EXERCISE FOR CSE202 – WEEK 9

1. Union-Find

The amortized complexity estimate for a sequence of m union or find operations with rank and path compression can be further improved. Recall that the simple bound $T(m, n, r) \leq nr$ was used in an intermediate step to compute a better bound $T(m, n, r) \leq m + 2n \log^* r$. The basic observation is that we can improve the estimate by using this better bound instead of the simple one.

Question 1. *Using this idea show that the amortized complexity of that algorithm is actually* $O(m \log^* \log^* n)$ *array accesses* ($m \geq n$). *Indicate for which value of* n *this function* $\log^* \log^* n$ *becomes larger than 3.*