Genealogical Tree

0.0.1_b440d28

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Chapter 1

Genealogical Tree

Summary

Program should be able to **find all the descendant with name Bob for all the ascendants with name Will on any level of ancestry**. In order to present the capabilities of your app:

- implement the application to optimize the initialization time
- application should have built in data about genealogical tree of people living in particular country
- please generate a representative data that has sample people an relationships between them. Use all varieties of names (can be also generated) but also put two test names (Bob and Will) and connect them in different relationships.
- the application should posses tests that are checking possible edge cases and ensure the stability of the application.
- the designed data structure should ensure optimized search time on following fields: name, last name, date of birth and location.

Generate binaries & documentation

Usual commands:

```
mkdir -p build
cd build
cmake ..
make
make install
make doc
```

Development details

In order to generate binaries & documentation, the following versions were used:

For code

∗**Linux**∗

- **cmake** *2.8.11*
- **gcc** *4.8.3*
- **boost** *1.53.0*

∗**OSX**∗

- **cmake** *3.2.2*
- **gcc** *5.1*
- **boost** *1.58*

Note: If you happen to work with *OSX* and `Homebrew`, don't forget to compile **boost** with the previous **gcc** compiler, not with the default *clang* one:

```
brew install gcc
brew install boost --cc=gcc-5
```

For documentation

∗**Linux**∗

- **doxygen** *1.8.5*
- **latex/pdfTeX** *3.1415926-2.5-1.40.14*
- **graphviz/dot** *2.30.1*
- **java/plantuml** *1.7.0_79/8026*

∗**OSX**∗

- **doxygen** *1.8.9.1*
- **latex/pdfTeX** *3.14159265-2.6-1.40.15*
- **graphviz/dot** *2.38.0*
- **java/plantuml** *1.8.0_40/8026*

Note: Don't forget configure *Doxyfile* and *CMakeLists.txt* to use **README.md** as *Main Page* for **latex** documentation.

As well generating images out of comments and including them into *markdown* and *latex* formats require some extra details:

- **README.md** ∗(see source code)∗

```
![](image/example.png)<font color="white">\image latex image/example.png width=140px</font>

HTML Commented PlantUML code for image/example.png
```

- **Doxyfile**

```
USE_MDFILE_AS_MAINPAGE = README.md "Genealogical Tree"
INPUT                  = . src test
IMAGE_PATH             = image
INPUT_FILTER           = "sed 's/^\!\[\(.*\)\](.*)$/\1/g'"
LATEX_OUTPUT           = doc/latex
PLANTUML_JAR_PATH      =
PLANTUML_INCLUDE_PATH  =
```

- **CMakeLists.txt**

```
set(PLANTUML java -jar /opt/plantuml/plantuml.jar)
set(PDF_FILE ${PROJECT_SOURCE_DIR}/${CMAKE_PROJECT_NAME}.pdf)

# make doc
add_custom_target( doc mkdir -p ${PROJECT_SOURCE_DIR}/doc
 COMMAND ${PLANTUML} ${PROJECT_SOURCE_DIR}/README.md
 COMMAND ${PLANTUML} ${PROJECT_SOURCE_DIR}/src
 COMMAND ${PLANTUML} ${PROJECT_SOURCE_DIR}/test
 COMMAND ${DOXYGEN_EXECUTABLE} ${PROJECT_SOURCE_DIR}/Doxyfile
 COMMAND rm -rf ${PDF_FILE}
 COMMAND make -f ${PROJECT_SOURCE_DIR}/doc/latex/Makefile -C ${PROJECT_SOURCE_DIR}/doc/latex
 COMMAND mv ${PROJECT_SOURCE_DIR}/doc/latex/refman.pdf ${PDF_FILE}
 COMMAND rm -rf ${PROJECT_SOURCE_DIR}/doc
 WORKING_DIRECTORY ${PROJECT_SOURCE_DIR}
```

Note: Take into account that *Doxygen PlantUML* task was deactivated at **Doxyfile** and activated just at **CMake↩ Lists.txt** in order to let us to save generated *images* and include them choosing their **size**.

For IDE

To use **NetBeans** don't forget to configure a *cmake* project with *custom* **build** folder. *PlantUML* and *markdown* plugins might be handy as well.

Note: If you happen to use *jVi* plugin on *OSX*, don't forget to use ∗∗-lc∗∗ instead of just ∗∗-c∗∗ for its ∗/bin/bash∗ flag. Define a target to show the *PDF* generated with the latest documentation information:

- **CMakeLists.txt**

```
# make show
if(APPLE)
  add_custom_target( show open -a Preview ${PDF_FILE} DEPENDS doc )
elseif(UNIX)
  add_custom_target( show evince ${PDF_FILE} DEPENDS doc )
endif()
```

- **jVi**

```
:!~/show
```

- ∗∗∼/show∗∗

```
#!/bin/bash

# CURRENT NETBEANS PROJECT
CNP=$HOME/Code/GenealogicalTree/build

make show -f $CNP/Makefile -C $CNP
```

Chapter 2

File Index

2.1 File List

Here is a list of all documented files with brief descriptions:

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Chapter 3

File Documentation

3.1 src/main.cpp File Reference

```
#include <iostream>
#include <utility>
#include <algorithm>
#include <boost/graph/graph_traits.hpp>
#include <boost/graph/adjacency_list.hpp>
#include <boost/graph/dijkstra_shortest_paths.hpp>
#include "version.h"
```

Functions

- int main (int argc, char **argv)

  Main function.

3.1.1 Function Documentation

3.1.1.1 int main (int *argc,* char ** *argv*)

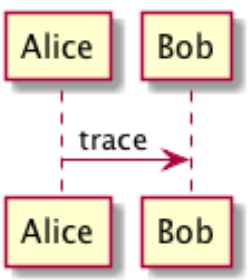
Main function.

Parameters

argc	An integer argument count of the command line arguments
argv	An argument vector of the command line arguments

Returns

an integer 0 upon exit success



3.2 src/version.h File Reference

Macros

- #define **DEFINE_VERSION_FIRST** "0"
- #define **DEFINE_VERSION_MIDDLE** "0"
- #define **DEFINE_VERSION_LAST** "1"
- #define **DEFINE_GIT_DETAILS** "b440d28 (HEAD, origin/develop, origin/HEAD, develop) Local CMake script to control git commit hash information"
- #define **DEFINE_GIT_COMMIT_HASH** "b440d28"
- #define **DEFINE_VERSION**

Variables

- static const char * **VERSION** = "VERSION = " DEFINE_VERSION
- static const char * **GIT_DETAILS** = "GIT_DETAILS = " DEFINE_GIT_DETAILS

3.2.1 Detailed Description

This metadata information might be located through command 'strings'

Just the version: Linux/Solaris/Mac: strings <binary> | grep VERSION Windows (MinGW): strings <binary> | findstr VERSION

Details like GIT branch or commit comments: Linux/Solaris/Mac: strings <binary> | grep GIT_DETAILS Windows (MinGW): strings <binary> | findstr GIT_DETAILS

3.2.2 Macro Definition Documentation

3.2.2.1 #define DEFINE_VERSION

Value:

```
DEFINE_VERSION_FIRST "." \
        DEFINE_VERSION_MIDDLE "." DEFINE_VERSION_LAST \
    "_" DEFINE_GIT_COMMIT_HASH
```

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