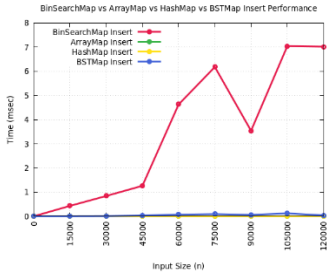
NAME: Ben Puryear

FILE: HW-7_WriteUp.pdf

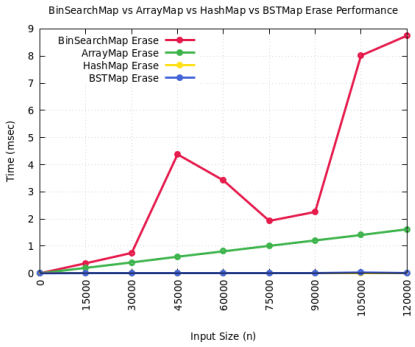
DATE: Fall 2021

DESC: This pdf goes over the basics accomplished throughout all the HW-7 related files

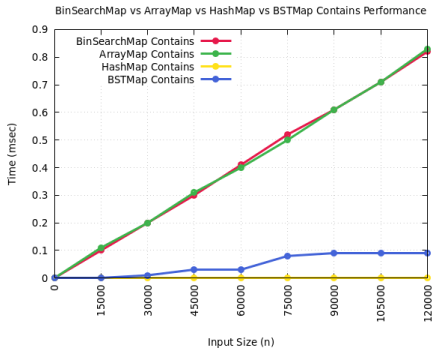
Graphs / Explanation:



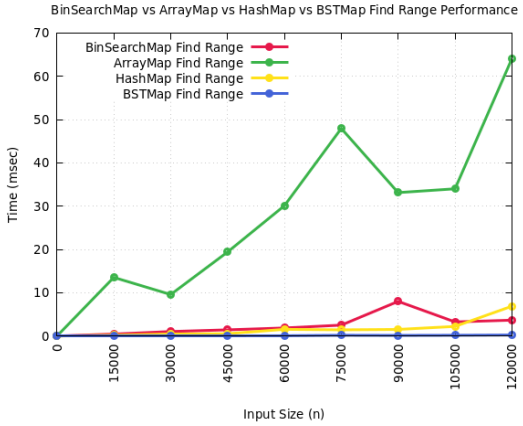
This first graph shows the insertion speed for each type. You can see that BST is leagues faster than BSM.



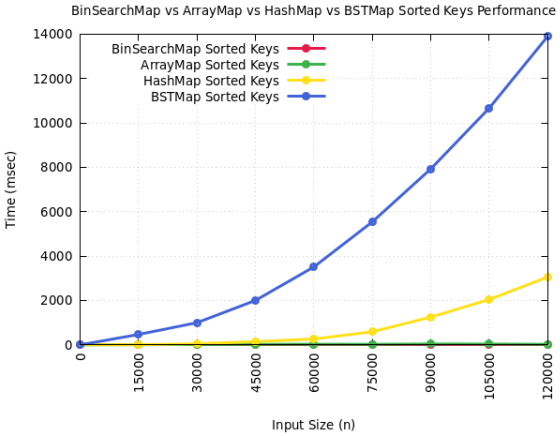
This next graph is the erase graph. This graph is a lot worse than the insertion graph (for BST) because it includes the act of moving around the nodes replacing the deleted node.



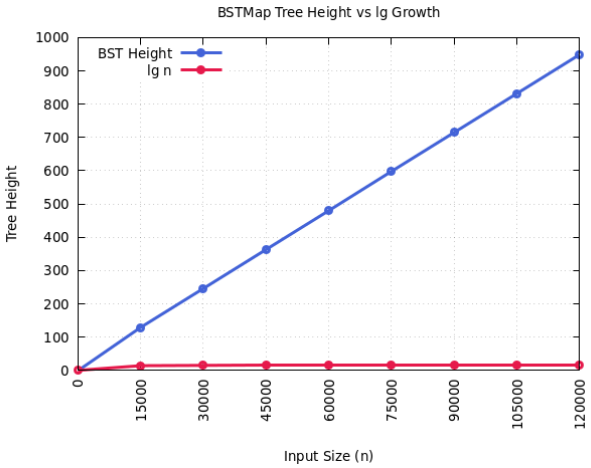
The next graph is the contains graph. For the BST it is very quick because of how BSTs are structured. Since the tree is in order, it is extremely easy to use binary search, especially with the leaves.



The next graph is the find range graph.



The next graph is the sorted keys graph. Sorted keys is the function that I had the most trouble with, and you can tell by the looks of the graph. BSTs takes an EXTREMELY long time compared to the rest.



This last graph is the overall bst stats graph.

Table:

operation	ArrayMap	LinkedMap	BinSearchMap	HashMap	BSTMap
insert	NLogN	NLogN	NLogN	1	N
erase	N	NLogN	NLogN	1	N
contains	NLogN	N	LogN	1	N
find keys	N	N	LogN	1	N
sorted keys	N	N	LogN	N	N

Issues I faced:

The main issue I faced was sorted keys. It was EXTREMELY slow and I ended up not being able to code anything with a satisfactory speed.