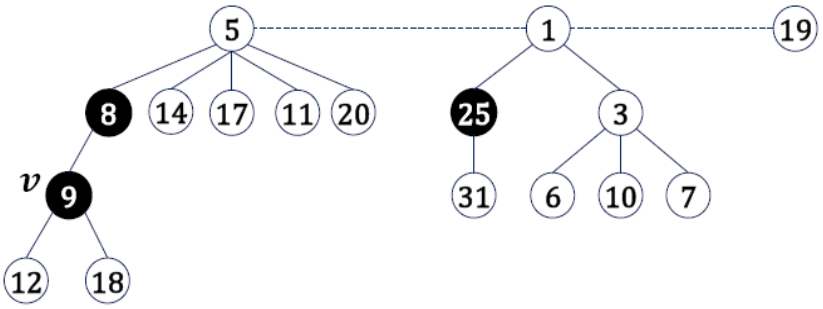
Assignment Problems (Binomial Heap & Fibonacci Heap)

1. Draw the valid Binomial heap for given 17 number of nodes.

2. Perform the following sequence of operations on an initially empty binomial heap. Draw the state of binomial heap after each of the operations.

insert(10),insert(3),insert(5),insert(2),insert(7),decrease_key(10,1),insert(4),delete_min(),delete_min(),delete_min()

3. Consider the following Fibonacci heap (black nodes are marked, white nodes are unmarked). How does the given Fibonacci heap look after a decrease-key (v; 2) operation and how does it look after a subsequent delete-min operation?



4. Illustrate what happens to the Fibonacci heap below when you delete '42'. The dark circles are marked nodes and white circles are unmarked. Illustrate the delete operation step by step. Calculate the potential function value for final fibonacci heap obtained.