LibreOffice
The Document Foundation

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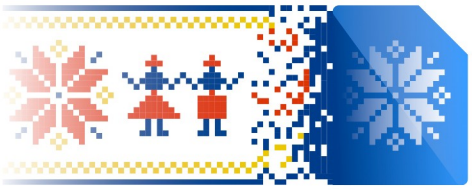

Workshop: Introduction to LibreOffice Development

LibreOffice core development

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- Development and bug fix
  - More EasyHacks
    - Finding EasyHacks to work on
    - Different difficulty levels
  - C++ development
    - Bug fixing
    - Fixing regressions
    - Describing a bug fix, from the start to the end
  - Writing tests

More EasyHacks

- Finding a suitable EasyHack
  - According to the programming language
    - C++/Java/Python, etc.
  - According to the diffuclty level
    - Beginner/Medium/Interesting
  - According to the application
    - Writer/Calc/Impress/Draw/Math
  - According to the topic
    - Cleanup, design, crash fix, improvement

Difficulty levels for EasyHacks

- Beginner
- Medium
- Interesting
  - Important for GSoC

Pre-requisites

- These are required for the LibreOffice core development
  - LibreOffice built from the sources
    - You should have a working debug build of LibreOffice
  - A debugger
  - An IDE (optional, but very useful)
- VM is not optimal, but you can find a pre-built one in the USB disks
  - Copy the VM disk, and create a new VirtualBox VM for it

Working on a crash fix

Fixing a crash

- Why work on crash fix?
  - Important: it is disruptive for the users
  - Usually easier to understand
  - Usually easier to reproduce
  - We can hope that it will be also easier to fix
    - Not always!
  - Useful for demonstrating debugging tips

Example bug fix

tdf#149718 Fix crash on insert chart for tables with merged cells

`d1707bc31261d16893c1f5240c803d283e293ec1`

Previously inserting charts for tables with merged cells lead to crash.
This was because a wrong assumption in **`unochart.cxx`**, specifically **`SwChartDataProvider::Impl_createDataSource()`** that every row has the same number of columns. Therefore the code was using the number of columns in the first row as the number of columns for all the rows, which is wrong.
For example, inserting a chart for the second column of this table leads to a crash:

```
[                    ]
[    1    ][    2    ]
```

Reproducing the bug

- Revert the patch

  git revert d1707bc31261d16893c1f5240c803d283e293ec1
- Resolve the issues and then:
  - git revert --continue
- After committing the revert, build LibreOffice again
- Use the attachments in tdf#149718 to reproduce the bug
- After reproducing the bug, we can work on the fix to understand it

Getting a backtrace

- Using GDB
  - instdir/program/soffice –backtrace
  - cat gdbtrace.log
- Using IDE
  - Make the program crash
  - See the stack of the calls
  - You can usually copy the stack from the IDE

Debugging

- Breakpoint
  - Put breakpoint before the place the program crashes
- Running step-wise for debugging
  - Try to run the program
  - If the program stopped at the breakpoint
    - Go further by: step over, step in and step out to see the running routines
  - You may need extra several debug symbols

Understanding the crash

- Wrong calculation of the container size
  - Wrong assumption in SwChartDataProvider::Impl_createDataSource() that every row has the same number of columns (unochart.cxx)

```
sal_Int32 nCols = pTable->GetTabLines().front()->GetTabBoxes().size();
```

- The fix
  - Calculate the maximum number of columns in all rows

```
for (sal_Int32 i = 0; i < nRows; ++i)
    nCols = std::max(nCols, static_cast<sal_Int32>(pTable->GetTabLines()
[i]->GetTabBoxes().size()));
```

Test the fix

- Test the fix manually
  - Change **sw/source/core/unocore/unochart.cxx**
  - Build LibreOffice again
  - Test with the bugdoc
- Add a UITest or CppUnitTest
  - Actually create the file
  - Create a table and merge cells
  - Then test if LibreOffice crashes
  - Run the UITest

```
cd sw && make -srj1 UITest_sw_chart
UITEST_TEST_NAME="tdf149718.tdf149718.test_chart_from_tab
le_with_merged_cells" SAL_USE_VCLPLUGIN=gen
```

Thank you ...

- Thank you for your patience!

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