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Program description

This program takes the records from an input file and insert them into a hash table. The program does so 11 times, each time with a different scheme. 8 of the 11 schemes use a division method to hash the records into the hash table. The remaining 3 schemes use the multiplication method. Each scheme uses one of 3 collision handling method: linear probing, quadratic probing and chaining. Chaining was implemented such that it is stored within the table. The results from each of the 11 schemes were all printed to an output file that is specified by the user.

This program was written in python3 and was developed in the Spyder IDE.

There can only be 1 record in each line in the input file and the records must be integers. Empty lines are ignored by the program.

Each of the results in the output file follows the following format:

Description line
Relevant statistics of the table
Hash table
Error message (if there are any)
Records that were unable to be inserted (if there are any)

Prior to printing the results, the list of original records from the input file is printed to the top of the output file.

Usage

Please follow the following format when executing the script through command line:

Python3 main.py -i <input_file> -o <output_file>

The path to the input and output file must be provided. In addition, the program provides a -h option that tells the user how to run the program.

Input

The script accepts text files as input files.