

# Program for Interactive Family-Tree Making

Bc. Eva Navrátilová

Date of Birth	Exact	2.5.1844			Source	B: 1784	+
Place of Birth	Čelčice				Page	62	
Midwife	Mariana Štěpánková (?)				Web	strana=62	

## Abstract

This paper describes the design and implementation of a user-friendly application for interactive family-tree making. The main aim of the application is to provide a multi-platform tool for managing genealogical data. The data can be imported and exported in the universally used GEDCOM format. The program provides an interface for editing and connecting the data about people and families. This data can be visualized in exportable family trees and reviewed via pedigree statistics. Unlike the existing solutions, this application also provides a simple interface for managing data about sources of information and their citations. This enables the user to keep track of their research and quickly check or resume it. The currently available applications are either too complex or lack key features. This program should overcome both of these problems and offer all the necessary functionality via an easy-to-use interface.

**Keywords:** Software Engineering — User Interface — Genealogy — C++ — Qt

**Supplementary Material:** [Facebook page](#)

\*[xnavra54@stud.fit.vutbr.cz](mailto:xnavra54@stud.fit.vutbr.cz), Faculty of Information Technology, Brno University of Technology

## 1. Introduction

Genealogy has been gaining a lot of attention in the past years. People are interested in finding out about their ancestors and with the progress in digitalization of research materials it has never been easier to research one's own pedigree.

Most genealogists opt to utilize the benefits of using a computer program for managing their genealogical data. However, many of the available solutions tend to be too complex for common use and very few can manage source information and citations effectively.

There are currently several genealogical applications, both open-source and paid ones. The most commonly used program amongst the community of Czech genealogists is an online genealogy platform MyHeritage, closely followed by a Czech application Ancestry. An overview of these two essential solutions can be found in the section 3.

Ideally, a genealogical program should be a user-friendly application with a simple interface. This requirement is emphasized by the fact that there are senior citizens amongst the users of these programs. This is not an easy task to accomplish though, due to the amount of information the application must be able to store and display.

It was also concluded that most of the users store data about information sources and citations of these sources. Yet most of the applications provide either too complex or no interface for source and citation management at all.

This paper describes the design and implementation process of an application, that aims to challenge the problems above. The resulting program is a user-friendly application, that connects all important features of an up-to-date genealogical program into one unit.

The main objective of the program is to provide the user with a tool to manage their genealogical data in a way that allows them to focus mainly on the genealogical research. This is achieved by providing a data input interface with a logical spatial structure. The structure allows to view and edit all information concerning chosen individual, while also being able to quickly navigate through their relations.

Another advantage over existing programs is the possibility to record citations of online or offline sources of information concerning birth, marriage or demise of an individual. This feature provides the user with a quick way to revise or pick up on his past research.

Another significant feature is displaying a graphical family tree. The application provides a full range of all basic family tree diagrams, including various types of outlets. These diagrams can also be exported into several vector and bitmap image formats.

The support of the well-established GEDCOM standard as both import and export file format is a matter of course, as the format is commonly used amongst all mainstream genealogical applications.

## 2. Introduction to Genealogy

Genealogy (from Greek *génos*) is the study of familial ties between individuals. Traditionally, genealogists take interest in studying and analysing aristocratic families. In the last years though, it has become increasingly popular to research one's own family history. The families can be researched from the perspective of finding ancestors as well as descendants.

The main objective of genealogy is to reconstruct familial ties and connections. Aside from thorough knowledge of the sources, it is often required to possess a considerable historical outlook [1].

Family tree diagrams are often considered outcomes of genealogical research. Two of the most common diagrams are ancestral outlet, which displays ancestors of an individual, and a family tree, which is used to display descendants of an individual.

Fundamental sources for genealogical research are registers. The registers contain information about individual's birth, death, marriages and sometimes even occupations, and therefore provide data of significant amount and detail to the genealogist.

## 3. Existing Solutions

There are several applications available for genealogists and their requirement to store genealogical data. Amongst the Czech genealogists though two programs stand out in number of users. This is probably to some

extent caused by the fact that many of the other programs lack the localization to the Czech language.

The most commonly used application for genealogical data management amongst Czech genealogist is MyHeritage. This web interface application can be used for free to some extent, but to acquire the full range of features there is an option for a paid subscription [2].

MyHeritage provides an interface to a complex collection of features, including data input and display and even a record matching technology, that is often considered one of the main qualities of this program.

On the other hand, the number of features this web interface provides might be confusing for some users. Even the input of the data for an individual person seems very complex and provides many advanced options.

As for source management, the application also provides a very complex interface. It is also complicated for the user to keep track of existing citations.

The other favoured application is Ancestry. It is a Czech freeware application (previously called Rodokmen). The author of this program is Martin Doležal [3].

The application, compared to MyHeritage, is very simple both in looks and functionality. It only enables the user to input limited data in comparison to MyHeritage, but the interface is very clear and easy to use.

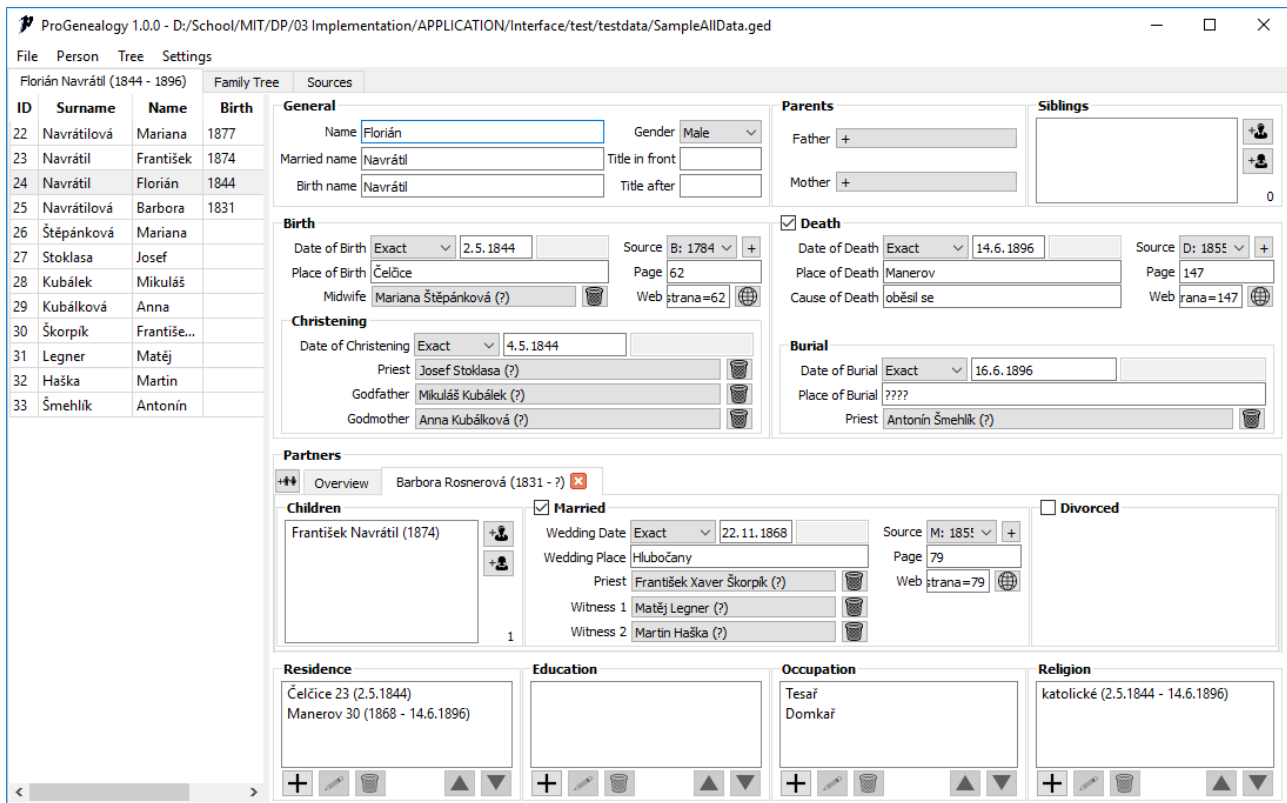
All basic information about an individual person is displayed in only two tabs of the main application window. This fact makes the possible speed of interaction between the user and the program rapid. The application also provides some advanced features in the form of image management and pedigree statistics.

What the program completely lacks though is source management. The only possible way to store source citations in the applications is via screenshot images or as a user-composed context-lacking text in the notes section.

## 4. Application Design

The design of the application was the main step towards the creation of a modular and user-friendly solution. After designing the core of the application, the main focus was to create a simple and clear interface with all the features within the reach of the user.

The solution should provide fast and easy access to all the key functionality of the application. The main components to be incorporated into the solution was the data management of individuals and sources and viewing and exporting of family tree diagrams.



**Figure 1.** The main window of the application providing the interface for editing an individual

#### 4.1 Individual Data Screen

One of the main challenges of the user interface design was the structure of the window for individual person data input and display. This screen does not only provide access to a wide range of data to the user, it is also considered to be the most commonly used screen of the application. Therefore, it is crucial for the interface to be well-arranged and polished.

There are two common approaches to the problem, the first one being dividing the data into multiple windows, the second one being incorporating a chosen simplified segment of the data into a single or a few displays.

Due to the fact the first option requires more user interaction to input the same amount of information and therefore it is distracting the user from the research itself, it was determined the latter will be implemented.

The figure 1 illustrates the current state of this issue's solution in the application. The main objective of this widget is to provide control over all essential data of an individual person to the user while viewing it in a well-arranged consistent layout at the same time.

The interface is separated into two columns by a movable splitter. The first column provides a list of all individuals in the database. The list can be sorted by name, surname, year of birth and identifier.

On the first glance it is clear the second column is further divided into sections.

The first row contains the most essential information about an individual and their familial ties, like their name, parents and siblings.

The second row contains the information about the individual's birth and christening and optionally about their passing and burial.

The third row focuses on the individual's partners and the couple's possible marriage, divorce and children.

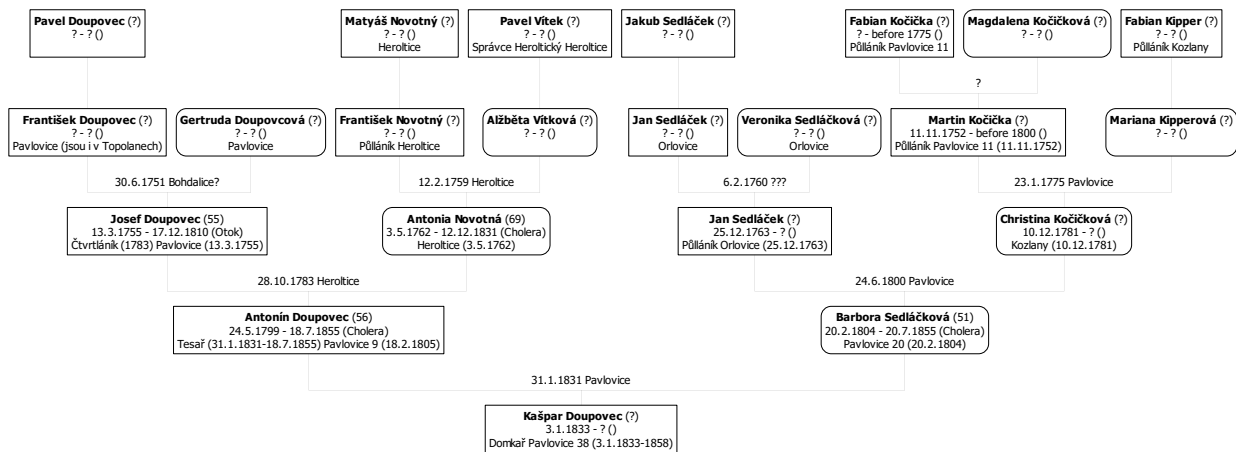
The last row contains entries about the individual's residence, education, occupation and religion.

Even though the view as a whole may seem a bit overwhelming on the first glance, this obstacle should be overcome after a bit of exploration. Furthermore, the benefits of this solution greatly surpass the downsides. The presence of all the necessary data of an individual offers a quick summary of all available information and enables fast data input without any distractions for the user.

#### 4.2 Tree Diagram Screen

This scene is intended to display tree diagrams. It can display three types of outlets, a family tree and a relationship tree.

The information and format of the data displayed in the cells and as the marriage descriptions can be freely changed by the user. The text can also be decorated using HTML.



**Figure 2.** The graphical ancestral outlet exported from the program

The resulting diagram can be exported into multiple graphical formats. Aside from pdf, jpg and png, many other are supported. The exported files are visually identical to the appearance of the tree in the program.

An example of an ancestral outlet tree diagram, exported from the program, can be reviewed in the figure 2.

### 4.3 Source Data Screen

The design of the interface for source record management also proved to be challenging. As there are very few existing solutions that offer this feature, the interface had to be designed from scratch.

The solution is illustrated in the figure 3. The interface is divided into two panels by a movable splitter.

The left panel lists all existing source records. This list can be filtered by a text in the input field above the list.

The right side of the view contains the data of the chosen source. It is divided into four main segments.

The first segment encompasses all the common data shared within different sections of the source. It contains information about archive, signature, place of origin and URL to the digitalised source.

The other three segments share an interface for additional data about sections of the physical sources. Each segment represents an event that can be recorded in a source – birth, marriage or passing. Furthermore, each of these events can be covered for different places and time periods. These specific entries are later used to filter sources to acquire appropriate citations.

This segment of the interface helps the user keep track of information about sources. In addition to that, the data about page scope and URLs provide a quick way for the user to resume their research.

### 4.4 Citations

When reviewing the figure 1 attentively, a source citation sub-box can be located at the top right edge of the Birth, Death and Marriage boxes. This sub-box provides an interface for citing a source, from which the information about the event was acquired.

The first row of this sub-box contains a combobox, which offers a valid set of sources that can be cited. This set is determined by the event, place and date of occurrence supplied by the given box.

The citation sub-box also provides interface for additional data, covering the cited page and a URL to the digitalised source. Next to the URL, there is a button for opening the cited website in a browser automatically. This can be beneficial for the user in times of reviewing their research.

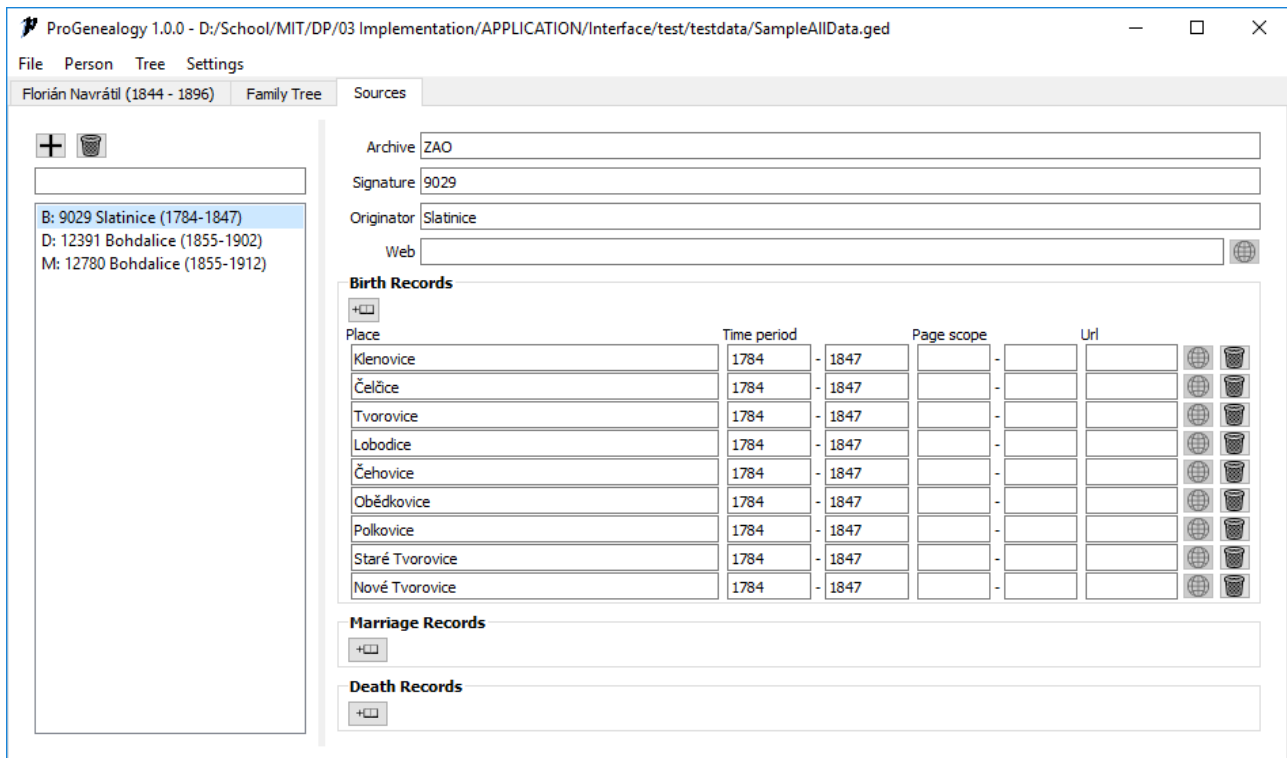
## 5. Application Implementation

The program was implemented in C++ using the Qt framework. The Qt framework was chosen for its ability to create cross-platform user interface solutions [4].

Another feature of this framework that proved to be useful for this program is the support for creating multi-language applications. Due to this fact, the program is currently available in both English and Czech, with a possibility of easily incorporating more languages in the future.

As an import tool for GEDCOM files an open source GEDCOM parser named cgGedcom [5] was used. This parser is also implemented using the Qt framework.

The codes are annotated using Doxygen blocks. Therefore, a documentation can be generated, and code structure can be reviewed to the benefit of the sustainability of the program [6].



**Figure 3.** The interface for source management

## 6. Conclusions

This paper describes the process of designing an application for managing genealogical data. It comes with a multi-platform modular internationalized and user-friendly solution focused on fulfilling the user requirements.

The overall objective of this program is to enable the user to spend time focusing on their research over interacting with the application.

The program provides all the necessary tools for managing genealogical data in one place. As opposed to other solutions, this application also offers a clear source record and source citation management.

The application can be further enriched by incorporating support for different import and export file formats, image management features or by adding visually appealing graphical tree themes.

The program is also designed to be able to interact with the DEMoS application and therefore make use of the database of registers and transcribed records.

## Acknowledgements

I would like to thank my supervisor Ing. Jaroslav Rozman, PhD. for his help.

## References

- [1] Ivan HLAVÁČEK, Jaroslav KAŠPAR, and Rostislav NOVÝ. *Vademecum pomocných věd historických*. Jinočany: H & H, 1997.
- [2] *MyHeritage*. <https://www.myheritage.cz/about-myheritage/>.
- [3] Martin DOLEŽAL. *Ancestry*. <https://ancestry.nethar.cz/index.php>.
- [4] *Qt for Application Development*. <https://www.qt.io/qt-for-application-development/>.
- [5] Charles GLANCY. *cgGedcom*. <https://github.com/cglancy/cgGedcom>.
- [6] *Doxygen*. <http://www.doxygen.nl/>.