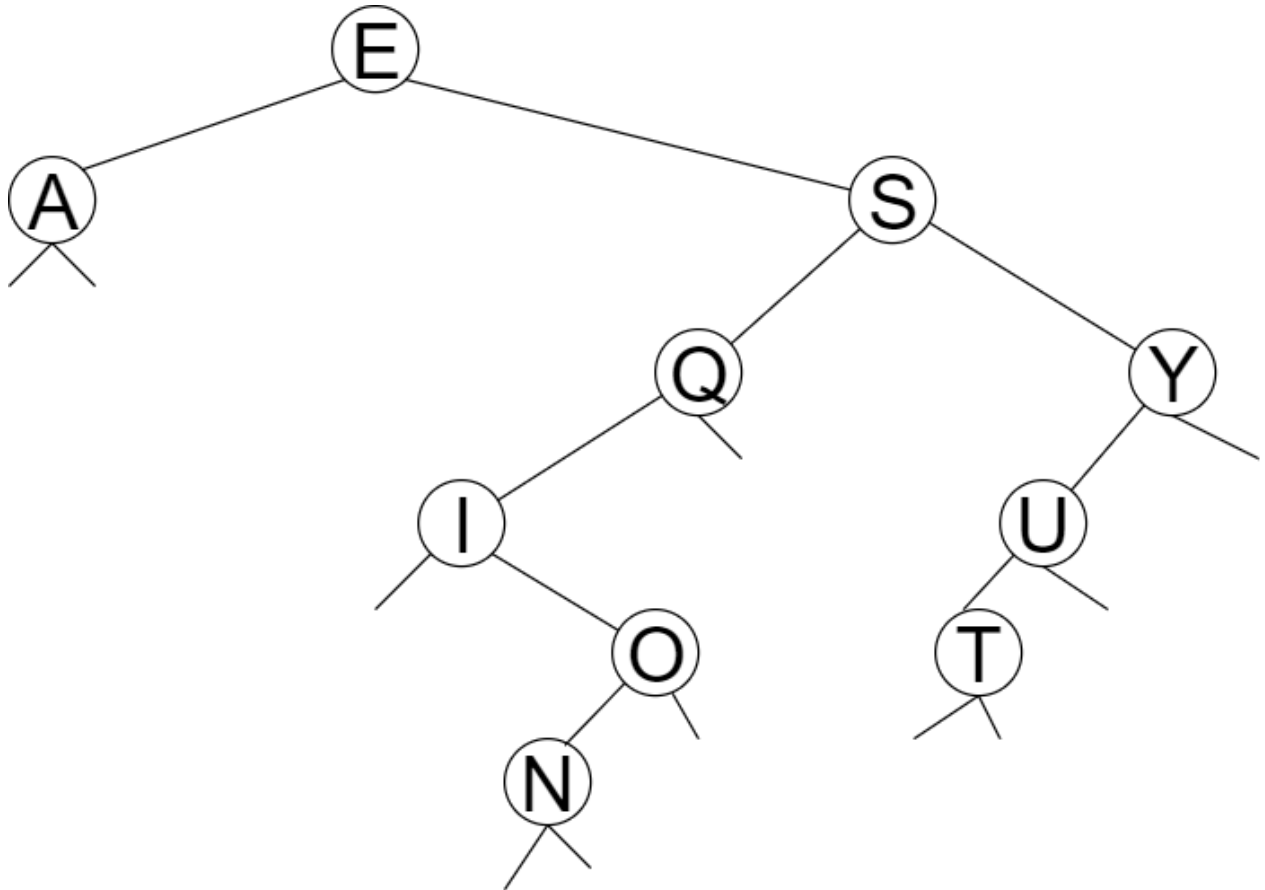


Exercise 1



1. We have : 0 comparisons for E, 1 for A, 1 for S, 2 for Y, 2 for Q, 3 for U, 1 for E, 2 for S, 4 for T, 3 for I, 4 for O, 5 for N for a total of 28 comparisons
2. **X S R H E C A** or **A C X E H R S**
3. **H C S A E R X** or **H S C E A X R**

Exercise 3

We observe that the new implementation performs better than the old one. This might be due to the fact that we do not require the method `rank()` anymore which might cut the time needed to execute the `get()` and `put()` methods. Plus, since there is no array anymore, we do not need to resize it whenever the size of it is too small during a `put`.