

Reducing Invalidations

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Reducing Invalidations

Invalidation an area schedules it to be redrawn

- Typically mark a rectangle as invalid to get it redrawn
- Invalidations are relatively cheap on desktop
- Its very easy and simple to just call Invalidate to invalidate the entire window
 - Full window/document invalidations are expensive in online
 - Remote, multi user, blows away idle-time collected scroll ahead caches, etc



Seeing Invalidations

Partial Invalidation

- Triple click in help about (Ctrl+shift+d)
- Enable tile Invalidations

On the other hand, we denounce with righteous indignation and dislike men who are so beguiled and demoralized by the charms of pleasure of the moment, so blinded by desire, that they cannot foresee the pain and trouble that are bound to ensue; and equal blame belongs to those who fail in their duty through weakness of will, which is the same as saying through shrinking from toil and pain. These cases are perfectly simple and easy to distinguish. In a free hour, when our power of choice is untrammelled and when nothing prevents our being able to do what we like best, every pleasure is to be welcomed and every pain avoided. But in certain circumstances and owing to the claims of duty or the obligations of business it will frequently occur that pleasures have to be repudiated and annoyances accepted. The wise man therefore always holds in these matters to this principle of selection: he rejects pleasures to secure other greater pleasures, or else he endures pains to avoid worse pains. Something here

But I must explain to you how all this mistaken idea of denouncing pleasure and praising pain was born and I will give you a complete account of the system, and expound the actual teachings of the great explorer of the truth, the master-builder of human happiness. No one rejects, dislikes, or avoids pleasure itself, because it is pleasure, but because those who do not know how to pursue pleasure rationally encounter consequences that are extremely painful. Nor again is there anyone who loves or pursues or desires to obtain pain of itself, because it is pain, but because occasionally circumstances occur in which toil and pain can procure him some great pleasure. To take a trivial example, which of us ever undertakes laborious physical exercise, except to obtain some advantage from it? But who has any right to find fault with a man who chooses to enjoy a pleasure that has no annoying consequences, or one who avoids a pain that produces no resultant pleasure?"

Debug Tools
Ctrl+Shift+Alt+D to exit

Display

- ☒ Screen Overlays
- ☐ Tile Overlays
- ☒ Tile Invalidations
- ☐ Show Clipboard
- ☐ Tiles device pixel grid

Logging

- ☐ Performance Tracing
- ☒ Protocol Logging
- ☐ Tile Dumping
- ☐ Debug Deltas

Functionality

- ☐ Typers
- ☐ Randomize user settings

Automated User

- ☐ Enable automated user
- ☐ Insert and delete shape



Seeing Invalidations

Full Invalidation

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Debugging them

Breakpoint

- CallbackFlushHandler::libreOfficeKitViewInvalidateTilesCallback
 - arg: const tools::Rectangle* pRect
 - NULL for entire Window
 - Otherwise the area
- SfxLokHelper::notifyInvalidation
 - another good candidate



Writer Examples

Writer: Clicking Header/Footer to enter/exit

- Entire document invalidated to redraw boundary marks
 - Only invalidate if there are boundary marks
 - Only invalidate the small rectangle that needs to be redrawn

Writer: Cursor entering a bullet causes mysterious flashes everywhere

- All bullets/numbering of the same group invalidated to redraw with field color
 - But field color is disabled in online, invalidation is for nothing



Calc Examples

Calc: Invalidate on switching tabs

- Makes sense for desktop, the area has to be redrawn there
 - But for online each tab is now a separate *part* so we don't need to throw away sheet A contents when we switch to sheet B

Calc: Typing invalidates the entire row to the right of changed cell

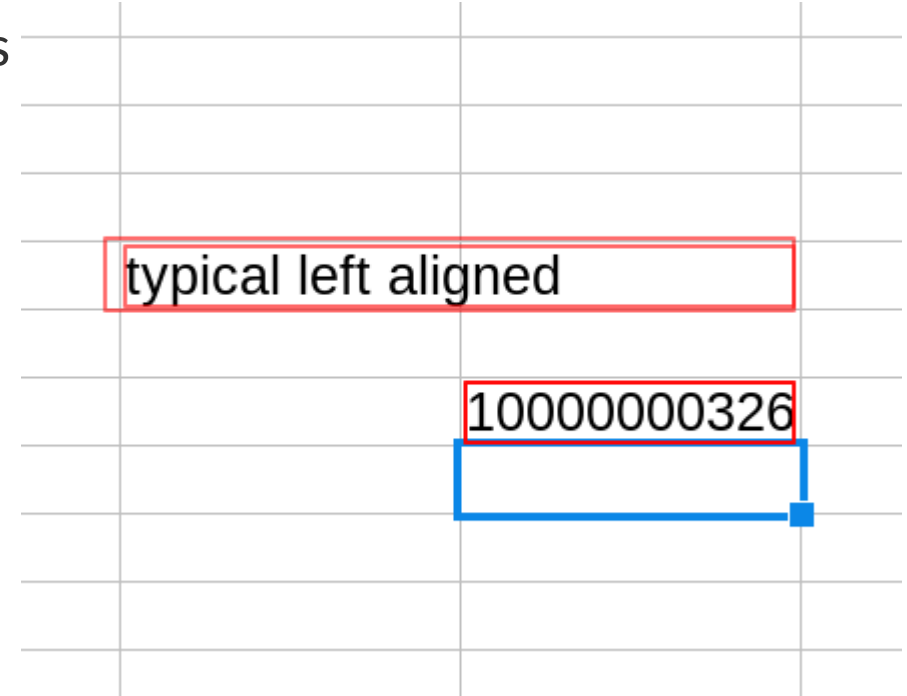
- In the general case cells contents might overflow
- If the cells to the right are empty, calc will show the content there, so easiest thing to do is to invalidate the entire row
- But the most common cases don't need to do that



Calc Examples

Typical cases

- Long left aligned text escapes
- Need to calculate worse case
 - But can optimize on maximum text width





General Examples

Invalidations on Save

- Unexpected, but on saving a drawing layer is set “visible”
- It makes sense to invalidate when a layer visibility toggles in general
- But not if it is toggled to visible from invisible and back when save is complete
 - In any event, invalidate is called even if the visibility doesn't change
 - Don't invalidate if visibility doesn't change



General Examples

Invalidations on Initial Theme change

- Documents started off basically in “Light” theme
- Then are switched to “Dark” theme if that is the user’s default mode
- Makes sense to invalidate on a theme change
- But if we know that initial theme, and set that from the start, then there is not need to switch and no need to have that early invalidation



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Thank you!

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