

I recommend reading chapter 12 through databases for another take on writing to files.

1. 11.1
2. 11.4 (Hint, exploit the difference between lists and dictionaries)
3. Write a program that does one of the following

The Euler Hotel (not to be confused with the Hilbert Hotel) has 1000 rooms numbered 1 through 400. The guests returned to their rooms one evening to find that some of them could get into their rooms and some could not. The reason was that the cleaning staff had unlocked all the rooms. Then noticing that Room 2 was unlocked, they locked every other room starting with Room 4. Then, noticing that Room 3 was unlocked, they locked every third room starting with Room 6. Then they repeated the process by finding the next unlocked door (Room n), and locked every n^{th} door starting with Room $2n$ for all 1000 rooms in the Euler Hotel. Which guests were unable to get access to their rooms and why?

The Euler Hotel (not to be confused with the Hilbert Hotel) has 1000 rooms numbered 1 through 1000. The guests returned to their rooms one evening to find that some of them could get into their rooms and some could not. The reason was that the cleaning staff had placed an administrative lock on all the rooms; meaning that the doors could be neither be opened nor closed with a standard guest key. Then they went to all the even numbered rooms and unlocked them. Next they went to all the rooms whose numbers were divisible by 3 and changed the lock status of each one (to locked it if it was unlocked, and to unlocked it if it was locked). Then they did the same to all the rooms that were divisible by 4, 5, 6, and so on. Which guests were able to get into their rooms and why?

4. For whichever questions you chose in #3, write what the room numbers identified (locked or unlocked as the case may be) have in common, along with the numbers themselves to a file. Whatever format you use, make sure the numbers are readable.

Alternate to 4: If you don't make headway on either problem in Q3: Create 100 random numbers, write what they have in common to a file, along with the individual numbers. Whatever format you use, make sure the numbers are readable.