**An Exploration of Red Black Trees and Applications**

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**Abstract**

A red black tree is a self balancing binary tree. Our research included the study of red black trees and their applications in real-world systems. One such system was a phone number lookup service that gave the user the ability to identify a caller from a phone number. We also used the data structure to model a school database. During this project, we explored the practical uses of red black trees, as well as their limitations in real-world systems. Our work with the red black trees allowed us to formulate opinions regarding additional applications in specific environments and systems. We also proposed ways for improving the implementation of the red black trees and object-oriented system that we utilized throughout the project.