Worksheet 9

1. Run parallel prefix sum on the following array, using a sequential cutoff of 2, drawing the tree and showing the sum and fromLeft values for node.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | 4 | 6 | 0 | 1 | 7 | 5 | 3 | 9 | 2 | 8 | 5 | 4 | 7 | 6 | 1 |

* 1. Insert the following into an initially empty binary min heap. Draw the resulting heap and write its array representation: 12, 14, 3, 8, 30, 9, 2, 7
  2. Run deleteMin twice on the heap resulting from (a).
  3. Why are inserts into a binary heap O(1) in the expected case?
  4. Describe how we could end up with a binary heap such that a deleteMin could happen in O(1) time; say, 1 swap and only percolating 2 down (for some large tree).