
(L^A)T_EX, genealogy, and the LifeLines software

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Abstract

Another example of (L^A)T_EX's utility as a portable, platform-independent typesetting system is in its use as an output format for genealogical information from the freely-available cross-platform genealogy software LifeLines.

Introduction

Genealogy, the study of family histories, is a hobby that can involve many generations and produce very large amounts of data. For this information to be useful from generation to generation (or even from year to year), it must be stored in a format that is portable between computer systems, useful even without a computer, and flexible enough to produce histories from different perspectives.

While (L^A)T_EX clearly meets the requirements of consistency and portability, it is, just as clearly, not a genealogical system. However, the same traits that make (L^A)T_EX so good at long-term information representation are needed in a genealogical package. One such package, available under the permissive open source MIT License [1], is called LifeLines.

LifeLines: A brief introduction

This is not a LifeLines journal, or even a genealogy journal, so this introduction to LifeLines will be brief. Please see the LifeLines home page [2] for more information.

LifeLines is a console-based program for Unix, Windows, and Macintosh that manages genealogical relationships using a GEDCOM (Genealogy Data Communications) [3] database. GEDCOM is a very prevalent format for genealogical data; it is maintained by The Church of Jesus Christ of the Latter Day Saints. Because LifeLines is freely available and works on many platforms, storing data that has such a potentially long lifetime in this software is much less worrisome than storing such data in a proprietary piece of commercial software that runs on only one platform. Additionally, LifeLines can import and export GEDCOM data to and from other programs.

Installing LifeLines LifeLines can be installed on Unix, Windows, and Macintosh OS X. For instructions on installing LifeLines on Windows, Mac OS X, or specific Unix variants please see the aforementioned LifeLines web site. There are compiled pack-

ages for Windows, Linux (RPM), and Mac OS X that make installation straightforward. For the general case, however, following are the basic steps to install LifeLines on a Unix system with the GNU C compiler available. First download the latest version of LifeLines from the web site mentioned above; this will be a file named similar to `lifelines-3.0.29.tar.gz`, depending on the version. Uncompress the file by typing `gunzip lifelines-3.0.29.tar.gz` and extract the tar file by typing `tar xf lifelines-3.0.29.tar`. Now change directories into the source directory, in this case that is `lifelines-3.0.29`, and compile the software with `./configure` and then `make`. On a 266 MHz Pentium II this takes less than 10 minutes.

After compiling LifeLines, install it by typing `make install` in the source directory. Depending on where you are installing LifeLines, this step may need to be performed as a privileged user (typically `root`). Installation options can be specified when you run the `configure` script.

For more information on installation and build options, run `./configure --help`, read the `README` and `INSTALL` files, or ask for help on the `LINES-L` mailing list [2].

Confirm that there is a `reports` directory where you installed LifeLines and that it contains files that end in `.ll`. If you don't see the directory, you'll need to create one by hand and tell LifeLines to look there for its report programs. To do this, choose a sensible location (a good choice is the `share` directory near where you installed LifeLines; that is, if you installed LifeLines in `/usr/local`, you would then put the report programs in `/usr/local/share/reports`) and create a directory called `reports`.

In the LifeLines source distribution you'll find all of the report programs in the `reports` directory. Copy those files to the directory you just created. The last step is to tell the LifeLines program where to find the report programs. When LifeLines starts, it looks for configuration information in a file called `.linesrc` in your home directory. A sample `.linesrc` is distributed with the LifeLines source. Copy the sample configuration file to your home directory and modify the line that starts with `LLPROGRAMS` in that file to reflect the location of your new `reports` directory.

If you haven't seen any errors during any of these steps, then you have successfully installed LifeLines on your system. If you did see errors, there is an active LifeLines discussion list called `LINES-L` that may be able to help. More information on this is available at the LifeLines web site [2].

```

LifeLines 3.0.29 - Genealogical DB and Programming System
Copyright(c) 1991 to 1996, by T. T. Wetmore IV
Current Database - /disk1/acaird/whh

Please choose an operation: █
b Browse the persons in the database
s Search database
a Add information to the database
d Delete information from the database
p Pick a report from list and run
r Generate report by entering report name
t Modify character translation tables
u Miscellaneous utilities
x Handle source, event and other records
Q Quit current database
q Quit program

LifeLines -- Main Menu

```

Figure 1: The main LifeLines screen

Using LifeLines To use LifeLines you enter data in the GEDCOM format and establish relationships between people. Much like \LaTeX , LifeLines focuses on the information, not the presentation; in fact, the LifeLines interface is notably non-flashy (although a richer GUI is under development), but is fast and efficient. Typical LifeLines screens on a Unix system are shown in Figures 1 and 3.

To demonstrate the basic usage of LifeLines, we'll step through the creation of a family consisting of the ninth president of the United States, William Henry Harrison, his wife, children, and parents.

LifeLines installs into `/usr/local/bin` by default on Unix systems, which is typically already in the search path. If you have installed LifeLines elsewhere, you will need to either specify the full path to LifeLines to start it, or put that directory in your `PATH` environment variable. For the purposes of this example, I will assume that LifeLines is installed in the default location, and that that location is included in your `PATH` environment variable.

Before starting LifeLines, you should create a directory where it will store your genealogical databases; since we are storing information about William Henry Harrison, I've created a directory called `whh`. To start LifeLines type `l1ines`. The first question it asks is which directory holds the LifeLines database. In my case, I enter `/disk1/acaird/whh` and am then presented with the main LifeLines screen, shown in Figure 1. At this point, you have an empty database, and need to add a person. We'll start by adding the President; choose `a` from the main menu, then choose `p` to add a new person from the next menu. This will start your editor or default to the `vi` editor. (Setting the `EDITOR` environment variable specifies the application called to edit LifeLines entries.) The editor brings up a blank template with places for the basic data on name, sex, birth, and death. You can add other fields in this

```

@I1@ INDI
1 NAME William Henry/Harrison
1 SEX M
1 BIRT
2 DATE 9 February 1773
2 PLAC Berkeley, Charles City Co., Virginia
1 DEAT
2 DATE 4 April 1841
2 PLAC The White House, Washington, D.C.
1 OCCU President of the United States
2 DATE FROM 11 January 1841 TO 4 April 1841
1 SOUR
1 FANC @F2@
1 FAMS @F1@
~
~
~
~
~
~
~
~
~/tmp/11tmp8URb51" 14L, 315C 1,1 @11

```

Figure 2: Editing GEDCOM data with vi

```

person: William Henry HARRISON (1)
born: 9 February 1773, Berkeley, Charles City Co., Virginia
died: 4 April 1841, White House, Washington, D.C.
father:
mother:

Please choose an operation: █ (pg 1/3)
e Edit the person u Browse to parents %s Add source
f Browse to father b Browse to persons %e Add event
m Browse to mother h Add as spouse %o Add other
s Browse to spouse/s i Add as child x Swap two families
c Browse to children r Remove as spouse tt Enter tandem mode
o Browse to older sib d Remove as child zz Browse to any
y Browse to younger * n Create new person ? Other menu choices
g Browse to family a Create new family q Return to main menu

LifeLines -- Person Browse Screen (* toggles menu)

```

Figure 3: Viewing a person's data in LifeLines

file for other information; see the LifeLines manual and the GEDCOM standard [3] for allowed fields. A populated template for William Henry Harrison, with the additional occupation field (`OCCU`) added, is shown in Figure 2. After editing the template, save the (temporary) file and quit the editor. LifeLines will then confirm that you want to accept this information; if you have made mistakes while editing the information in the record and forgot what you changed, you can say no here and the record is unchanged. LifeLines will display the person in its browse mode; this is shown in Figure 3. It doesn't show all of the information about the person, but you can still see it if you edit the person's record, and the extra information will be included in certain types of reports.

In the menu, as shown in Figure 3, there are options in the middle column to "Add as spouse", "Add as child", and "Create new family". Using these options and the "Add information to the database" option from the main menu, you can construct families and generations.

```

person: Anna TUTHILL (2)
born: 25 July 1775, Flatbrook, Sussex County, New Jersey
died: 25 February 1864, North Bend, Ohio
father:
mother:

P Identify the second spouse/parent, if known.
Enter name, key, refn or list: william henry /harrison

f Browse to father      b Browse to persons    %e Add event
m Browse to mother     h Add as spouse      %o Add other
s Browse to spouse/s   i Add as child       x Swap two families
c Browse to children   r Remove as spouse   tt Enter tandem mode
o Browse to older sib  d Remove as child    zz Browse to any
y Browse to younger *  n Create new person  ? Other menu choices
g Browse to family     a Create new Family  q Return to main menu

LifeLines -- Person Browse Screen (* toggles menu)

```

Figure 4: Adding a spouse to create a family in LifeLines

```

Father: William Henry HARRISON (1) (1)
born: 9 February 1773, Berkeley, Charles City Co., Virginia
died: 4 April 1841, White House, Washington, D.C.
mother: Anna TUTHILL (2)
born: 25 July 1775, Flatbrook, Sussex County, New Jersey
died: 25 February 1864, North Bend, Ohio
married: 22 November 1795, North Bend, Ohio.

Please choose an operation: (pg 1/3)
e Edit the Family %e Add event x Swap two children
f Browse to father %o Add other %c Reorder child
m Browse to mother s Add spouse to family tt Enter family tandem
c Browse to children a Add child to family b Browse to persons
n Create new person r Remove spouse from ? Other menu choices
%a Add source d Remove child from q Return to main menu

*The new family was added to the database.

```

Figure 5: LifeLines’s display of a family

Continuing on in our genealogy of President Harrison, we add his wife, Anna Tuthill, by returning to the main menu, selecting “Add information to the database” and adding her information. When, after editing the template, LifeLines returns you to the display of Anna Tuthill’s information in browse mode, choose option **a**, “Create new family”. From the next menu, choose option **2** to tell LifeLines to use Ms. Tuthill as one of the spouses. When

```

person: William Henry HARRISON (1)
born: 9 February 1773, Berkeley, Charles City Co., Virginia
died: 4 April 1841, White House, Washington, D.C.
father: Benjamin HARRISON, b. 1726., d. 1791, (3)
mother: Elizabeth BASSETT, b. 1730., d. 1792, (4)
spouse: Anna TUTHILL, n. 1795., Ohio., cb. 1796, Ohio., b. 1775, New (2)
child: Elizabeth Bassett HARRISON, b. 1796, Ohio., d. 1846., (5)
child: John Cleves Sumner HARRISON, b. 1799., (6)
child: Lucy Singleton HARRISON, b. 1800., (7)
child: William Henry HARRISON Jr., b. 1802., (8)
child: John Scott HARRISON, b. 1804., (9)
child: Benjamin HARRISON, b. 1806., (10) ++

Please choose an operation: (pg 1/4)
e Edit the person y Browse to younger * r Remove as spouse
f Browse to father g Browse to family d Remove as child
m Browse to mother u Browse to parents n Create new person
s Browse to spouse/s b Browse to persons a Create new family
c Browse to children h Add as spouse ? Other menu choices
o Browse to older sib i Add as child q Return to main menu

LifeLines -- Person Browse Screen (* toggles menu)

```

Figure 6: LifeLines’s display of William Henry Harrison’s complete record

prompted for the other spouse, type William Harrison’s name with a forward slash (/) before his last name as shown in Figure 4. (LifeLines always expects a slash before the last name when it asks for a person to search for.) After creating this family, LifeLines will return you to browse mode, focused on this family; this “family-centric” view of the data is shown in Figure 5. By using the “Browse to father” and “Browse to mother” options, you can get to views of the data focused on individuals instead of families.

At this point, you simply continue to add people and associate them with others via wife–husband relationships, or parent–child relationships. William Henry Harrison’s complete record including his spouse, parents, and children is shown in Figure 6.

LifeLines’s \LaTeX output

In addition to the already stated advantages of LifeLines (availability, portability, and based on non-proprietary standards), one of the most powerful features of LifeLines is that its output is all based on external “programs” written in the LifeLines language; these programs end in the `.ll` extension by convention, although LifeLines will read these programs regardless of the extension on the filename.

Included with LifeLines are more than 80 programs to generate reports based on the data entered into LifeLines’ database. There are programs to create the traditional family-tree or a circular family-tree in PostScript, to create HTML files of calendars with all of the events in a family history in listed in them, to create a report of all of the surnames in the database with their corresponding SOUNDEX codes, and, most interestingly for our purposes, a report program to create a book in \LaTeX with many of the details of a family history.

Because (\LaTeX) lends itself so well to automated document creation, produces beautiful output, and has tools for easy maintenance of tables of contents, indices, and can include graphics, it is a natural choice for a program like LifeLines for cases where the output is complex.

The report program that creates a \LaTeX book is called `book-latex.ll`. This program reads the data from LifeLines and produces a \LaTeX file based on the book class that is made up of sections for each generation of a family and chapters for each family. Within each section is a paragraph (or several paragraphs) about each family member in that generation. These paragraphs are more or less rich depending on the information available. In addition to plain text, you can include graphics with careful use of LifeLines’ and GEDCOM’s NOTE field and the `\image`

command in `book-latex.11`. `book-latex.11` also uses \LaTeX 's integration with `makeindex` to create an index by surname of everyone in the book. The book can be created from a descendant or ancestor perspective, and any person or people in the LifeLines database can be the "root" of the book. For example, I can create a book with both my wife and me at the "root", so the details of all of our direct ancestors are in the book. However, for my sister-in-law, I can create a book with her at the "root" and it will contain very little of my family (I would only be mentioned in that I married her sister), and the rest of the book is about her family.

Running the `book-latex.11` program After assembling the genealogical information, entering it into LifeLines, scanning photos and documents such as birth, marriage, and death certificates, it is a relatively simple matter to create a book with a very useful table of contents and index that is a complete family history, using the `book-latex.11` LifeLines program.

To run `book-latex.11`, to the main menu of LifeLines and choose option "r". When prompted for a program to run, type `book-latex`. (If LifeLines gives you an error here, go back to the installation section and confirm that you have the report programs installed and the `.linesrc` file set up correctly.)

At this point, `book-latex.11` will prompt you for its many options. The first choice is whether you want and ancestor or descendant book; I think the ancestor book is more interesting, so for this example, choose that option. The next choice is what level of notes you want included in the book. GEDCOM has a NOTE field that you can include if you want in the report. In this case we don't have any notes, so choose the first option, `TEXT`. `book-latex.11` next asks you to identify the person you want to include in your book. Type the name in the standard Firstname/Lastname LifeLines format and confirm your selection. `book-latex.11` will then ask you again to choose a person; if you have a second person you'd like to include in the book (most commonly a spouse, to make a complete family tree) enter that person's name, or, if you don't want to include a second person simply press enter. `book-latex.11`'s next question is the name of the output file; choose something ending in `.tex`. You will then be prompted for the name of the author of the book and the place (city, state, country) for the copyright; enter appropriate values or press enter to leave these blank. The final question `book-latex.11` asks is for the name of a file to in-

clude as an introduction. This is a standard \LaTeX file without the preamble that is included in the beginning of the report. After you answer the last question, the report program will run and you'll see the list of the people included in the report on the screen.

You now have a \LaTeX file that is the report (if you didn't specify a path, it is in the same directory as your LifeLines databases). The LifeLines distribution includes the file `tree.tex` which is needed to process the report. You can add this file to your \TeX installation or simply put it in the same directory as the LifeLines \LaTeX output file.

To turn the LifeLines-generated \LaTeX file into a DVI file that you can print or convert to PDF, you need to run \LaTeX and `makeindex` on it several times, as follows:

1. Run \LaTeX on the generated file. If this is the first time you are doing this \LaTeX will stop with the error:
! LaTeX Error: File './whh.ind' not found.
and prompt you for the name of the index file. Since you can't have one until running \LaTeX at least once, simply press Enter and let \LaTeX continue on. In the example I've been using up to now, I named my \LaTeX file `whh.tex`, so the first command is: `latex whh`
2. Next run `makeindex` to create an index file that \LaTeX can read. In our example, the command is simply: `makeindex whh`
3. Run \LaTeX again on your output file. This time it won't complain about any missing files but it is likely to warn you that labels may have changed and you should run \LaTeX one more time. Do so one final time, and the resulting DVI file will contain a nicely formatted and indexed report. The commands are simply two more invocations of: `latex whh`

Figure 7 shows an example of LifeLines's \LaTeX output. The output is easily modified by editing the `book-latex.11` script that LifeLines uses. If you are comfortable with basic programming and \LaTeX concepts, you will find `book-latex.11` easy to understand and modify. You may want to make modifications because you may notice that the output of LifeLines has some peculiarities: years without months are preceded with an extra comma; spaces after periods are post-sentence spaces. Hand-editing before publication may be necessary. Alternatively, the LifeLines maintainers would, I'm sure, be happy to accept modifications to `book-latex.11` to address these oddities.

1 William Henry HARRISON

William Henry HARRISON, the son of Benjamin HARRISON(2) and Elizabeth BASSETT(3), was born on February 9, 1773 in Berkeley, Charles City Co., Virginia. He married Anna TUTHILL on November 22, 1795 in North Bend, Ohio. Anna was born on July 25, 1775 in Flatbrook, Sussex County, New Jersey and died on February 25, 1864 in North Bend. William died on April 4, 1841 in The White House, Washington, D.C. and was a President of the United States from 11 January 1841 to 4 April 1841.

Children of William Henry HARRISON and Anna TUTHILL:

- I. Elizabeth Bassett HARRISON was born on September 29, 1796 in Fort Washington (now Cincinnati), Ohio. She married John Cleves SHORT on June 29, 1814. John was born in , 1792 in USA and died in , 1864 in USA. Elizabeth died on September 27, 1846.
- II. John Cleves Symmes HARRISON was born on October 28, 1798.
- III. Lucy Singleton HARRISON was born on September 5, 1800.
- IV. William Henry HARRISON Jr. was born on September 3, 1802.
- V. John Scott HARRISON was born on October 4, 1804.
- VI. Benjamin HARRISON was born on September 8, 1806.
- VII. Mary Symmes HARRISON was born on January 22, 1809.
- VIII. Carter Bassett HARRISON was born on October 26, 1811.
- IX. Anna Tuthill HARRISON was born on October 28, 1813.
- X. James Findlay HARRISON was born on June 21, 1818.

Conclusion

While (L)T_EX is excellent for typesetting “human-created” documents, it is also very good at typesetting computer-generated documents. LifeLines takes advantage of this, along with L^AT_EX’s strong cross-platform support, to produce well formatted and indexed genealogical reports. With some experimenting and relevant names and dates, you will quickly find using LifeLines and its reports an interesting and addictive pastime, with the added benefit of creating something you can share with the rest of your family and pass on to the next generations, secure in the knowledge that the information about your ancestors and contemporaries will survive operating system upgrades, hardware changes, and all of the other vagaries of modern computer use.

Thanks

Thanks to the original author of LifeLines, Thomas T. Wetmore IV; the current SourceForge project maintainers, Marc Nozell and Perry; the author of the `book-latex.11` script, Dennis Nicklaus; and all of the current developers.

References

- [1] Information on the MIT Open Source Software License: <http://www.opensource.org/licenses/mit-license.php>
- [2] The LifeLines web site: <http://lifelines.sourceforge.net/>
- [3] The GEDCOM web site: <http://www.gendex.com/gedcom55/55gctoc.htm>

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Figure 7: A segment of typical `book-latex.11` output