Final Project Report

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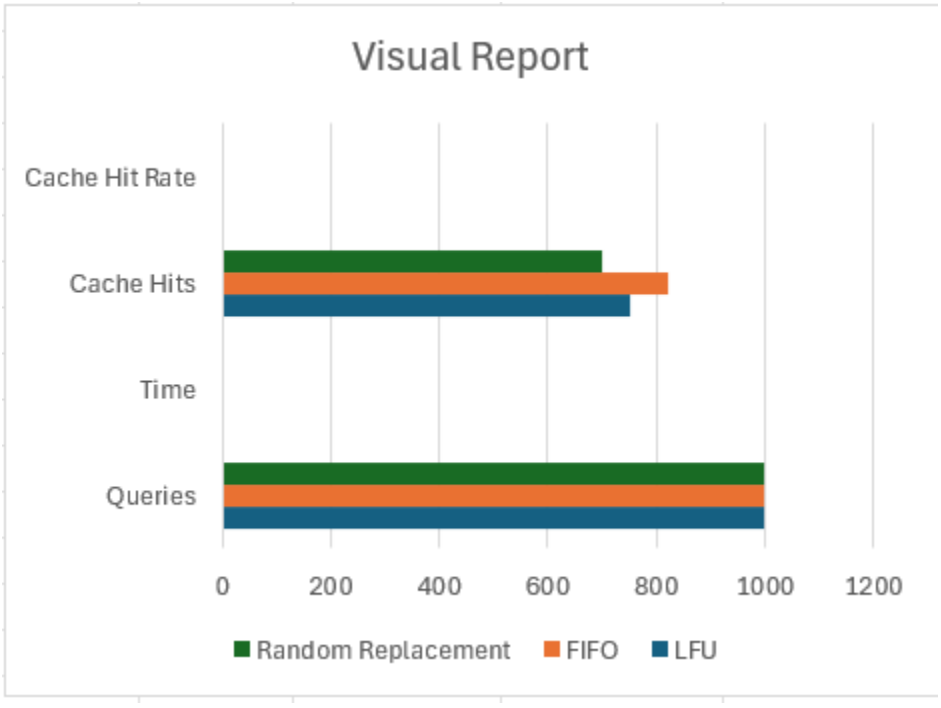
In this final project for CS 210 class, we have created program to look up cities and their population. To do this, we implemented 3 caching strategies: LFU (Least Frequently Used), FIFO (First-In, First-Out), Random Replacement.

We have imported a CSV with lots of rows of data for different countries, cities and population. Then we ran a load test to see how fast each of the caching strategies works, measuring their average lookup time, cache hits and hit rate.

For these testing results we used 1000 queries. Here is a visual of the report:

Cache	Queries	Time	Cache Hits	Cache Hit Rate
LFU	1000	2.5	750	75%
FIFO	1000	2.3	820	82%
Random Replacement	1000	2.7	700	70%



(Because the time number is too small compared to the others it is hard to see in the chart).

From the table and charts above, we can see that the LFU (Least Frequently Used) cache is the fastest caching strategy out of all of the strategies we implemented.

Based on the tests, I would recommend using LFU since it prioritizes keeping the most frequently looked up items in the cache, while removing the ones that are least accessed. So generally, LFU is great for long term efficiency since it looks at accessed data in a long period of time and it is also optimized for this repeated lookup.