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Abstract
The purpose of this project was to analyze the run time in clock ticks between a map and an unordered map. The input data was a collection of 99999 employees, their salary, and their department number. The employees were sorted by department and salary ranges then inserted into either a map or an unordered map. The runtime in clock ticks was analyzed for each case.

File Manifest
- .git - Folder with github information.
- .vscode - Folder with vscode information, since I used vscode as my text editor.
- Employee.cpp - Employee class file that was provided.
- Employee.h - Employee class header file that was provided.
- a.out - Output executable generated by the g++ compiler
- build.sh - Build file that I used so I didn't have to type a long command each time I wanted to compile.
- empdriver.cpp - File that includes main function for code execution.
- empmaps.cpp - File that includes functions that sort and print out the maps and unordered maps with the user provided data.
- empmaps.h - Header file for the empmaps.cpp file.
- records.dat - First set of provided data.
- records2.dat - Second set of provided data.

Analysis
a. What is the runtime in clock ticks when creating the ordered map and unordered map with the department as the key and why do you think there are differences between these two times?

   The runtime in clock ticks for creating an ordered map was 89826 ticks. The runtime for creating an unordered map was 51208 ticks. I think this is different because the algorithm for map must sort the map first which takes longer than not having to sort the unordered map.

b. What is the runtime in clock ticks when creating the ordered map and unordered map with the salary range as the key and why do you think there are differences between these two times?

   The runtime in clock ticks for creating an ordered map by salary ranges was 31118 ticks. The runtime for creating an unordered map by salary ranges was 23142 ticks. I think this is different because of the same reason as before: the map must be sorted first for a map; the unordered map does not have to be sorted so it is faster.

c. Run your code using the records2.dat file. Each record from the records.dat file is duplicated in this records2.dat file. Explain the output of your code. That is, if you get the same output as when you ran your code against the records.dat file, note this and explain why the output is the same. If the output is different, explain why it is different.

   The runtime in clock ticks for creating an ordered map was 167790 ticks. The runtime for creating an unordered map was 89871 ticks. This is about double as compared to the records.dat file. This is the case because the map is slower because it is sorted, and the unodered map is faster because it does not need to be sorted.