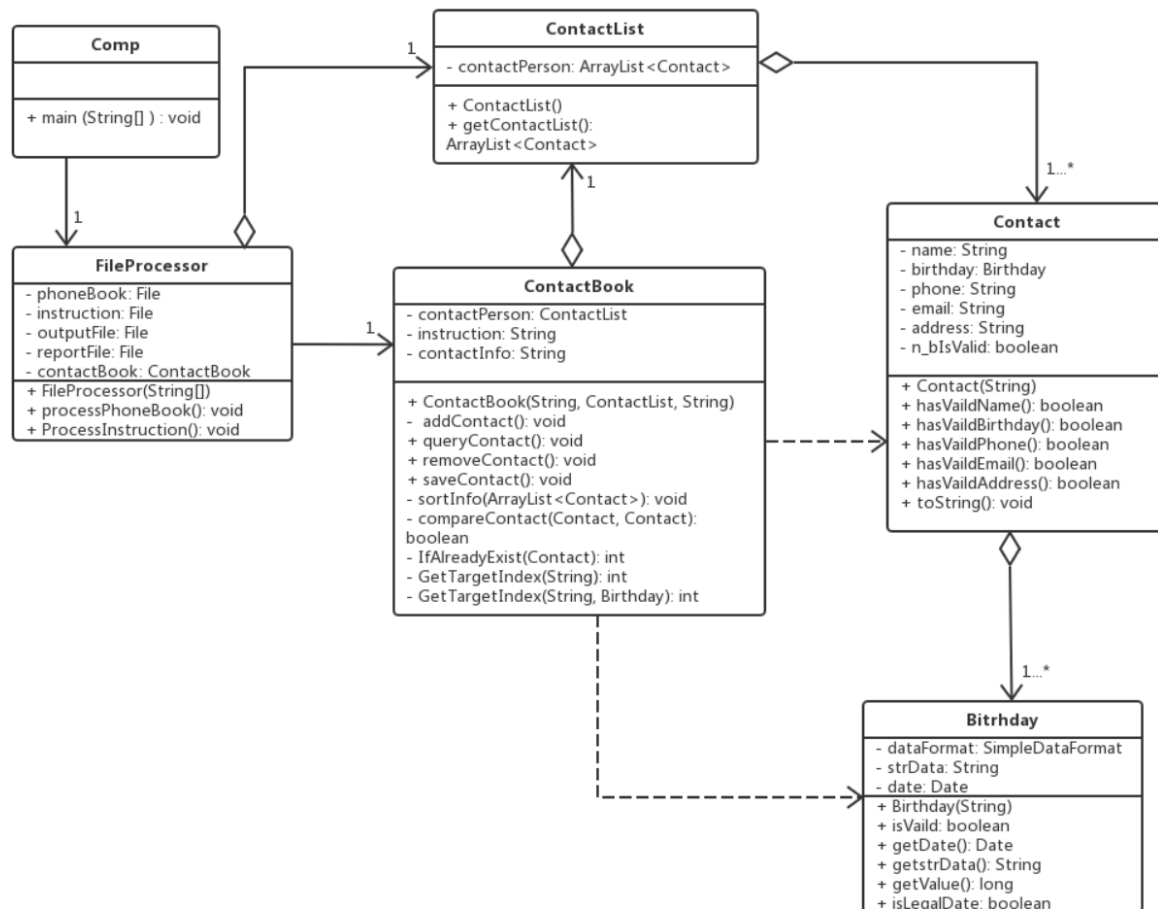UML diagram of design：

Description of design：

Class Birthday is used to reformat the date string and parse the formatted string. At the same time, it uses method isLegalDate to check if the date format is legal.

Class Contact is used to check if the input information is legal and adjust to the correct format. In this class, it uses regular expression to check if information(including name, birthday, phone, email and address) from contact is legal. This class will use Class Birthday. It can receive String from Class ContactBook, and check if that information is legal. If that information is legal, it will save and return by method toString, so that it can be used in class ContactBook.

Class ContactList is an ArrayList that use to save information from contact person. It will save contact information from Class contact orderly.

Class ContactBook is used to run the commands, including add, delete, query and save. It can recognize what kind of instruction comes from Class FileProcessor and run this command. But it needs to rely on Class Birthday and Class Contact, because it needs to check if the information from input file is not legal. Also, in the command of query, because it has order in report.txt, it order those instances first. So it use

bubble algorithm to order instances. In this way, it can make sure we would not lost information and give the sequence we query in contact person.

Class FileProcessor is used to control the program, if we run Class FileProcessor, it can read the information from contact documents and instruction documents. It would regard the information from contact documents as "add" command and add information into result. In the process, it will use Class ContactList to build an arraylist to save information and use Class ContactBook to run commands.

Class Comp is used to build a main method to run the whole program.