עבור איבר אקראי בפעולת SPILT צריך לשים לב שכל שורה בעץ AVL היא גדולה פי מהשורה הקודמת כלומר חצי מהאיברים הם עלה, לכך יש סיכוי 50% ש SPLIT יפעל על עלה. 25% שיפעל על צומת שהיא לפני אחרונה וכו.

we have at most logn trees to join (for each side so 2logn),

Suppose the trees are T1,T2,…,Tlogn. Such that they make

0<=RANK(T1)<=RANK(T2)<=...<=RANK(Tlogn)<=logn

Suppose we add the first two trees with ranks a1 and a2 respectively such that |a1-a2|<= const +1

(we learned this in class and is true because it’s an AVL tree).

We join them and get tree1 such that it’s rank is <=max{a1.rank, a2.rank} +1

We continue by induction with a3 we get that |tree1.rank – a3.rank| <= const +1

Then by joining them we get tree2 such that it’s rank is <=max{tree1.rank, a3.rank} +1

We continue this for the at most logn trees that we have and get that the sum of their rank differences is <= (logn \* const) + (the plus ones)logn = O(logn).

למדנו בכיתה ש

