GSoC Proposal

Topic : Re-design Notebookbar using Native Toolkit Widgets

Personal Information

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Synopsis

The task is to re-design the Notebookbar in LibreOffice using the VCL weld mechanism instead of custom widgets. This change will improve compatibility with different UI toolkits, enhance maintainability, and allow easier modifications via UI design tools.

Benefits to the Community

The implementation of native toolkit widgets will improve UI consistency across platforms, ease future maintenance, and enhance user experience. By removing custom widgets and utilizing the VCL weld mechanism, LibreOffice will gain better integration with modern UI toolkits such as GTK4.

Deliverables

1. Understanding the Existing Notebookbar Implementation

A thorough examination of the current implementation of the Notebookbar, including its reliance on custom widgets and Glade UI files. This will involve:

- Reviewing the existing C++ code responsible for rendering the Notebookbar.
- Analyzing how the current implementation interacts with VCL.
- Identifying pain points in modifying the Notebookbar using Glade.

2. Evaluating the VCL Weld Mechanism

A study of the VCL weld mechanism to understand how it can replace the existing custom widgets. This will include:

- Understanding which native toolkit widgets are supported by VCL weld.
- Identifying limitations and potential challenges in implementing the weld mechanism.
- Experimenting with simple UI elements to test the feasibility of migration.

3. Designing the Notebookbar Using Native Toolkit Widgets

The main phase of the project involves replacing the existing Notebookbar UI with native toolkit widgets. This includes:

- Creating a prototype UI using `GtkNotebook` and supported GTK widgets.
- Ensuring that the redesigned UI matches the current UI experience.
- Generating previews using `glade-previewer` and testing compatibility with `minweld`.

4. Integrating and Testing the New Design

Once the new UI design is complete, it needs to be integrated into LibreOffice and tested rigorously. This phase involves:

- Testing the usability of the new Notebookbar with different UI backends.
- Ensuring seamless integration into the LibreOffice build system.
- Collecting feedback from the community and refining the design based on suggestions.

5. Documentation and Final Submission

Proper documentation is crucial to ensure future maintainability. The final steps will include:

- Writing developer documentation on how the new Notebookbar works.
- Creating user documentation on how to modify the new UI.
- Submitting the final proposal and code for evaluation.

Technical Approach

Step 1: Setup and Familiarization

- Clone the LibreOffice repository and set up the development environment.
- Build LibreOffice from source and explore the current Notebookbar implementation.
- Study the existing VCL weld mechanism and its documentation.

Step 2: Analyzing the Current Notebookbar

- Identify the components that need to be replaced with native toolkit widgets.
- Understand the flow of data and interactions within the Notebookbar codebase.
- Note any dependencies or limitations that might affect the redesign.

Step 3: Prototyping with GtkNotebook and Native Widgets

- Create a standalone prototype using `GtkNotebook` and supported GTK widgets.
- Ensure the new UI maintains the same layout and functionality as the existing Notebookbar.
- Generate previews using `glade-previewer -f notebook.ui`.

Step 4: Implementing VCL Weld Mechanism

- Replace custom widgets with the VCL weld mechanism step by step.
- Verify that each replacement maintains compatibility with LibreOffice's UI framework.
- Ensure the new implementation is flexible and maintainable.

Step 5: Integration and Testing

- Integrate the new Notebookbar into the LibreOffice codebase.
- Conduct rigorous testing to ensure compatibility across different UI backends (GTK3, GTK4, Windows, macOS).
- Fix any issues that arise and optimize performance.

Step 6: Community Feedback and Refinement

- Share the implementation with the LibreOffice community for feedback.
- Incorporate suggestions and make improvements accordingly.
- Finalize the code and ensure proper documentation for future contributors.

Step 7: Final Submission

- Prepare and submit the final report and code.
- Ensure all documentation is complete and easy to understand.
- Assist in transitioning the code for further development and maintenance.

Timeline

Community Bonding Period (Weeks 1-3)

- Engage with the LibreOffice community and mentors.
- Study the existing Notebookbar implementation and identify key components.
- Get familiar with the VCL weld mechanism and its applications.

Phase 1 (Weeks 4-7)

- Begin implementing the new Notebookbar design using the VCL weld mechanism.
- Create a working prototype using `GtkNotebook` and verify widget compatibility.
- Conduct initial testing with different UI backends.

Phase 2 (Weeks 8-11)

- Replace all necessary custom widgets with VCL weld components.
- Refactor and optimize the code for performance and maintainability.
- Conduct extensive testing and debug any arising issues.

Phase 3 (Weeks 12-15)

- Integrate the final design into the LibreOffice codebase.
- Gather community feedback and make necessary refinements.
- Complete the developer and user documentation.

Final Weeks (Weeks 16-17)

- Submit the final project report and code.
- Work on any final adjustments based on mentor feedback.
- Contribute towards long-term maintainability of the new Notebookbar.

Required Skills / Knowledge

- UI Design and Glade UI Designer
- C++ Programming
- Understanding of VCL weld mechanism
- Experience with GTK and other UI toolkits
- Reading and modifying existing codebases

Why Me?

I am currently pursuing my mtech in Computer science and Engineering in IIT Bombay , INDIA . My area of intrest is low level design in C and working on frameworks .

I am passionate about open-source development and have a strong background in C++ and UI frameworks like GTK. My experience working on LibreOffice-related issues and my ability to quickly grasp complex codebases make me a strong candidate for this project.

Additionally, I have experience with Google Earth Engine, GDAL, and large-scale geospatial data processing, demonstrating my ability to handle technical challenges efficiently. My problem-solving skills, attention to detail, and commitment to delivering high-quality work will ensure that I successfully implement the proposed changes in LibreOffice.

Moreover, I actively engage with open-source communities and have previously contributed to projects like IfcOpenShell, ScummVM, and Organic Maps, showcasing my adaptability and collaboration skills. My structured approach to problem-solving and eagerness to learn new technologies will help me contribute effectively to this project.

Difficulty Level

Medium

Expected Outcome

A redesigned Notebookbar using native toolkit widgets that seamlessly integrates with the VCL weld mechanism, making future modifications easier and improving UI consistency across platforms.

Looking forward to your guidance.

Best regards,

Adarsh gupta.