# *Assignment 8:*
# *Inserting into Red-Black Trees Part II*
# *Due* **in class** *Thursday, 11/1*

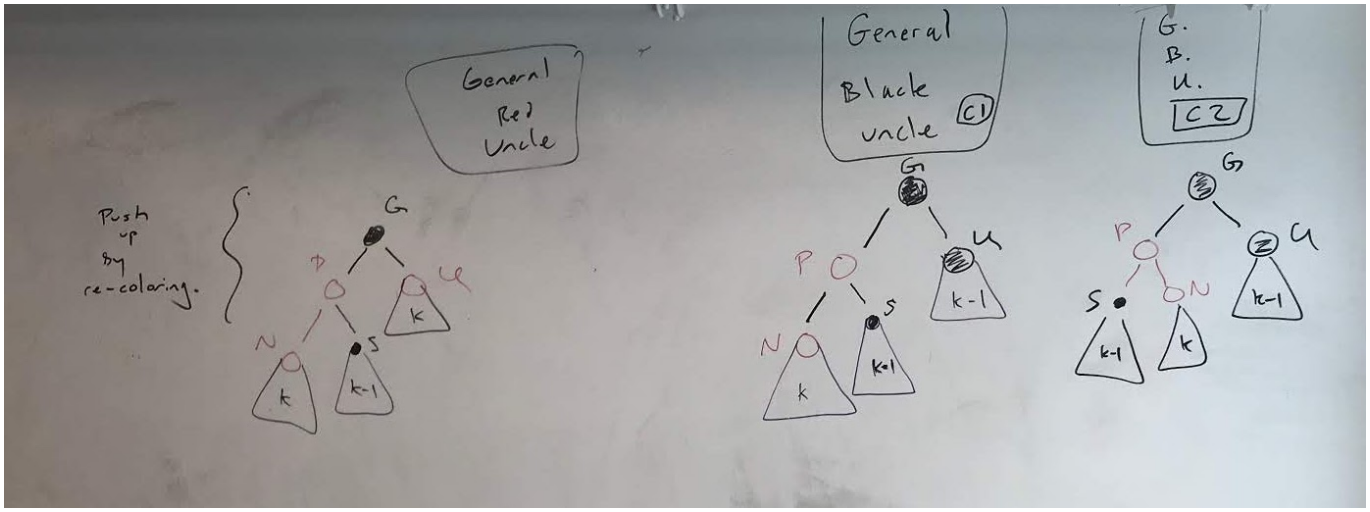
October 29, 2018
CS: DS&A
Proof School

We worked on red-black tree insertion in class on Monday, and we're getting close. We identified three cases; they correspond to the three diagrams in this picture:

**I. Red Uncle**

**II. Black Uncle Case I**

**III. Black Uncle Case II**




In all cases, we start out with a problem: two red nodes in a row. That's the *only* problem; we assume that black heights are working out. The goal, through a combination of recolorings and repositionings, is to resolve all the BST and RBT requirements... or, at least, to "push" the red-red collision up the tree (and keep the black height and BST requirements satisfied).

So your assignment: (1) Work out how to do this in all three of these cases. (Hints: The Red Uncle case can be done by just changing colors. Case III. takes more work than case II.) And (2) If we're pushing up the red-red conflict, what happens when we get to the root? In other words, how to we handle the "base case" of the recursion?

Write up your ideas on a separate sheet of paper, and turn that in at the beginning of next class. Have fun!