Project Report

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***Abstract*—This is a report for project assignment.**

I. Algorithm 1

In this algorithm I have followed the steps that the paper mentioned.

$$n = [1000, 1100, 1200]$$

$$2n-2[\log_2 n]-c_s(root_t)+p = 2*1000-2*9-2*9-1 = 1963$$

$$981 + 984 = 1965$$

$$983 + 985 = 1968$$

$$982 + 984 = 1966$$

$$982 + 983 = 1965$$

$$983 + 986 = 1969$$

$$2n-2[\log_2 n]-c_s(root_t)+p = 2*1100-2*9-19+1 = 2164$$

$$1089 + 1089 = 2178$$

$$1088 + 1092 = 2180$$

$$1090 + 1085 = 2175$$

$$1090 + 1084 = 2174$$

$$1090 + 1090 = 2180$$

$$2n-2[\log_2 n]-c_s(root_t)+p = 2*1200-2*9-19+1 = 2364$$

$$1191 + 1186 = 2377$$

$$1191 + 1186 = 2377$$

$$1192 + 1185 = 2377$$

$$1187 + 1191 = 2378$$

$$1187 + 1190 = 2377$$

I also have shown the random tree S, and steps 4, 5, and 6 in figure 1, 2, 3, and 4.

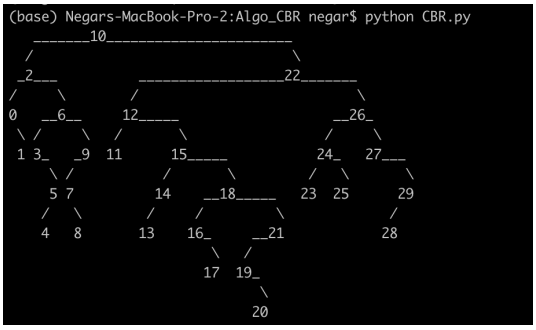

Fig. 1. Random tree S.

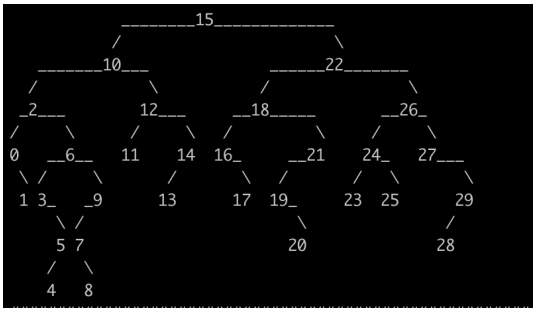

Fig. 2. Algorithm A1, step 4.

II. Algorithm A2

This algorithm is similar to A1 with this different that we have to find the similar sub trees, I have shown a sample in figure 5. I have also shown the picture of the step 5 result in figure 6. I have a small error for step 6 that I am still working on that.

$$n = [1000, 1100, 1200]$$

$$2n-2[\log_2 n]-c_s(root_t)+p = 2*1000-2*9-(n-1)+1 =$$

$$2n-2[\log_2 n]-c_s(root_t)+p = 2*1100-2*9-(n-1)-1 =$$

$$2n-2[\log_2 n]-c_s(root_t)+p = 2*1200-2*9-(n-1)-1 =$$

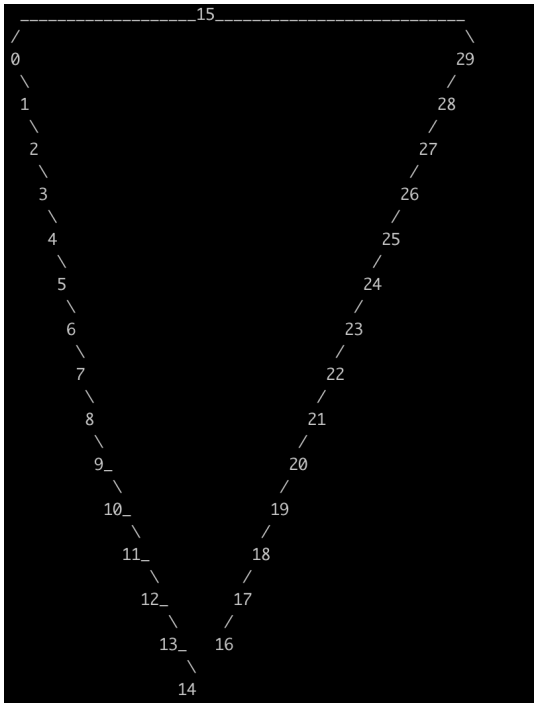

Fig. 3. Algorithm A1, step 5.

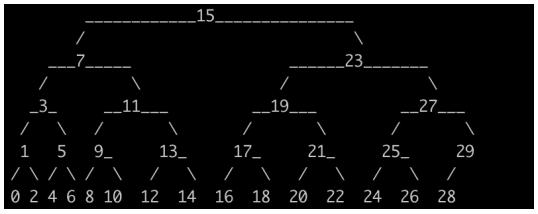

Fig. 4. Algorithm A1, step 6.

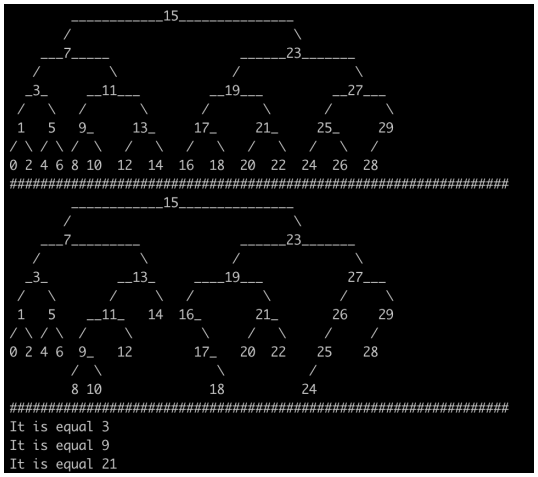

Fig. 5. Algorithm A2, find similar sub trees.

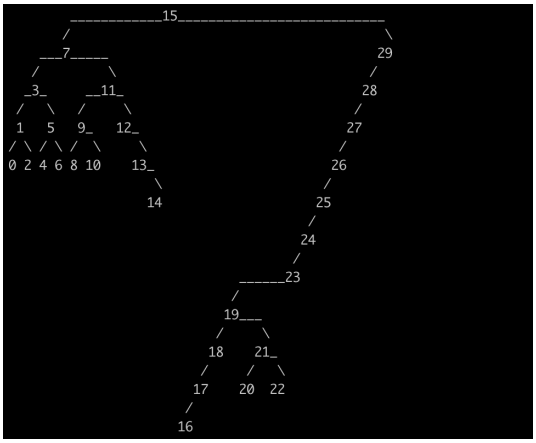

Fig. 6. Algorithm A2, step 5.

III. Algorithm A3

This algorithm is similar to A1, and A2 with this different that we have to find the sub trees with similar intervals. Then, we should do A1 for the sub trease and A2 for the rest of the tree.

$$n = [1000, 1100, 1200]$$

$$2n - 2[\log_2 n] - c_s(root_t) - 2\Sigma_{i=1}^{f} n_i + p = 2*1000 - 2*9 - (n-1) + 1 =$$

$$2n - 2[\log_2 n] - c_s(root_t) - 2\Sigma_{i=1}^{f} n_i + p = 2*1100 - 2*9 - (n-1) - 1 =$$

$$2n - 2[\log_2 n] - c_s(root_t) - 2\Sigma_{i=1}^{f} n_i + p = 2*1200 - 2*9 - (n-1) - 1 =$$

IV. How to run the code?

Just run the CBR.py file with command python CBR.py. You should be able change the number of nodes in CBR file under the variable n. Then running it should run the algorithm one first and then run the algorithm two.