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A4 GDB Writeup  
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For this project gdb ended up being indispensable. Since red black trees can be complex to implement, it was really helpful being able to trace through the code as the tree was being built. It allowed me to map pointer diagrams in real time with what was actually happening in the program. In order to do this I loaded a text file with inputs before running the program so I would have a consistent baseline to see what was wrong. When each node was added I displayed the contents of each variable, including which nodes the added node was pointing to. It was possible with access to one node to map and draw out an entire tree for each step. This would have been an unnecessarily long process to do with print statements, and it was one of the first times gdb was more useful than just stepping through the code on my own. As far as features go I do not think it's necessarily possible but it would save time if gdb could visually represent or allow the stepping through of data structures in a more intuitive way. It seems like there could be a lot of improvements, but its likely there are features or implementations I am unaware of.