Getting Started with LibreOffice Development

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Developer Community Architect
The Document Foundation (TDF)

LibreOffice Conference 2021
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Self Introduction
Self Introduction

• I am Hossein Nourikhah
  – Ph.D. in Information Technology
  – Developer Community Architect for The Document Foundation (TDF)
  – Developer, University Lecturer and FOSS Advocate

• Any problems getting started with LibreOffice development?
  – Contact me!
    • Email: hossein@libreoffice.org
    • Wiki: https://wiki.documentfoundation.org/User:Hossein
    • IRC: hossein at libreoffice-dev room in LiberaChat Network
      irc://irc.libera.chat/#libreoffice-dev
How to Learn LibreOffice Development?
Learning Process

- **Contributing to LibreOffice development**
  - One can contribute without code
  - I am here focused on coding

- **Learn at least one programming language**
  - C, C++, Java, Bash, JavaScript, Python, Perl, SQL, XML

- **Use Learning Materials**
  - Learning materials are not inside a single document
  - There are many sources for learning

- **Start from Easy Stuff: EasyHacks**
- **Search, read, ask and code!**
Learning Sources

• Multiple Sources
  - Website  libreoffice.org / documentfoundation.org
  - Code    git.libreoffice.org - opengrok.libreoffice.org
  - IRC     libreoffice-dev → libera.chat Network
  - Mailing Lists  libreoffice → freedesktop.org
  - Wiki    wiki.documentfoundation.org
  - Docs    docs.libreoffice.org
  - Blogs   blog.documentfoundation.org / dev.blog.documentfoundation.org
  - LibOCon conference.libreoffice.org
  - Articles wiki → Development/Learning_Materials
  - Books   - - - - - - - - - - - - - - - -
Website

Do more - easier, quicker, smarter

LibreOffice is a free and powerful office suite, and a successor to OpenOffice.org (commonly known as OpenOffice).

Its clean interface and feature-rich tools help you unleash your creativity and enhance your productivity.

LibreOffice 7.2 is here

With new features, compatibility improvements, and performance boosts

Fun Project

LibreOffice is one of the friendliest and fastest-growing projects in the free and open source software world.

Fantastic People

LibreOffice is about more than software. It's about people, culture, creation, sharing and collaboration.

https://www.libreoffice.org/  https://www.documentfoundation.org/
# Code

LibreOffice

[OpenGrok search](https://opengrok.libreoffice.org/)

<table>
<thead>
<tr>
<th>Repository</th>
<th>SCM Type: Parent (branch)</th>
<th>Current version</th>
</tr>
</thead>
<tbody>
<tr>
<td>core</td>
<td>git: <a href="https://git.libreoffice.org/core">https://git.libreoffice.org/core</a> (master)</td>
<td>2021-09-19 19:45 +0000 770d show more ...</td>
</tr>
<tr>
<td>cppunit</td>
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<td>2020-08-31 17:51 +0000 9429 show more ...</td>
</tr>
<tr>
<td>dev-tools</td>
<td>git: <a href="https://git.libreoffice.org/dev-tools">https://git.libreoffice.org/dev-tools</a> (master)</td>
<td>2021-09-17 11:25 +0000 71ff show more ...</td>
</tr>
<tr>
<td>dictionaries</td>
<td>git: <a href="https://git.libreoffice.org/dictionaries">https://git.libreoffice.org/dictionaries</a> (master)</td>
<td>2021-07-31 23:29 +0000 e991 show more ...</td>
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</tbody>
</table>
IRC

#libreoffice-dev

- This is the DEVELOPER channel. For user questions & problems without code go to #libreoffice, bug reports/feature requests: [http://tdf.io/bugs](http://tdf.io/bugs) | 7.1.6 and 7.2.1 are out, master is for 7.3 | [http://wiki.documentfoundation.org/Development](http://wiki.documentfoundation.org/Development) | [https://paste.debian.net/](https://paste.debian.net/) for build logs | dev list: libreoffice@lists.freedesktop.org

- Guest99 has joined

- Guest2766 has left (Client Quit)

https://web.libera.chat/
# Developers’ Mailing List

**LibreOffice -- LibreOffice development and discussions.**

<table>
<thead>
<tr>
<th>About LibreOffice</th>
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<tbody>
<tr>
<td>List for LibreOffice development - please make sure you’ve read <a href="https://lists.freedesktop.org/mailman/listinfo/libreoffice">this</a> before posting.</td>
</tr>
<tr>
<td>To see the collection of prior postings to the list, visit the <a href="https://lists.freedesktop.org/mailman/listinfo/libreoffice">LibreOffice Archives</a>.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Using LibreOffice</th>
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<tbody>
<tr>
<td>To post a message to all the list members, send email to <a href="mailto:libreoffice@lists.freedesktop.org">libreoffice@lists.freedesktop.org</a>.</td>
</tr>
<tr>
<td>You can subscribe to the list, or change your existing subscription, in the sections below.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Subscribing to LibreOffice</th>
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<tbody>
<tr>
<td>Subscribe to LibreOffice by filling out the following form.</td>
</tr>
<tr>
<td>Use of all freedesktop.org lists is subject to our <a href="https://lists.freedesktop.org/mailman/listinfo/libreoffice">Code of Conduct</a>. How we collect and use information is described in our <a href="https://lists.freedesktop.org/mailman/listinfo/libreoffice">Privacy Policy</a>.</td>
</tr>
</tbody>
</table>

You will be sent email requesting confirmation, to prevent others from gratuitously subscribing you. This is a hidden list, which means that the list of members is available only to the list administrator.

<table>
<thead>
<tr>
<th>Your email address:</th>
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<tbody>
<tr>
<td>Your name (optional):</td>
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</table>

You may enter a privacy password below. This provides only mild security, but should prevent others from messing with your subscription. **Do not use a valuable password** as it will occasionally be emailed back to you in cleartext.

If you choose not to enter a password, one will be automatically generated for you, and it

[https://lists.freedesktop.org/mailman/listinfo/libreoffice](https://lists.freedesktop.org/mailman/listinfo/libreoffice)
LibreOffice Modules

accessibility
Accessibility Support for LibreOffice

android
LibreOffice for Android

animations
Containers for the css:animation UNO API

apple_remote
Apple Remote Control Support for Mac

avmedia
Audio / video Media Implementation.

basctl
BASIC IDE Controls and Dialogs

basegfx
Algorithms and Data Types for Graphics

basic
StarBASIC Interpreter

bean
API to Use LibreOffice from Java Applications (OfficeBean)

https://docs.libreoffice.org/
Blogs

https://blog.documentfoundation.org/
LibOCon

Online LibreOffice Conference

LibreOffice
Conference 2021

This year’s conference takes place online, from September 23 - 25. Join us!
The conference program is now published – check the schedule and mark your
favorite sessions.

If you attend the conference via Jitsi, please register via the registration form on this site.

German speakers: check out the Hybrid LibreOffice-Konferenz 2021 in Hamburg!

Click here for conference merchandise!

https://conference.libreoffice.org/
Demo 1...
Manual or Using Distro Tools

• Installing dependencies
  – You have to install several libraries and tools
  – Some of them are installed using make
  – Others have to be installed manually or using distro tools
    • Cygwin on Windows
    • apt on Ubuntu
    • dnf or yum on RHEL / CentOS
    • pacman on Arch
    • zypper on openSUSE
Using LODE

- **LODE: LibreOffice Development Environment**
  - Downloads, builds and installs the prerequisites

- **When it is needed?**
  - Suggested for Windows and macOS
  - Suggested for some older versions of Linux

- **Notes**
  - You can use distro tools for newer versions of Ubuntu and RHEL/CentOS
  - You have to install MSVC, SDK and JDK yourself (Windows)
  - You have to install compiler and JDK yourself (Older Linux distros)
Windows Prerequisites

- **C++ Compiler**
  - Visual Studio 2019 / 2022
- **Java**
  - JDK >= 11 from Oracle / Microsoft / Red Hat / etc.
- **Cygwin**
  - cygwin.com

- **Several other dependencies, if building manually**
Linux Prerequisites

- **g++**
- **Java development kit (JDK)**
  - JDK >= 11
- **Dependencies**
  - Ubuntu: `apt-get build-dep libreoffice`
  - RHEL/CentOS: `dnf builddep libreoffice`
- **Recommended way to install dependencies**
  - Use distro tools for most of them
macOS Prerequisites

- XCode from App Store
- Java development kit (JDK)
  - JDK >= 11
- Recommended way to install dependencies
  - Use LODE
- Use current XCode on the current macOS version
Compiling on Different OSes
General Compile Instructions

• General instructions
  - Install the prerequisites
  - Get the source Code
    git clone https://git.libreoffice.org/core
  - Configure
    ./autogen.sh
  - Build
    make
  - Run
    soffice or soffice.exe
  • It’s inside instdir/program
autogen.input

- Put compile options inside autogen.input
  --with-jdk-home=/usr/lib/jvm/java-11-openjdk-amd64/
  --enable-python=fully-internal
  --enable-dbgutil
  --enable-ld=gold
  --enable-gdb-index
  --enable-online-update
  --with-privacy-policy-url=NO_URL
Integrated Development Environment (IDE)

- **Usable IDEs**
  - Visual Studio Code (VSCode)
  - Microsoft Visual Studio: make vs2019-ide-integration
  - Qt Creator: make qtcreator-ide-integration
  - KDevelop: make kdevelop-ide-integration
  - Vim: make vim-ide-integration
  - Xcode: make xcode-ide-integration

- **Open the project after it was created!**
Demo 2...
EasyHacks
EasyHack

- **EasyHack: A simple straightforward programming task**
  - Can be solved by a limited effort from the newcomers
  - Code pointers are available
  - Considered a good starting point
  - Available as bugs labeled with EasyHack in the Bugzilla

- **Different complexity levels** (examined by the experienced developers)
  - Beginner
  - Medium
  - Interesting!
Sample EasyHack

- **Task: Use pragma once instead of include guards**
  - Difficulty level: Beginner
  - Search for header files with include guards
    
    ```
    git grep "#ifndef" *.hxx
    ```
  - Remove include guards and possible duplicate new lines
  - Add `#pragma once` instead
  - Write bug number in commit title and message
    - [https://bugs.documentfoundation.org/show_bug.cgi?id=143148](https://bugs.documentfoundation.org/show_bug.cgi?id=143148)
    - Referred to as `tdf#143148`
Sample EasyHack (continued)

Bugzilla – Bug 143148

**Reported:** 2021-07-01 15:07 UTC by Buoyjaga
**Modified:** 2021-08-26 17:21 UTC

**Product:** LibreOffice
**Component:** LibreOffice

**Version:** Inherited From OOO

**Status:** NEW

**Alias:** None

**CC List:** Add me to CC list
1 user
(Add)

**Ignore Bug Mail:** (never email me about this bug)

**See Also:** 124176

**URL:**

**Whiteboard:** target: 7.3.0

**Keywords:** difficultyBeginner, easyHack, skillCpp, topicCleanup

**Personal Tags:**

**Depends on:**

**Blocks:** Dev-related

Show dependency tree / graph
Gerrit
Setting Up for Gerrit Submission

• **Basic setup**
  - Creating key pairs
    ./logerit setup
      • https://www.unixtutorial.org/how-to-generate-ed25519-ssh-key/
  - Adding key to the Gerrit
  - Test:
    ./logerrit test
  - Create a commit
    git commit
  - Submit
    • ./logerrit submit master
Gerrit

- **Submit changes**
  - Submit your changes to Gerrit in order to get reviewed

- **Add a reviewer**
  - If the build was OK, add me or other mentors

- **Repeat after each review comment**
  Do these steps until you get +1 or +2
  - Fix the problems reported by CI (Jenkins) build
  - Fix the suggestions / corrections from the reviewers
  - Respond to the comments
  - Upload the next patchset

- **Get it merged**
  - If you get +2, your code will get merged!
Gerrit (continued)

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<thead>
<tr>
<th>Subject</th>
<th>Status</th>
<th>Owner</th>
<th>Reviewers</th>
<th>Repo</th>
<th>Branch</th>
<th>Updated</th>
<th>Size</th>
<th>CR</th>
<th>V</th>
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<tbody>
<tr>
<td>vcl: test FontMetric construction from Phy...</td>
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<td>use clang-cf's -Zc:dilleportInlines- for Skia...</td>
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<td>use clang-cf's -Zc:dilleportInlines- for Skia...</td>
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<td>vcl: test PhysicalFontFace and move to vcl...</td>
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<td>vcl: add sal/config.h in preparation for pat...</td>
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<td>avoid division by zero</td>
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<td>vcl: remove OutputDevice's GetDevFontSiz...</td>
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<td>Remove some &quot;Attention&quot; comments of litt...</td>
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<tr>
<td>Related: tdf#136442 implAppendEntry is a...</td>
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<tr>
<td>tdf#144559 Fix information about docume...</td>
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<tr>
<td>do not special-case Clang for Skia on Win...</td>
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<tr>
<td>tdf#143591 DOCX import: handle anchore...</td>
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https://gerrit.libreoffice.org/
Demo 3...
Path to Growth in Development
Path to Growth in Development

✓ Understand C++
✓ Understand git and gerrit
  • Be able to build LibreOffice
  • Submit your first EasyHack with difficulty beginner
  • Do at least 10 bug triages
  • Do at least 5 EasyHacks with difficulty beginner
  • Fix at least 5 regressions
  • Write at least 10 unit tests
  • Do at least 5 EasyHacks with difficulty medium
Recommended Readings

• Comprehensive list of learning materials
  – Articles / Books / References / Examples / Presentations / Slides

• LibreOffice API Documentation
  – https://api.libreoffice.org/

• LibreOffice Development Tools
  – https://api.libreoffice.org/docs/tools.html
Thank You