Overview of the code:

Basic Contact Class (`basicContactInfo`)

The class '`basicContactInfo`' is the class that holds individual contact data of every contact.

a. This class contains the required methods to set/get values of the name & phone number fields.
b. This class adds provision to add more fields dynamically using 'setField' overloaded method. But this is limited to basic types.
c. Supports stdout output.

Address Book Class (`addressBookClass`)

The class '`addressBookClass`' holds a 'set' container, which is an ordered-collection of '`basicContactInfo`' class instances.

a. This class at the core contains an array of '`basicContactInfo`' objects.
b. This class retrieves alphabetically sorted contacts based on either the first name or last name.
c. This class also supports removal of contacts, addition of dynamic fields to all existing contacts and is thread-safe through mutex locking.

Comments:

1. All minimum and optional requirements were met and basic codes demonstrating them are in the 'main' function.
2. Design patterns such as the visitor pattern and decorator patterns could be used to improve the dynamic addition of newer fields.
3. Search methods and remove methods can be optimized by taking advantage of the first name sorting and be improved. As the contacts grow, the present methods may consume time.
4. The design could be made more scalable and robust.

List of Files and build instructions:

- '`contactInfoClass.h`' – Header containing the class which holds the data of individual contact.
- '`contactInfoClass.cpp`' – Class method implementations.
- '`addressBook.h`' – Header containing the class declarations of the address book.
- '`addressBook.cpp`' – Source containing the method implementations.
- '`main.cpp`' – Contains the 'main()' function and examples which showcase the requirements that were met.

Place all the above files in single directory and run the following command on Linux environment:

1. Build:

```
g++ addressBook.cpp contactInfoClass.cpp main.cpp -o addressBookExe -
std=c++17 -lpthread
```

2. Run

```
./addressBookExe
```