

9th September 2009

Glade3 tutorial (3) - Size negotiation

Hello.

Last time we managed to create initial GUI for our "Charter" application. Today we'll try to make it more flexible. I'll explain some fundamental things about size negotiation process first, and after this introduction, we'll play a bit with Glade.

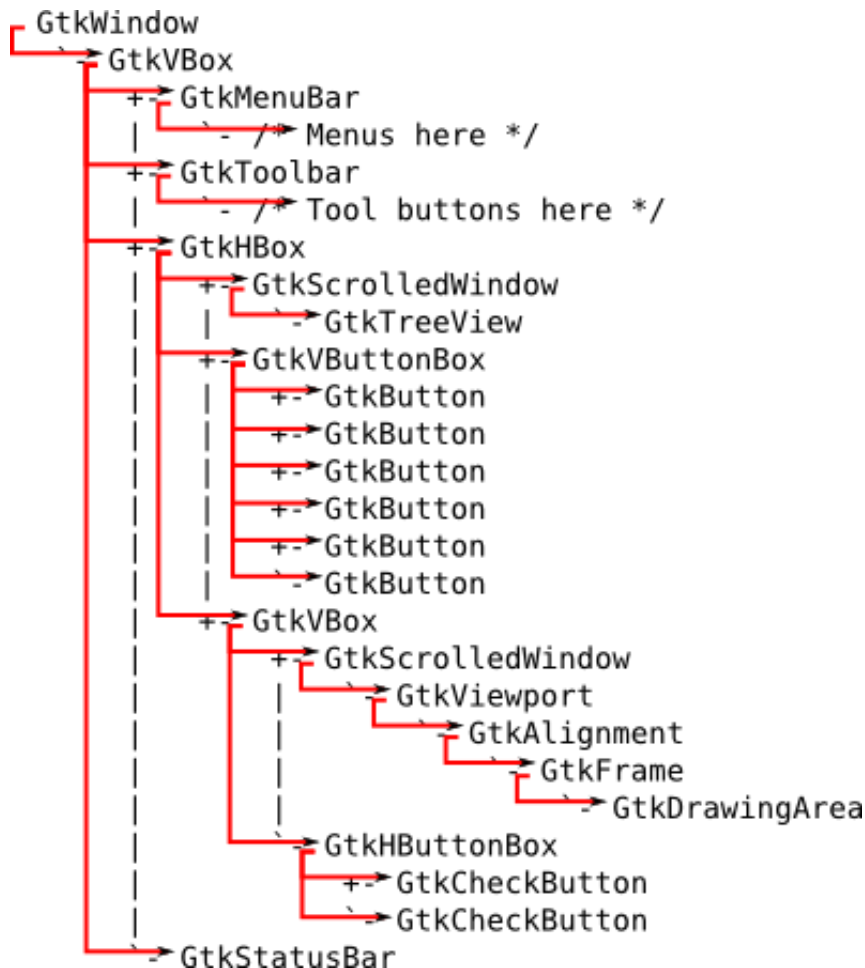
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Size negotiation in GTK+

Knowing how GTK+ handles widget sizing is one of the most important things if you want to create clean and efficient GUIs. I called this process negotiation, since there are two processes that contribute to final result: size requisition and size allocation.

Size requisition stage can be seen as recursive "How much space do you need?" question. Toplevel window ask this question it's child, child widgets asks their children, ... This process ends when all of the widgets in tree responded. In our case this process looks like this:



There are two important findings in this cascade:

1. Child widgets do not know anything about parent's size preferences
2. Parent bases it's size on sizes of it's children

Now that toplevel window knows how much space is needed in ideal conditions, it decides how much space will actually be available. If requisition stage returned some sensible value, this is what is usually used. But if we manually changed size request of toplevel window (using `gtk_window_set_default_size` for example) or for any other reason requested size cannot be used, window will discard it and use different one.

And here is where the second stage begins: allocation. This can be also seen as a command: "Here you have some space, do whatever you need to do to fit into it." that is passed from parent to it's children. And if the widget has more than one child, it's also responsible to properly divide available space among it's children. Remember this, since this is very important for things that come next.

Widget packing

I won't talk about packing much here, since this topic is nicely represented in official GTK+ tutorial. And now it's time for you to go there and read packing section: [GTK+ tutorial - Packing Widgets](http://library.gnome.org/devel/gtk-tutorial/stable/c355.html) [http://library.gnome.org/devel/gtk-tutorial/stable/c355.html] .

Done reading? Good. Now how are all these different options placed inside Glade? They can be found on two separate places:

1. "General" tab of container widget contains options that are set on container widget itself (examples

would be "Homogeneous" property of GtkVBox or "Column spacing" of GtkTable.

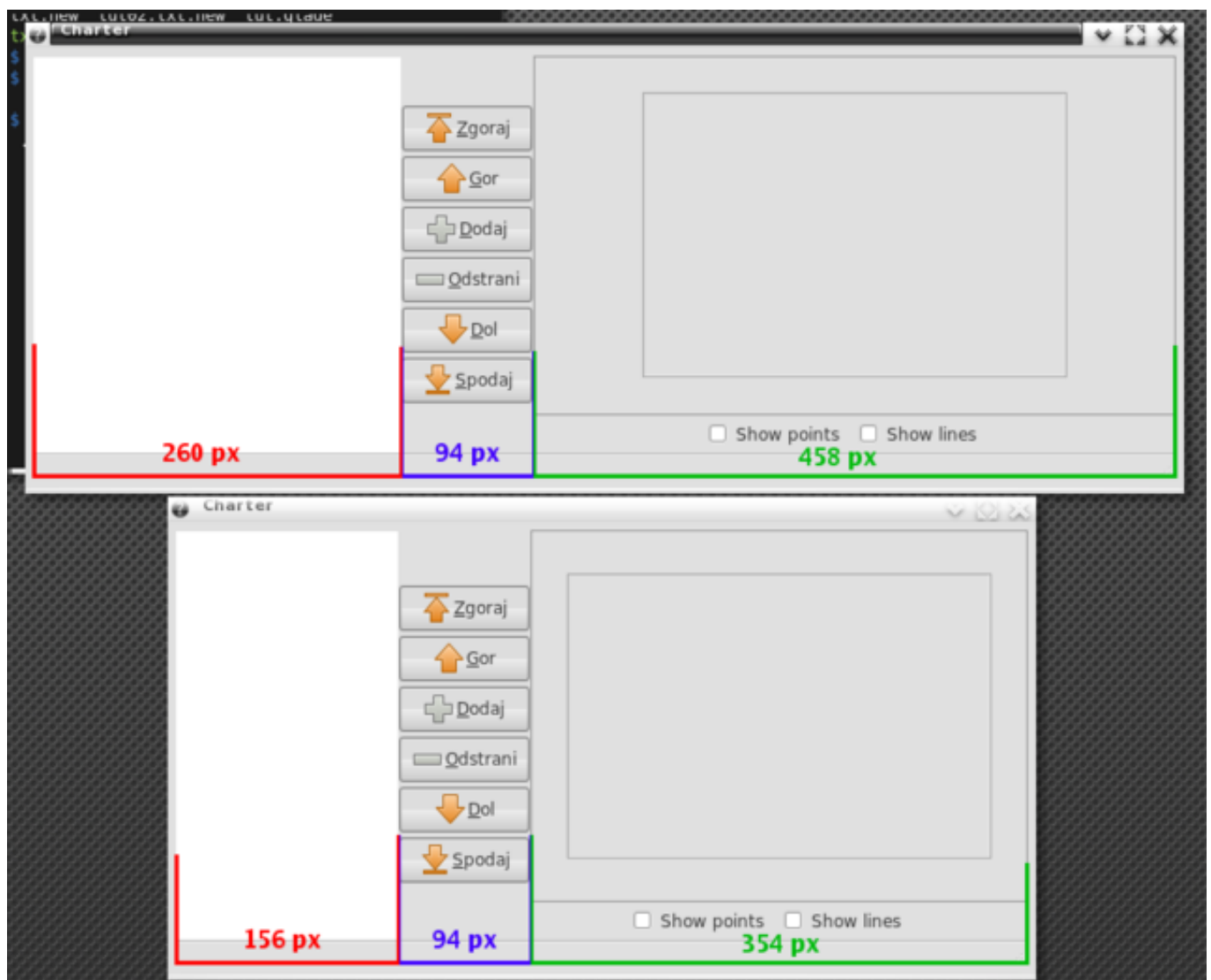
2. "Packing" tab of widget that is being added into container contains options that are set at insertion time (in code, those parameters are set using `gtk_box_pack_*` and `gtk_table_attach` family of functions).

Are things relatively clear now? If not, try recreating packing examples from tutorial using Glade3. This is a great practise to get code<->Glade3 connections properly set up.

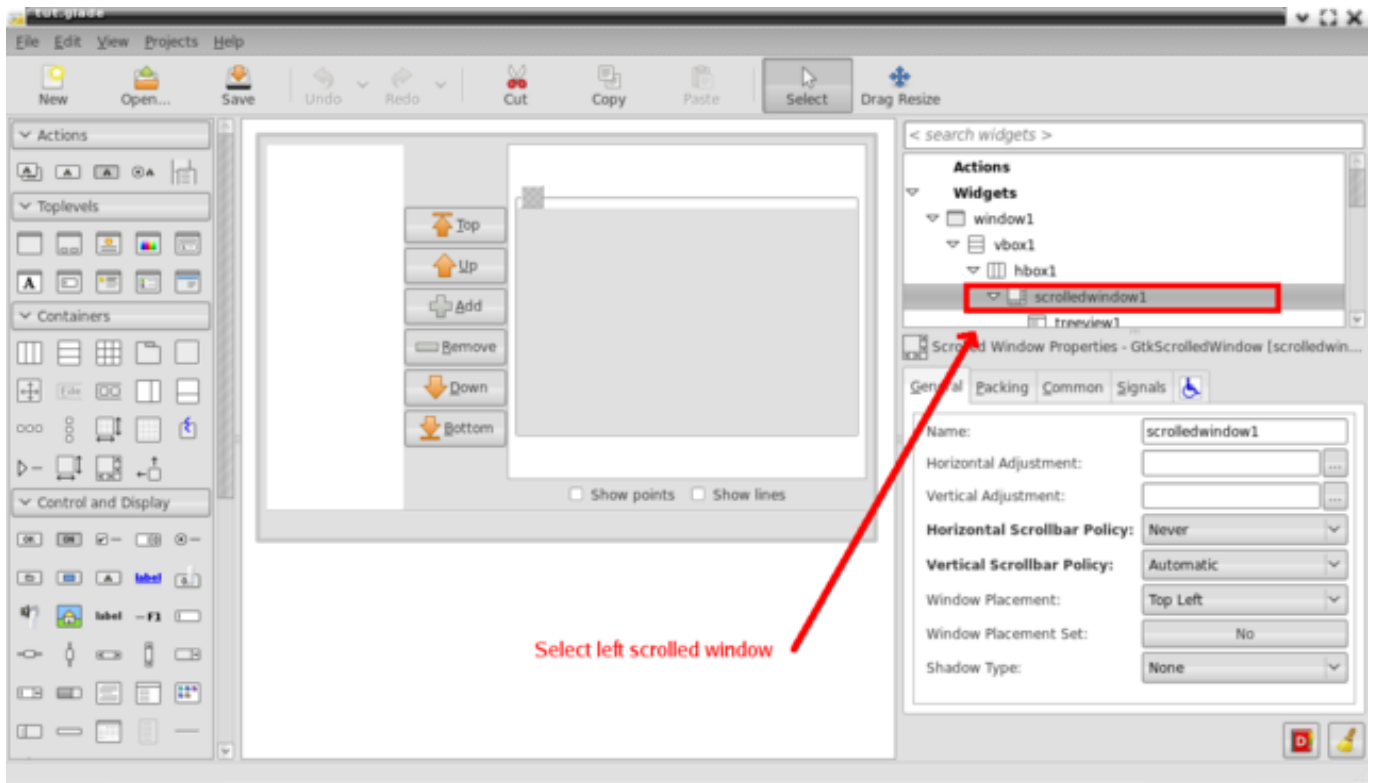
Widget packing and application resizing

And we finally came to the point where we'll talk about the problem with our application - resizing is just wrong;). But before we get too exited and start editing our interface, let's put some of the newly acquired knowledge to work.

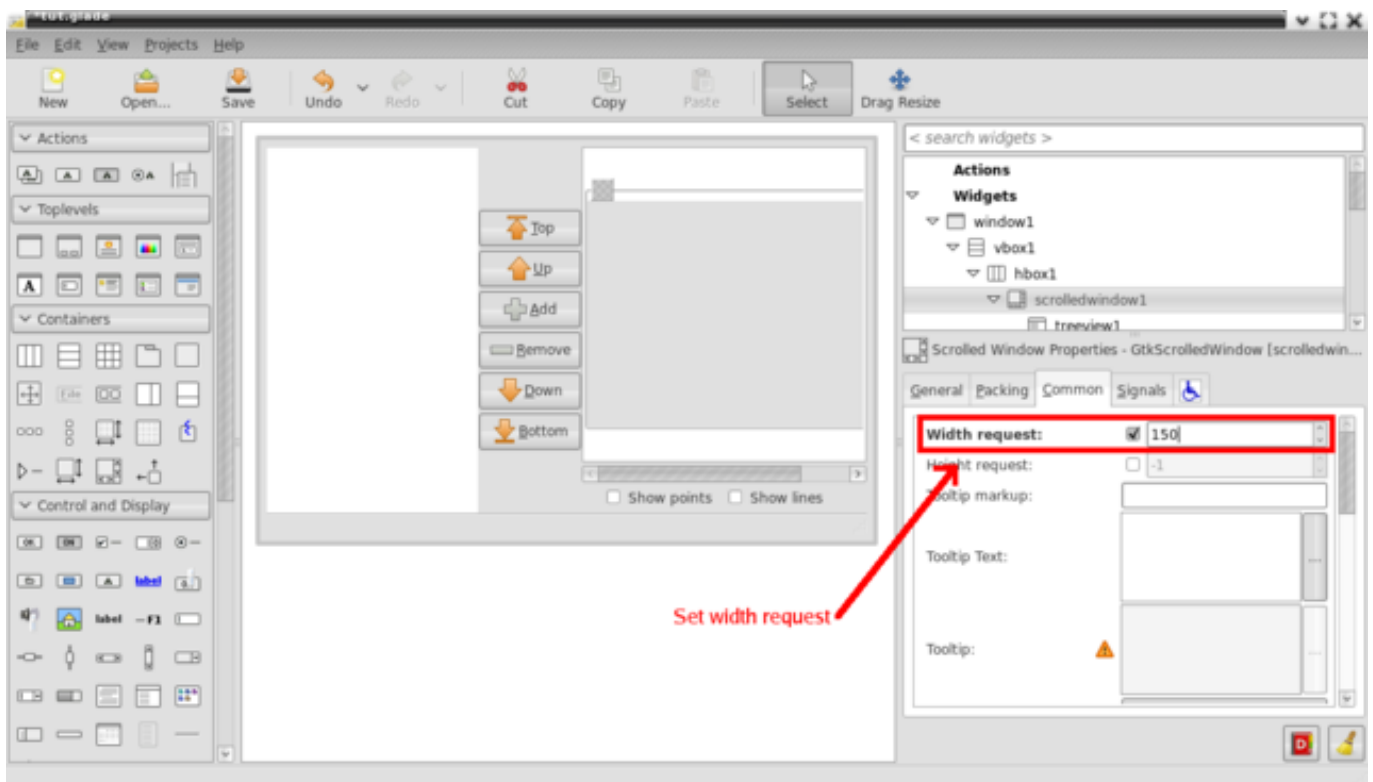
We'll describe how central horizontal box determines sizes of it's children. I took a screenshot of two instances of our application, running at the same time. I resized them and measured parts of the horizontal box. You can see that the central part with buttons retained it's width, while other two parts gained equal amount of space. Why is this so? This is caused by second part of the size negotiation process. Parent widget allocated some extra space to the horizontal box and box then divided that extra space among it's children with `expand` property on.



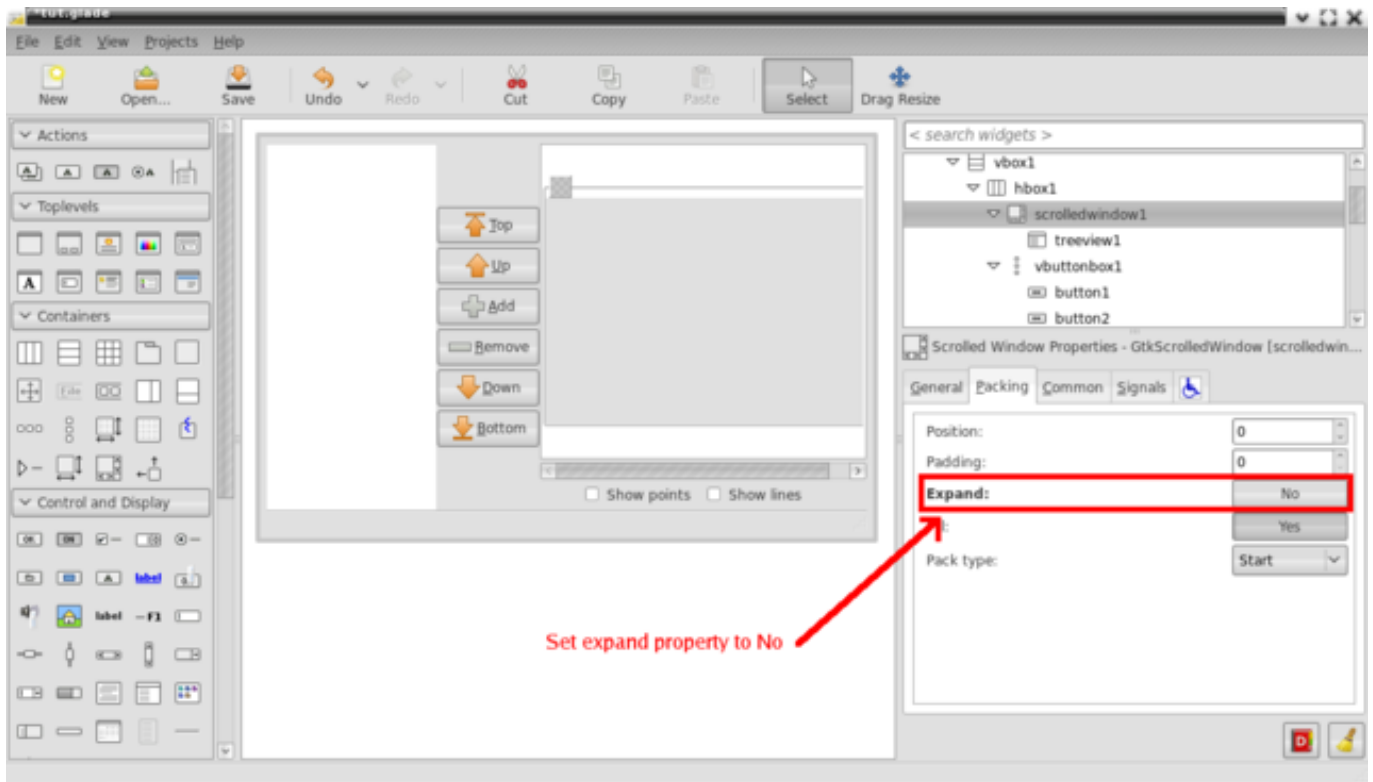
Now we're ready to start fixing our application by making left part of the application fixed in size. Start up glade, load project and click on left scrolled window.



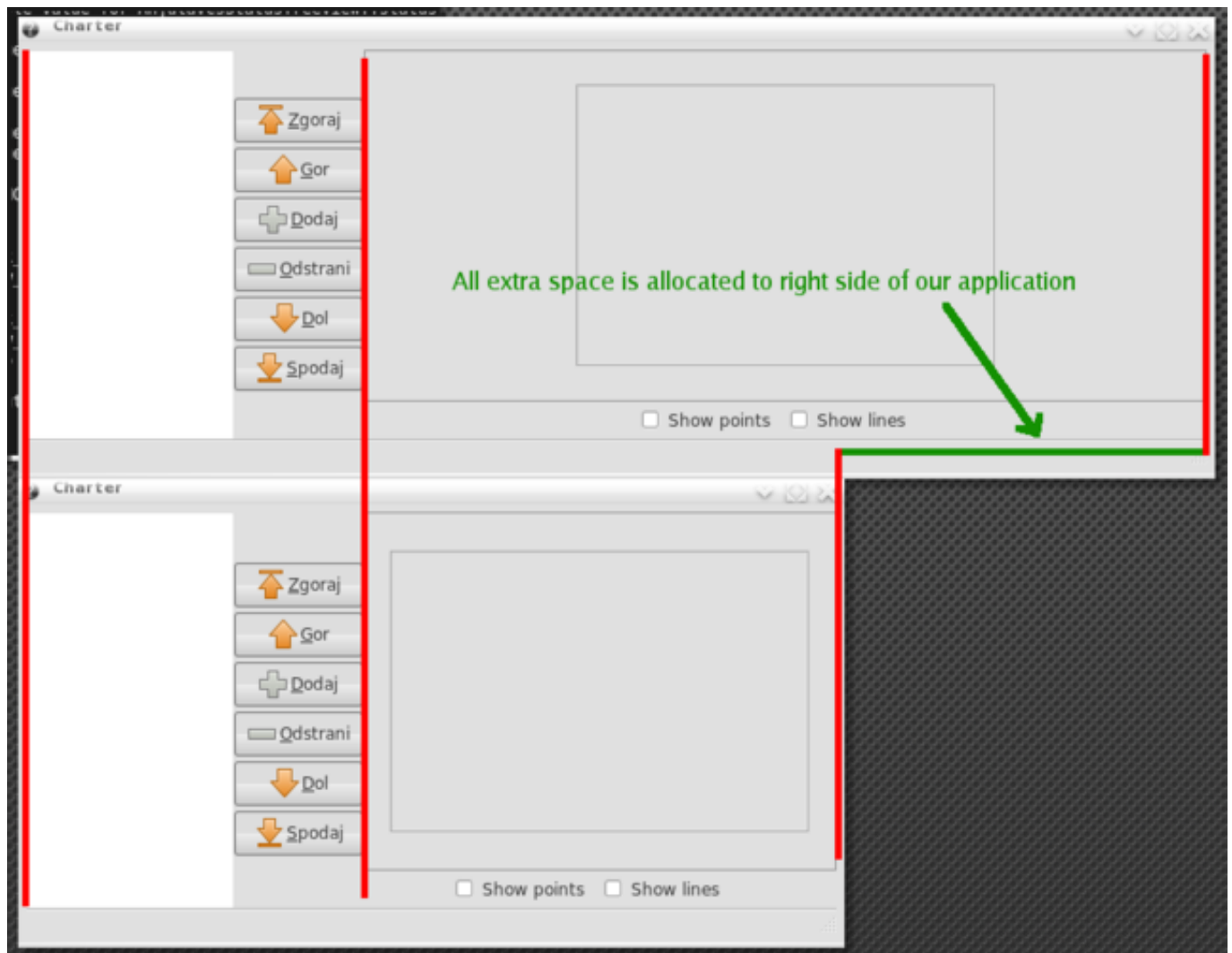
Now go to "Common" tab and set width request to 150 px. This will ensure that scrolled widget always requests 150 px wide space from parent.



But this is not enough to make our left side fixed, since size requests only specify minimal amount of space that this widget needs. It's completely legal to allocate more space to it. To make sure that scrolled window gets exactly 150 px, we need to modify it's packing parameters too. Open "Packing" tab and set "Expand" property to "No".



With things set like this, any extra space that will be allocated to horizontal box will be added to display area. Save your project and run sample application again. BTW, you don't need to recompile it to see the changes, since we only changed glade file, which is loaded at runtime. See how our GUI reacts to resizing now?



And this concludes today's part of tutorial. Feel free to experiment with different packing options. Final glade file of today's tutorial can be downloaded from [here](http://tadeboro.googlepages.com/tut01.glade) [http://tadeboro.googlepages.com/tut01.glade] (make sure you rename it to tut.glade before trying to run our sample application).

You're all invited to join me next time, when we'll add data store to our tree view and connect some buttons to their signals.

Stay healthy.

Posted 9th September 2009 by [Tadej Borovšak](#)

Labels: [Glade](#), [GTK+](#), [tutorial](#)

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Anonymous 09 September, 2009 04:38

great tutorial! Thanks a lot for putting these out. Can't wait for next chapter...

[Reply](#)



Cenwen 09 September, 2009 19:08

Hi another great tutorial in another day. Awesome. Yet!!

Thanks to the link for the second!

[Reply](#)



Cenwen 09 September, 2009 20:02

Impossible to print all the tutorial. A pdf will be welcome!

[Reply](#)



jesus 10 September, 2009 16:30

I am just moving from pyqt to pygtk so your work has come from heaven to me. I am following attently your tutorial.

[Reply](#)



Gino Strobbe 16 September, 2009 13:01

I have been playing around a bit with Qt but did not really feel comfortable with the way they do things. Searching for an other approach I stumbled upon your glade / GTK+ tutorials. Perfect. Just what I need.

They are clear and straight to the point. In those three compact tutorials you already succeeded in giving a good indication how all fits together. Thank you. I'm looking forward for the next part.

[Reply](#)



locutus 29 October, 2009 03:33

wow I just found your blog, this is exactly what I've been looking for.. I programmed in VB, delphi and clarion, always for Windows.. last year I learned some C and became curious about linux programming.. thanks a lot for this tutorial! you have a new reader now!

[Reply](#)



Marc 24 March, 2010 08:47

Thanks for this professional tutorial. The link to GTK packing tutorial is no longer working. You may find it at <http://library.gnome.org/devel/gtk-tutorial/2.18/c355.html>

[Reply](#)



Anonymous 10 April, 2010 04:59

The link to the packing tutorial is here:

[Gtk+ Packing Tutorial](#)

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Anonymous 14 October, 2010 16:03

Fantastic. Best GLADE tutorial I could find! Thank you!

[Reply](#)



Anonymous 18 November, 2010 10:07

Thanks!!! amazing

[Reply](#)



Anonymous 05 January, 2011 21:59

Packing Widgets page at Gnome changed to <http://library.gnome.org/devel/gtk-tutorial/stable/c354.html>

[Reply](#)



Anonymous 14 November, 2011 23:08

This is a great set of tutorials. covering all the information required. Thanks mate!

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