

Programming Practice Report

SUBJECT	Phonebook
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Chapter 1

Design

1.1 Goals

The phonebook is designed to be a **GUI** Graphical User Interface application for **GNOME 3**. It's designed to be **modern**, **safe** and **linux-only**. The whole project is written in **GNU C++ 14**.

The phonebook should store the contact's name and phone number. The user should be able to add a new contact, edit or remove an existing contact, and search the phonebook for contacts by name or by phone. The saving process should be transparent to the user, so that the user need not to worry about saving.

1.1.1 The GUI

The GUI should be **modern** and straightforward like any other **GNOME 3** applications. It should have only 1 window displaying the data (in this case, the contact list) with most of the actions on the titlebar.

1.1.2 The Storage System

The data should be stored using **NDE** Non-Destructive Editing strategy.

In this way, we should only save the operations/actions on the data instead of the data itself. Thus the whole editing history is saved, so the user is able to undo/redo even after closing and reopening the application. Because only the actions are saved, we can do this *on the fly* so the user don't need to click "save" all the time, making the saving process *transparent* and **safe** (the old actions won't be missing because we only append new actions to the end of file).

All the actions should be saved in *plain text*, each action in one line, so that once saving failure happens, the user can recover easily by removing the last line.

But, huge editing history may cause the application to load slowly and eat lots of memory. So another mechanism is provided: *snapshot*.

Snapshotting should remove all the actions and save the data (instead of actions) in a compressed compact binary format. It should first save to a temporary file, then rename to the original file to avoid saving failure.

After snapshotting, the editing history will be *lost*. Thus the user cannot undo the actions that happened before snapshotting.

1.2 User Interaction Diagram

Chapter 2

Implementation