

Software Systems Laboratory

Proposal for Assignment - 3

by

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1 Existing Software Project

LibreOffice

LibreOffice is an open source alternative for MS Word. Its native file format is Open Document Format (ODF), an open standard format that is being adopted by governments world wide as a required file format for publishing and accepting documents. LibreOffice can also open and save documents in many other formats, including those used by several versions of Microsoft Office.

LibreOffice includes the following components.

1. Word Processor : Writer is a feature-rich tool for creating letters, books, reports, newsletters, brochures, and other documents. You can insert graphics and objects from other components into Writer documents. Writer can export files to HTML, XHTML, XML, Adobe Portable Document Format (PDF), and several versions of Microsoft Word files. It also connects to your email client.
2. Calc (spreadsheet) : Calc has all of the advanced analysis, charting, and decision making features expected from a high-end spreadsheet. It includes over 300 functions for financial, statistical, and mathematical operations, among others. The Scenario Manager provides “what if” analysis. Calc generates 2D and 3D charts, which can be integrated into other LibreOffice documents. You can also open and work with Microsoft Excel workbooks and save them in Excel format. Calc can also export spreadsheets in several formats, including for example Comma Separated Value (CSV), Adobe PDF and HTML formats.
3. Impress (presentations) : Impress provides all the common multimedia presentation tools, such as special effects, animation, and drawing tools. It is integrated with the advanced graphics capabilities of LibreOffice Draw and Math components. Sideshows can be further enhanced using Font work special effects text, as well as sound and video clips. Impress is compatible with Microsoft Power Point file format and can also save your work in numerous graphics formats, including Macro media Flash (SWF).

2 System Architecture

The system is very large with about two hundred modules. We plan to be working with only a few of them.

The modules can be classified from low to high level.

At the low level, there are modules like store, registry(used to keep interface descriptions), unoidl (used to create / compile interface descriptions: an IDL compiler.) , xmlreader(very simple XML pull parser) etc that form the Runtime environment.

The sal (System abstraction layer) module is one of the key modules here.

At higher levels there are graphical modules and modules that contain the main application codes.

Some of the key modules that handle graphical aspects are:

1. Vcl(Visual Class Libraries – the LibreOffice graphical toolkit), Toolkit(wrapper on top of vcl), canvas
2. Application modules:
desktop/ this is where the main() for the application is.
sw/
Writer
sc/
Calc
sd/ Draw / Impress

Link for Detailed Architecture:

Detailed Architecture - <https://wiki.documentfoundation.org/Development/CodeOverview>

3 Important Links

Link for the Detailed architecture and module details of LibreOffice :

Github link for source code - <https://github.com/LibreOffice/core>

Detailed Architecture - <https://wiki.documentfoundation.org/Development/CodeOverview>

List of Modules - <https://docs.libreoffice.org>

Module Dependencies - <https://wiki.documentfoundation.org/Development/Buildsystem>

4 Proposed Changes/Additions

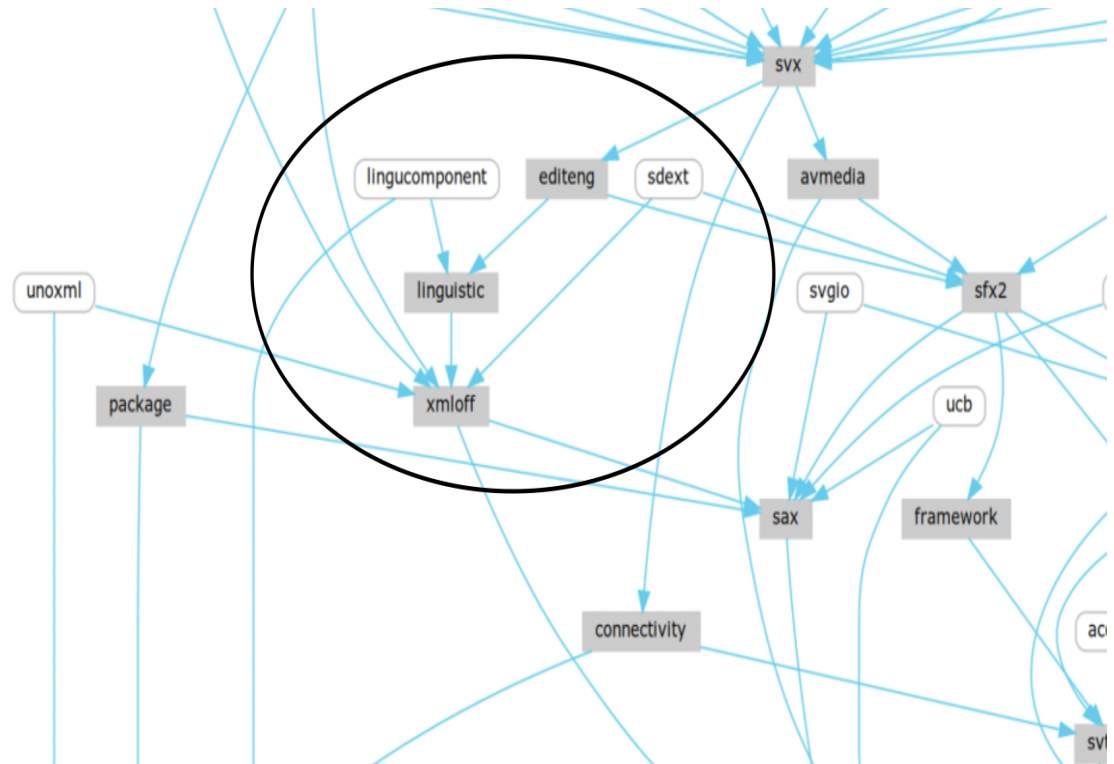
Adding language support for our native language(Punjabi), which is currently not supported in LibreOffice.

The proposed module will add tools for Punjabi language which may include :

1. Spell checker
2. Thesaurus
3. Auto correct
4. English to Punjabi dictionary
5. Generating n-grams for language research, etc.

Note : These are some of the tentatively planned changes. The amount of effort and time required can only be known while actually trying to implement them. So we might add/subtract or make some changes in the proposed model.

5 Modules that will be affected



Modules that we expect to work with:

The linguistic module:

It contains spellcheck, hyphenator, thesaurus, etc.

Linguistics Components Manager: This module handles the registered modules for spellchecker, hyphenator and thesaurus.

It will also affect the proofing tools module of LibreOffice.

It will include development of dictionary, thesaurus, English to Punjabi dictionary. For creation of dictionary Punjabi Corpora will be used.

6 Supporting Evidence

Below is the link of all the languages supported in LibreOffice. It does not include an in-built spell checker, thesaurus of the native language we are planning to add.

Language support - <https://wiki.documentfoundation.org/Language/Support>

7 References :

1. <https://github.com/LibreOffice/core>
2. <https://wiki.documentfoundation.org/>
3. <https://gist.github.com/Foadsf/58d401c9b9ed5d80f60deee88d1fcdfd>
4. <https://www.libreoffice.org/about-us/source-code/>
5. <https://wiki.documentfoundation.org/Development/GenericBuildingHints>
6. <https://en.wikipedia.org/wiki/LibreOffice>
7. <https://calcuttahighcourt.gov.in/downloads>