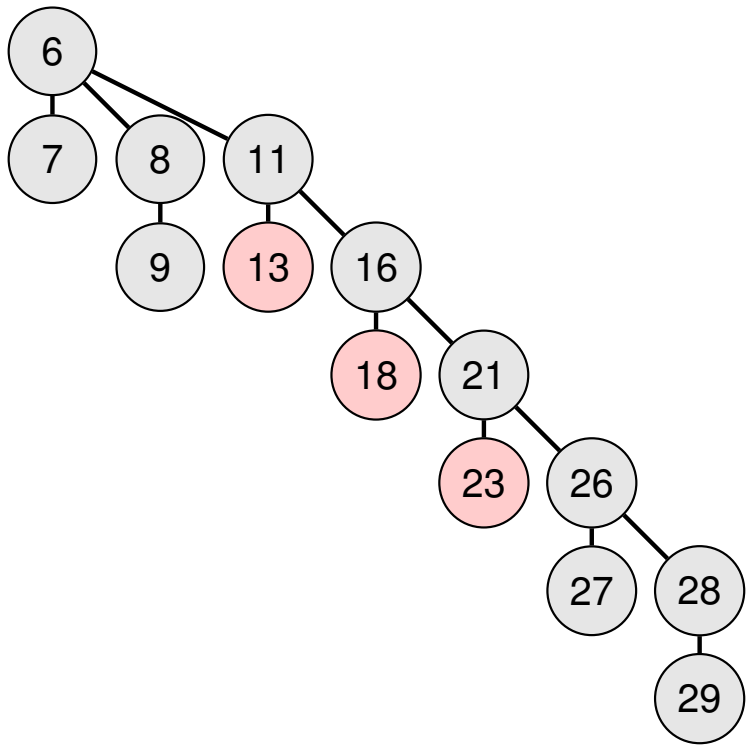

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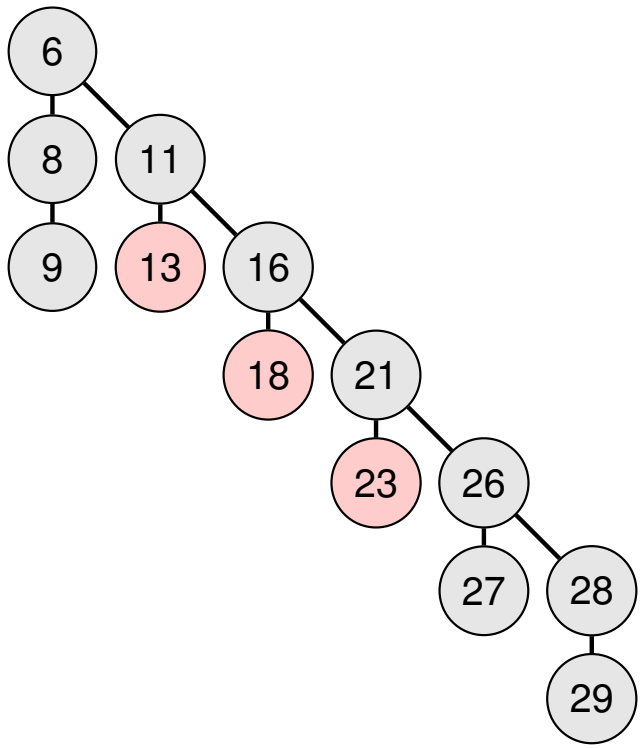

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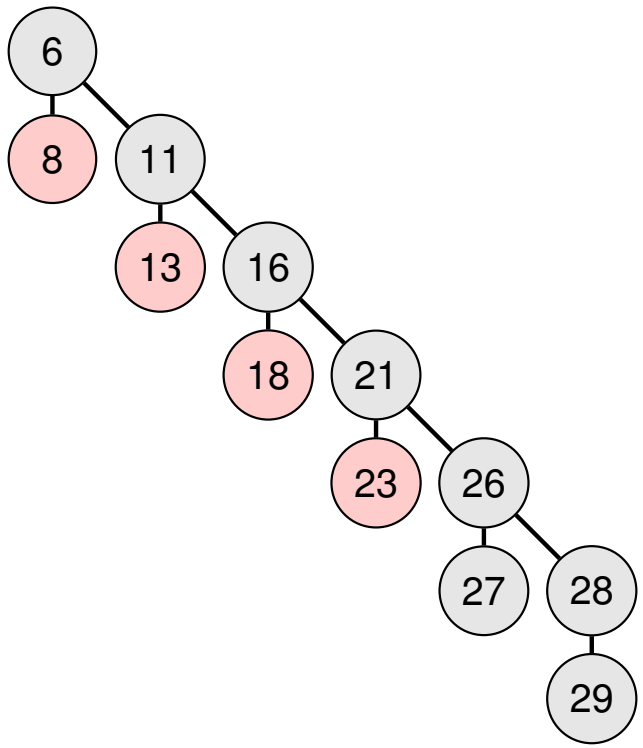

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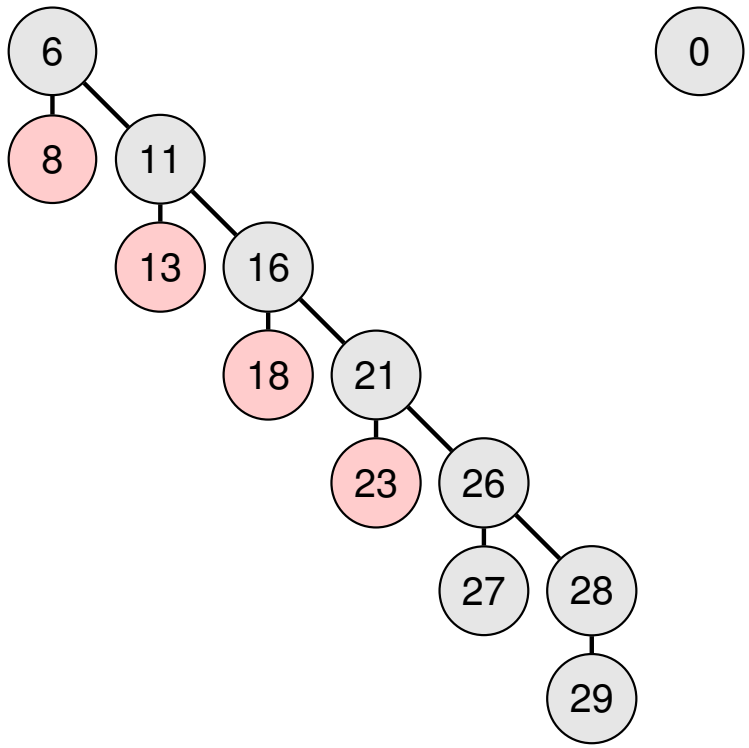

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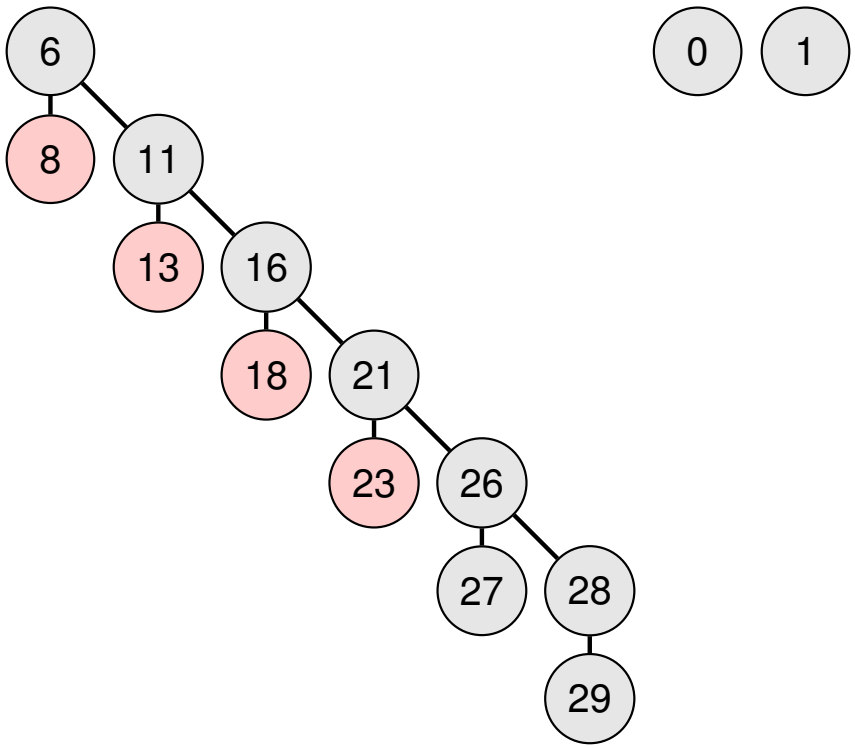

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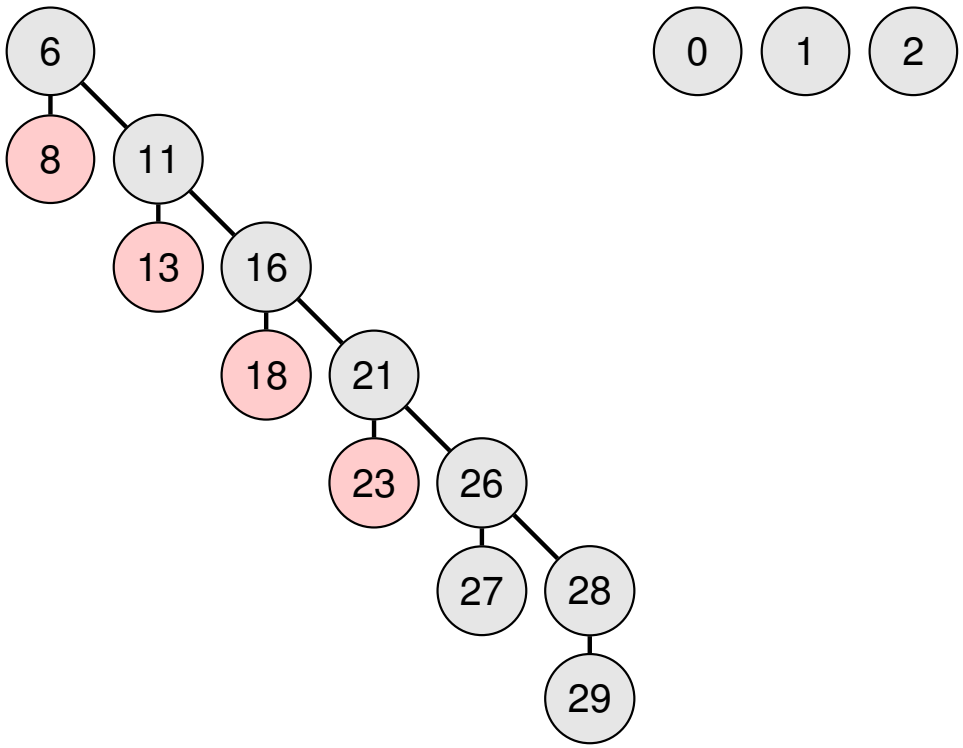

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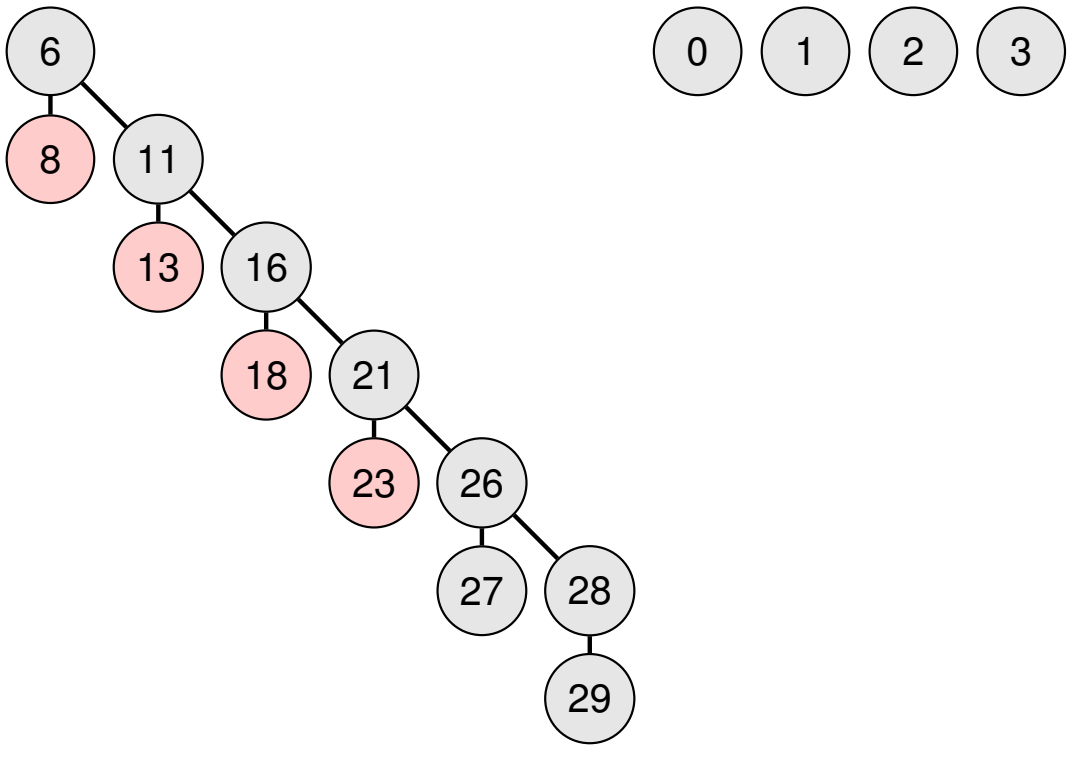

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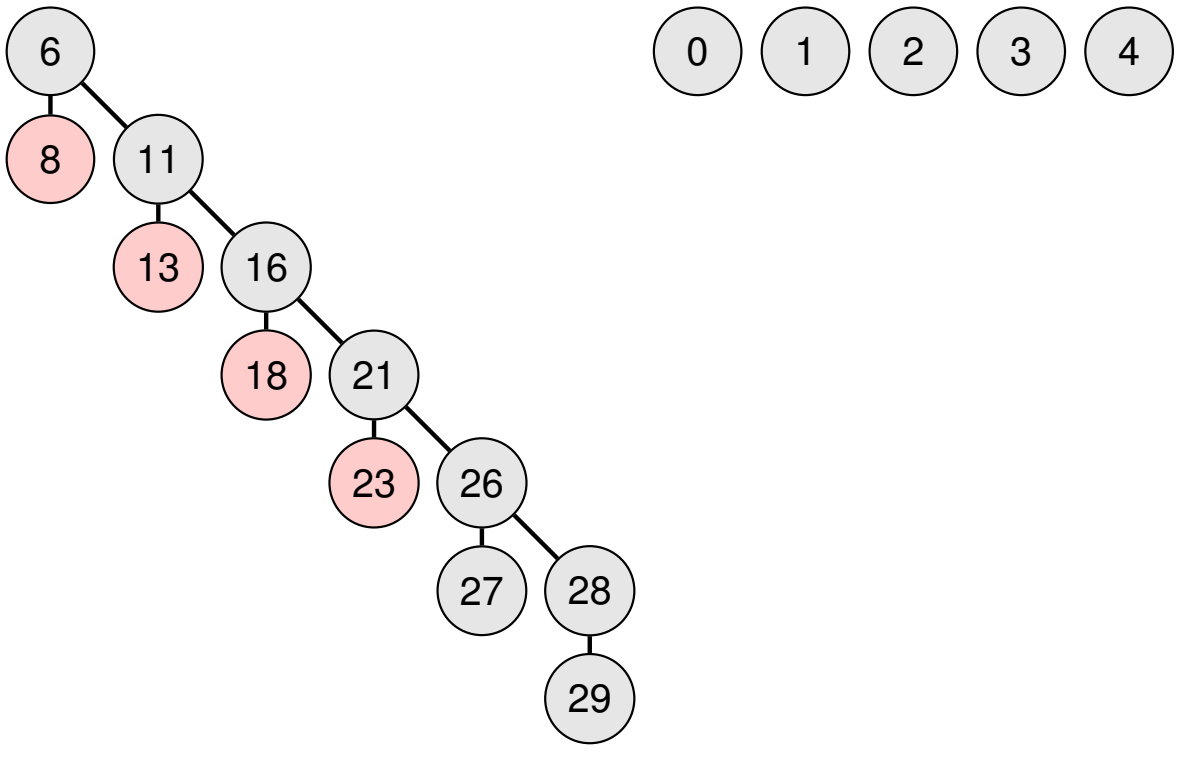

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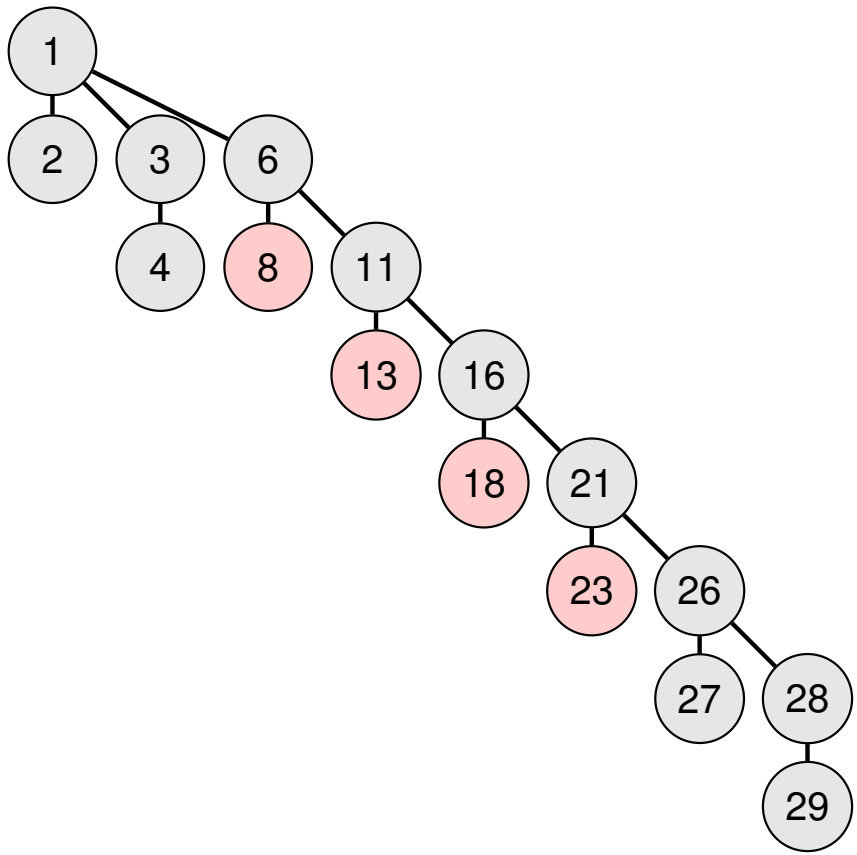

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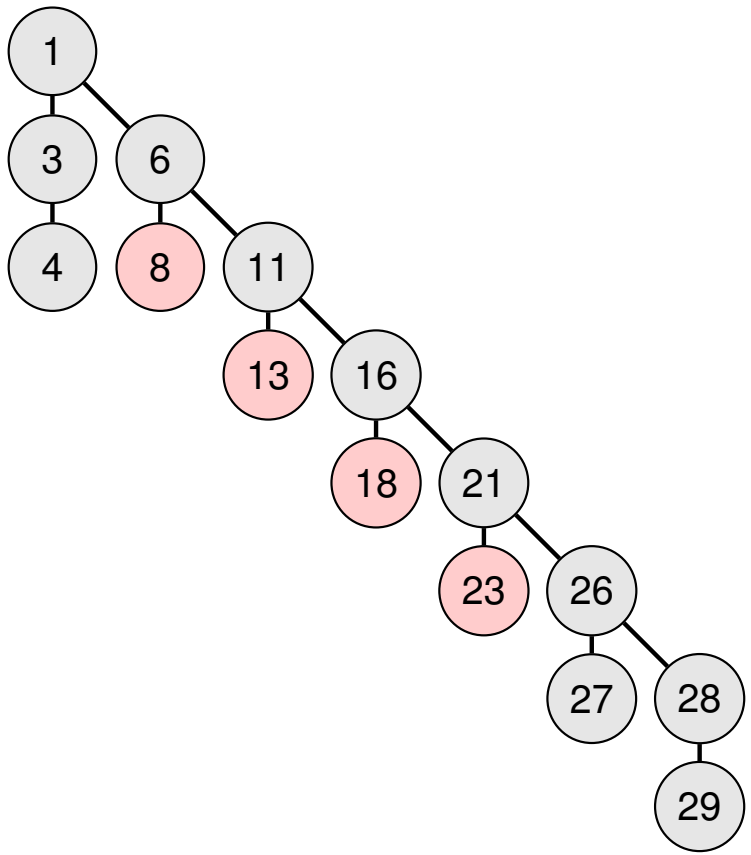

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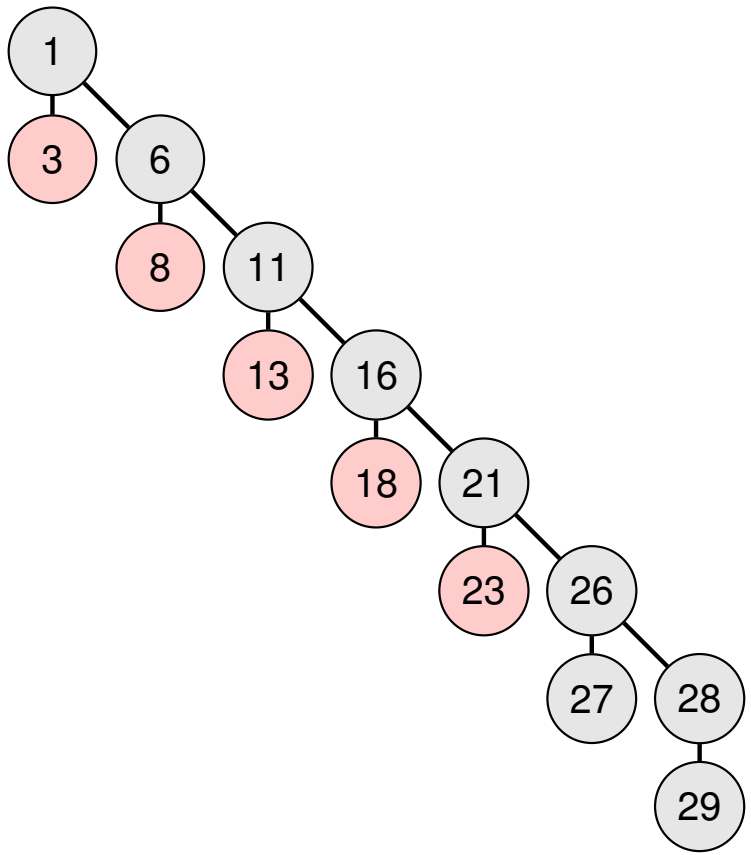

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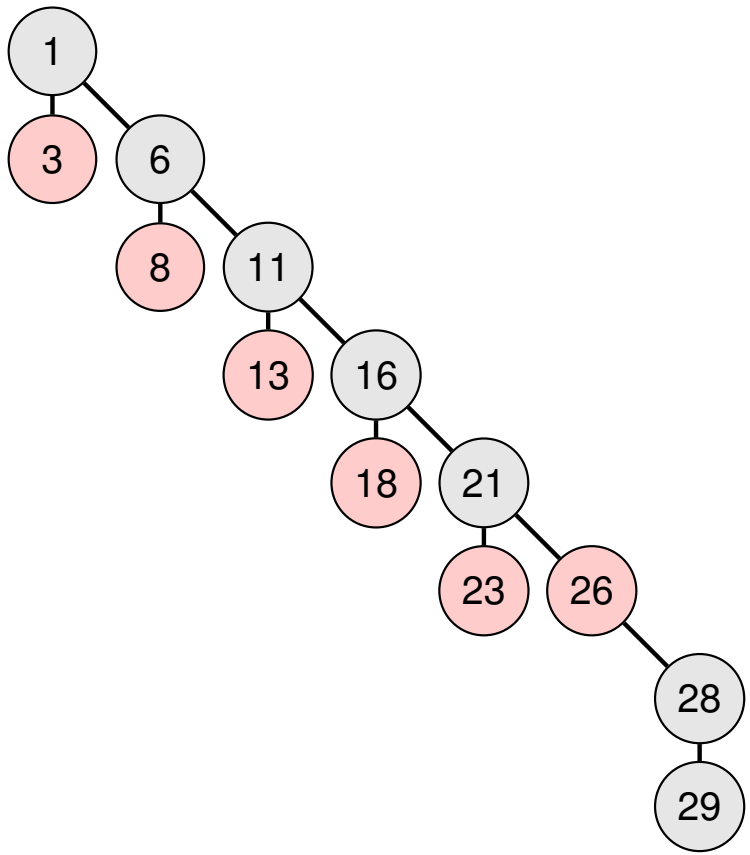

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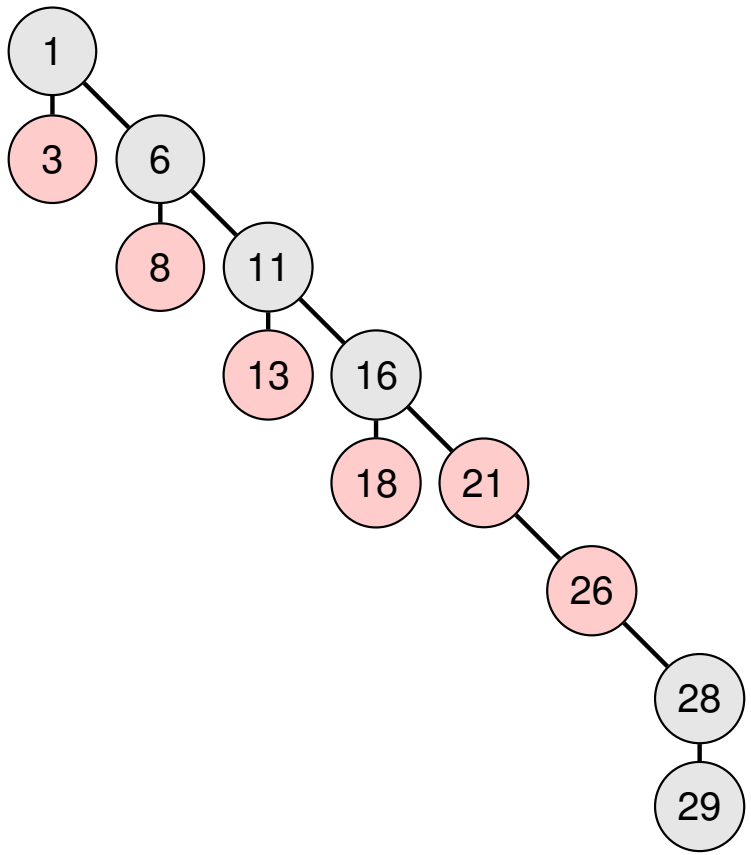

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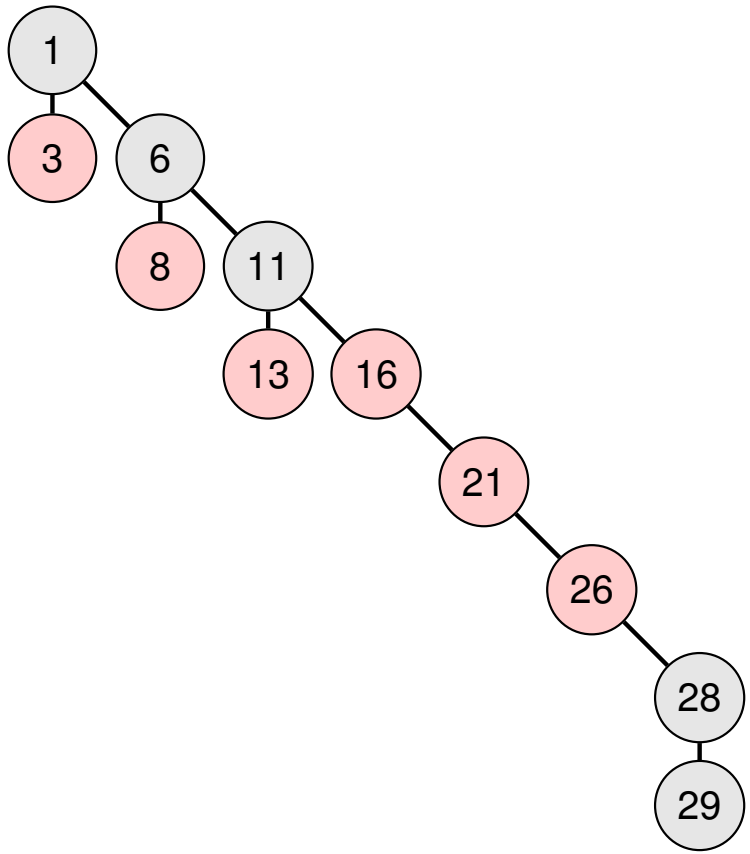

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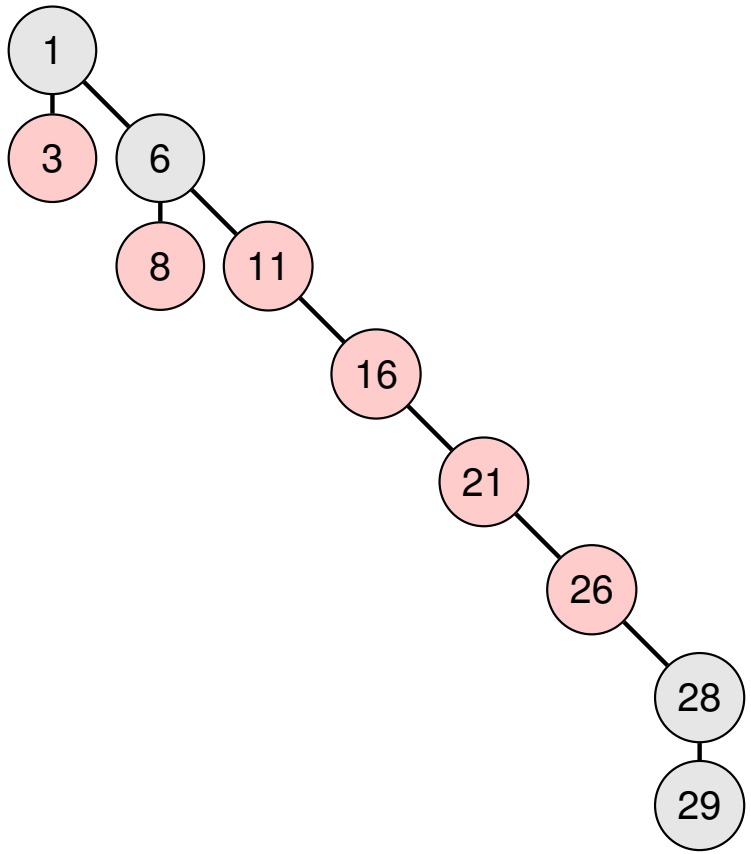

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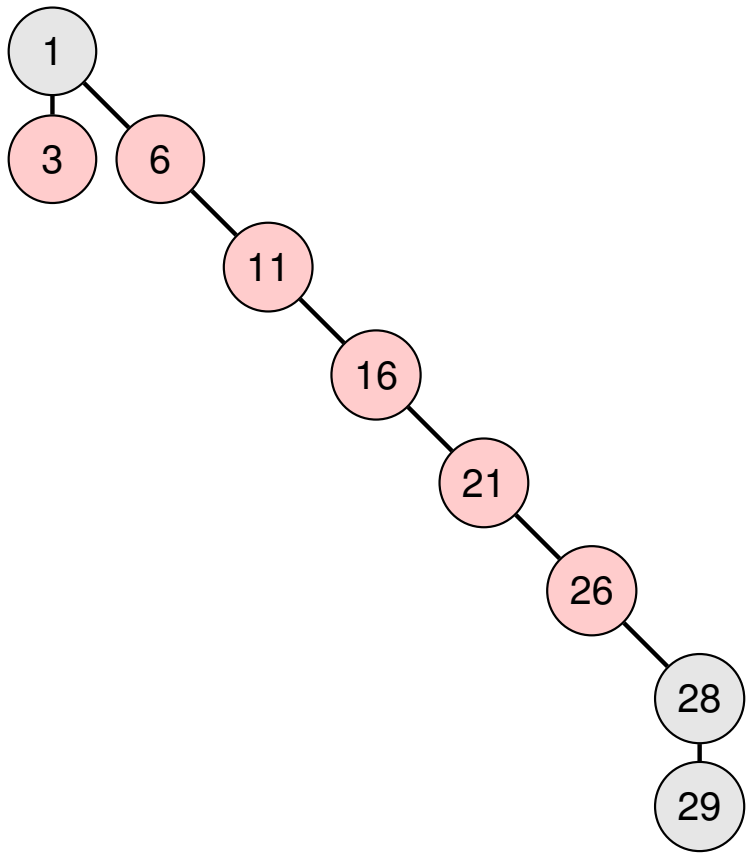

# Solution Microchallenge 5

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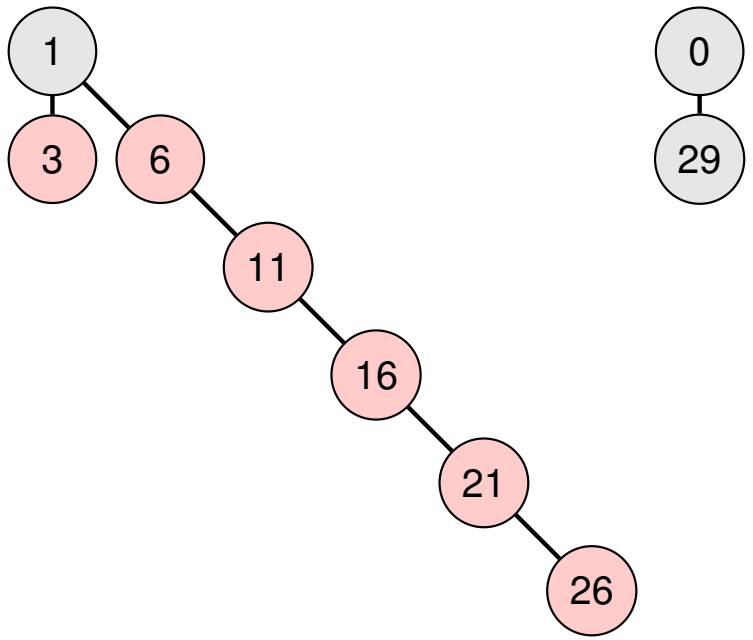
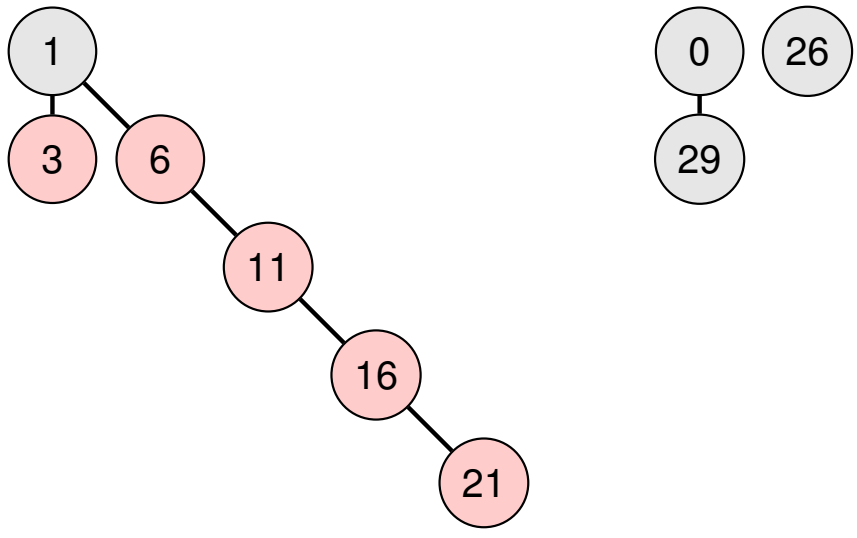


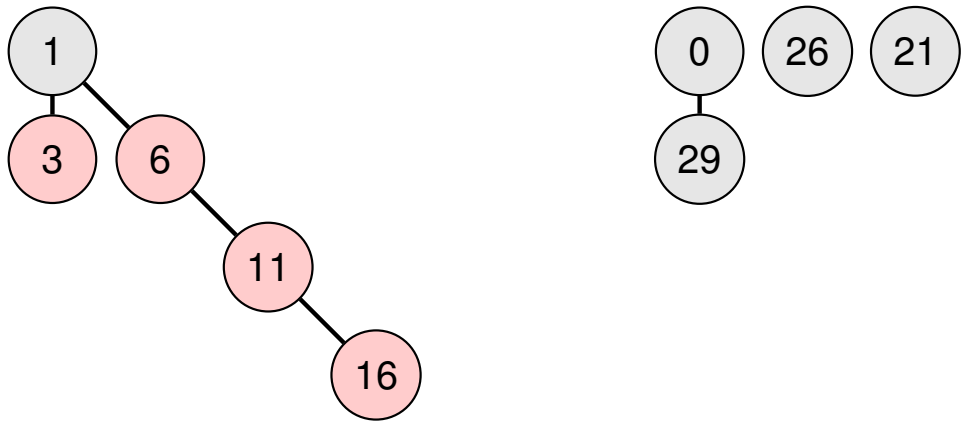
# Solution Microchallenge 5

Decrease-Key(28 $\rightarrow$ 0) Cascading Cut 1



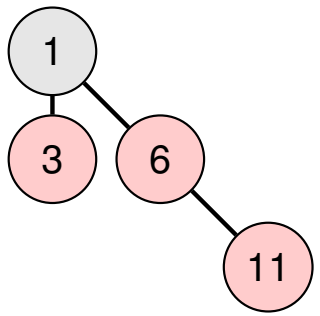
# Solution Microchallenge 5

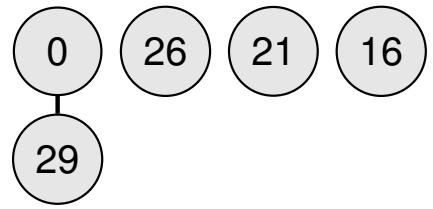
Decrease-Key(28 $\rightarrow$ 0) Cascading Cut 2



# Solution Microchallenge 5

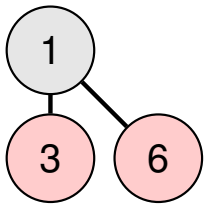
Decrease-Key(28 $\rightarrow$ 0) Cascading Cut 3

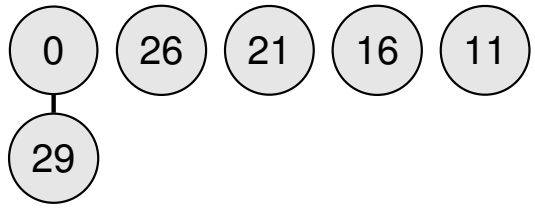


# Solution Microchallenge 5

Decrease-Key(28 $\rightarrow$ 0) Cascading Cut 4



# Solution Microchallenge 5

Decrease-Key(28 $\rightarrow$ 0) Cascading Cut 5