

Introducing Multi-Color Gradient to LibreOffice

About Me:

Name : Pranesh Ulleri
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Other platform handles:

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Medium : <https://medium.com/@ipraneshulleri>
Blog site : <https://praneshulleri.wordpress.com/>

Interests:

I have a keen interest and have invested most of my time in the UI/UX field. I have worked on various platforms which require the same, whether it is Android or Web-development. Building models and developing softwares that are useful to others are one of my top interests.

Other projects I have done:

- Front-end web development for a project on a taxi-pooling system at our college. Which would provide effective taxi pooling for students and faculty.
<https://github.com/Amrita-Pooling-Management-System>

- Web interface for e-healthcare, this project was made on a 24 hour hackathon. <https://github.com/PraneshUlleri/INQ>
- Telegram Bot using NodeJs, the bot is designed to ask questions regarding the waste-management and the data is collected to provide an analytical feed to researchers <https://github.com/PraneshUlleri/EVS-Project>

LibreOffice and me:

I planned to contribute to the LibreOffice organisation by the end of december 2019. Tried to make the build in the first week of january 2020, followed by the academic exams I couldn't work on for the next two week. After the exams I was able to build and went through the site to find bugs, tried to learn the work style and got to interact with many skillful developers. I got attracted to this organisation, because of the level of acceptance a new developer is getting from the organisation. This is really motivating for developers. I'm planning to continue contributing to the organisation in the future too.

My Contributions(both merged and currently working):

Bug document foundation	Gerrit
[Bug 130408] change "Style" to "Page Style" in "Insert Break" dialog	tdf#130408
[Bug 116091] Replace 'AutoFormat' button with table style listbox in Convert Text to Table dialog	tdf#116091
[Bug 124548] Activating Area tab, "None" is always focused, regardless of which fill type is selected	tdf#124548

GSoC Project 2020

Introducing Multi-Color Gradient to LibreOffice

Tag:

User Experience

Aim:

To introduce Multi-Color Gradient to LibreOffice. Users will be able to fill the page with gradients of two or more colors.

Deliverables:

- The gradient will extend to multiple colors. ie., more than two colors
- Extend the ui features to support multi colour gradients
- Option for user to adjust multiple color and customize the gradient
- Bug fix (if any)
- Documentation
- Blog

Mentor:

- Tomaž Vajngerl, IRC: quikee , mail: quikee@gmail.com,
- UX team, IRC: channel #libreoffice-design,
mail: design@global.libreoffice.org

GSoC Timeline

Period	What happens
May 4, 2020 - May 31,2020	Community Bonding
June 1, 2020 - August 23, 2020	Coding
June 29 - July 3, 2020 July 27 - July 31, 2020	Evaluation
August 31, 2020 - September 7, 2020	Students Submit Code and Final Evaluations

Detailed timeline:

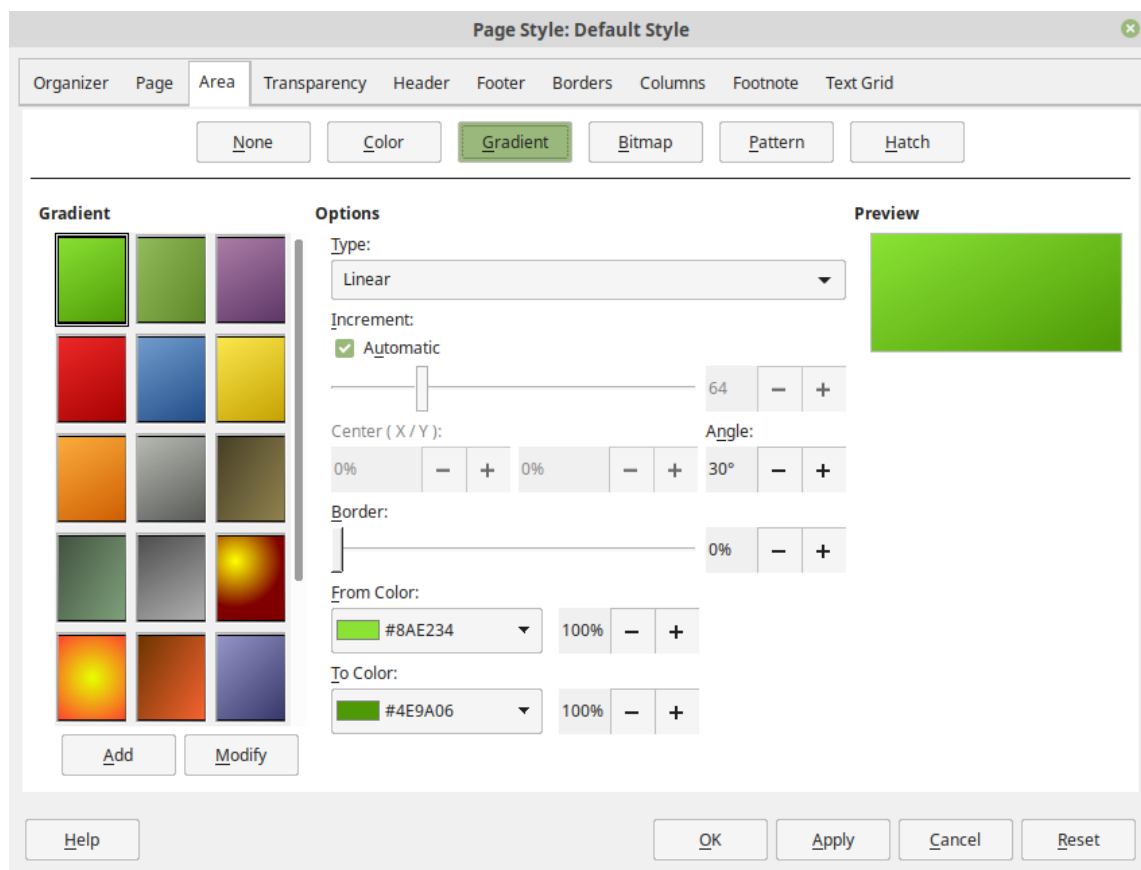
Period	Task
May 4, 2020 - May 31, 2020	• Community Bonding • Get familiarised with the previous two-color gradient related code • Go through the previous bug fixes that are related to the topic
June 1, 2020 - June 29, 2020	Coding initial stage: • Work on the ui that would facilitate the function to select at most 3 colors • At the same time work on the gradient • Create documentation draft
June 29, 2020 - July 3, 2020	Evaluation: • Prototype model for the multi-color gradient with 3 variant of color
July 3, 2020 - July 26, 2020	Coding middle stage: • Work on the ui that would facilitate the function to select multiple color • Extend the gradient to total of 7 colors • Update documentation draft
July 27, 2020 - 31, 2020	Evaluation: • Prototype model for the multi-color gradient with multiple variant of color(more than 3)
July 31, 2020 - August 23, 2020	Coding final stage: • Fix bugs (if any) • Work on the ui. • Add Documentation • Blog Post about the project
August 24, 2020 - August 31, 2020	Submission: • Submit all the Deliverables • Final mentor evaluation

LibreOffice and Gradient:

Current state:

Till now LibreOffice follows a gradient system that consists of mainly two colors. These colors are set as “ From color ” and “ To color ”, which is color 0 and color 1 respectively. These color are So the user can at a time select two colors and adjust the following:

- Type
- Increment
- Position
- From color
- To color



Basically the operation here, of interpolating two color variants is called '*linear interpolator*' aka '*lerp*'. The lerp function interpolates the from color and the two colors and this gradient is adjusted according to the type, angle and position

Some Important Code Pointers:

- include/basegfx/utils/lerp.hxx

Lerp has three arguments, two of which as mentioned earlier are colors and defined as rFrom and rTo, and the third argument is 't' of double type, which ranges from 0 to 1, both inclusive. And return statement:

```
return static_cast<ValueType>( (1.0-t)*rFrom + t*rTo );
```

The UI part for Gradient selection:

- cui/uiconfig/ui/gradientpage.ui

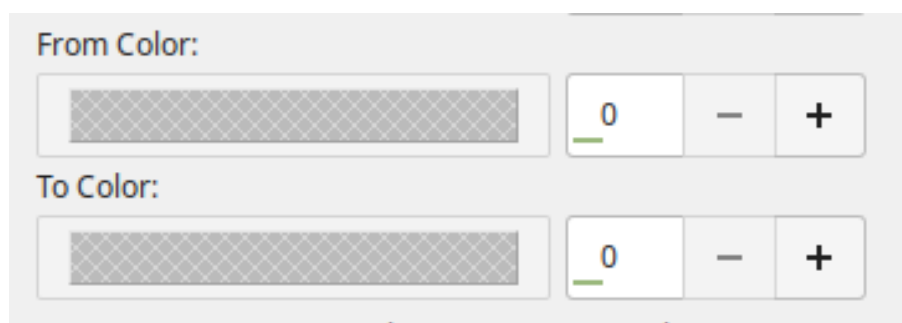
The cxx and hxx file:

- include/vcl/gradient.hxx
- vcl/source/outdev/gradient.cxx
- vcl/source/gdi/gradient.cxx

Action Plan during GSoC

During Coding Initial Stage:

Prior to making the whole project I would like to break the project so as to ease the development process. During the initial stage I propose to work on the ui and function that can extend the gradient upto three colors. I will work more on the development of the gradient than the ui part in this stage. The ui would be an extension of the current with one more color selection option so the user can select.



There will be an additional color selector named middle color that would be set between the color 0 and color 1

During the Middle Stage:

At this stage, I prioritize and balance my work share on both the ui and multi-gradient. The ui part will have an option to select the number of colors (0-5). Two colors being mandatory, users can select at most 5 mid colors.

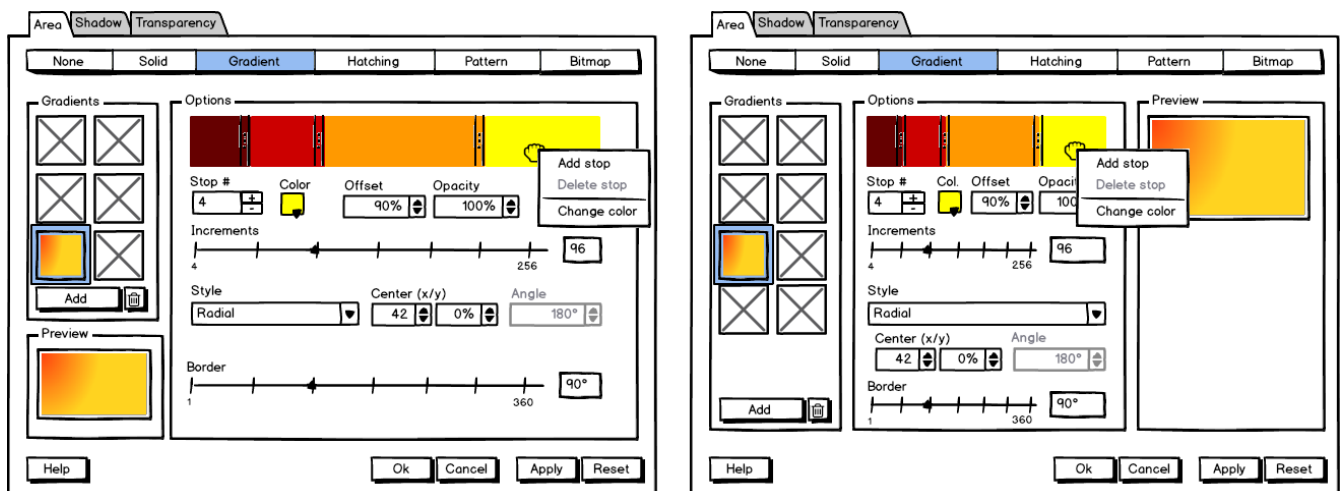
The ui essentially will have 4 extra set of color selector apart from the 3 that already exist after the initial stage

(This stage development might require more time so if it is not completed a partial developed part would be submitted and the rest will be submitted at the final stage.)

During the Final Stage:

This is the stage where I will concentrate most of the time on the ui, bug fix, documentations and a blog post about the project.

If time allows, I would like to upgrade the **ui** where the mid color will be shown in small windows like this where the middle colors will be displayed instead of lines (picture snipped from columns tab in page style). Otherwise i would like to work on it after gsoc



There would be sliders and the user would get to select the colors, stops can be added and removed.

For reference I'm planning to refer these documentations and Q&A

[1] <https://docs.unity3d.com/ScriptReference/Gradient.html>

[2]

<https://answers.unity.com/questions/646272/lerp-between-3-colors-based-on-energy-amount.html>

[3] <https://www.alanzucconi.com/2016/01/06/colour-interpolation/>

[4] https://en.wikipedia.org/wiki/Linear_interpolation

[5]

<https://stackoverflow.com/questions/13488957/interpolate-from-one-color-to-another>

[6] <https://gist.github.com/Tetr4/3c7a4eddb78ae537c995>

[7]

<https://answers.microsoft.com/en-us/msoffice/forum/all/using-three-or-more-colors-for-the-gradient-page/c0277a02-1ba4-450a-b873-1f1fd38be47d>

[8]

<https://design.blog.documentfoundation.org/2015/12/22/area-fill-options-made-consistent/>

[9]

http://docs.oasis-open.org/office/v1.2/os/OpenDocument-v1.2-os-part1.html#element-draw_gradient