

For efficiency in speed, this implementation uses an array based tree and queue. The reason is for ease of traversal, copying, storing, and retrieving. The relation on the the array is as follows:

- $i_r = \frac{i_c - 1}{4}$
- $i_a = 4i_r + 1$
- $i_a = 4i_r + 2$
- $i_a = 4i_r + 3$
- $i_d = 4i_r + 4$