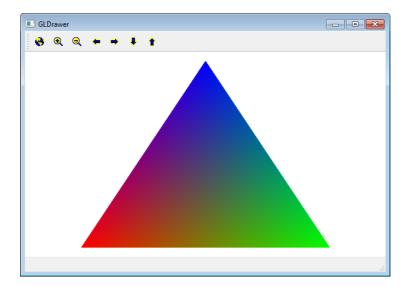
Introduction to Computer Graphics for Engineering

Short Course - 16th -18th June 2014

Implementation of a simple graphics program with window-viewport manipulation



Complete the graphics program available in the course homepage: <u>http://www.tecgraf.puc-rio.br/~lfm/HW2_GLDrawerViewCtrl.zip</u>. This program uses Qt interface system and OpenGL graphics system. Understanding the given code is part of the assignment.

An executable program, which is the solution of the assignment, is provided: <u>http://www.tecgraf.puc-rio.br/~lfm/HW2_GLDrawerViewCtrl-solution.zip</u>.

Assignment

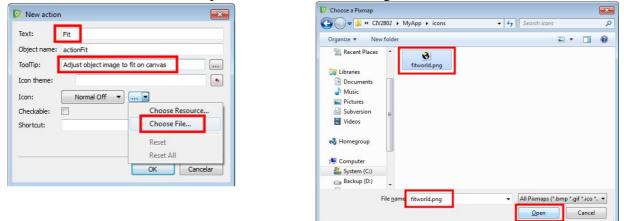
- 1. Complete the lines of code in file glpanel.cpp that are indicated by comments /*** COMPLETE HERE GLPANEL: XX ***/.
- 2. Add the following buttons to the tool bar of the program: *Fit*: fit object image on program canvas. *Zoom in*: zoom in (increase) object image on program canvas. *Zoom out*: zoom out (reduce) object image on program canvas. *Pan left*: move object image left on program canvas. *Pan right*: move object image right on program canvas. *Pan down*: move object image down on program canvas. *Pan up*: move object image up on program canvas. It is required to create icon imagens for each of these buttons.
- 3. Modify files myapp.h and myapp.cpp to treat actions associated to these buttons.

Tutorial to insert a button and its action in the tool bar

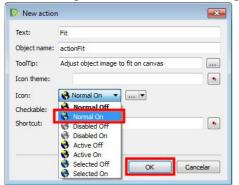
1. Creation of an action for a button in Qt Desiner:

MyGLDrawer - myapp.ui		Object Inspector		
e Here		Object MyAppClass Discretation of the second seco	Class QMainWindow QWidget GLPanel QMenuBar QToolBar QStatusBar	
		Property Editor		
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		Property ⁴ QObject objectName ⁴ QWidget	Value MyAppClass	
		Action Editor		
		New Used	Filter	_
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2. Edition of action name and tip text, and selection of image file with button icon:



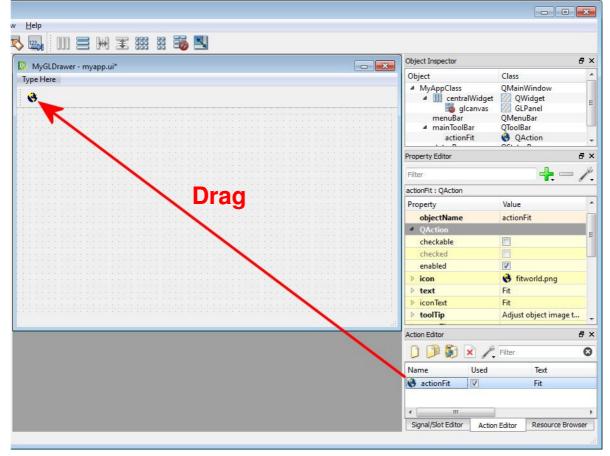
3. Finishing association of icon image to button:



4. Verification of created action:

)rawer - myapp.ui*	Object Inspector		
:	Object	Class	
	MyAppClass Minimum menuBa mainToc statusBa	ralWidget QWidget glcanvas GLPanel r QMenuBar IBar QToolBar	
	Property Editor		
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5. Association of action to button in the tool bar:

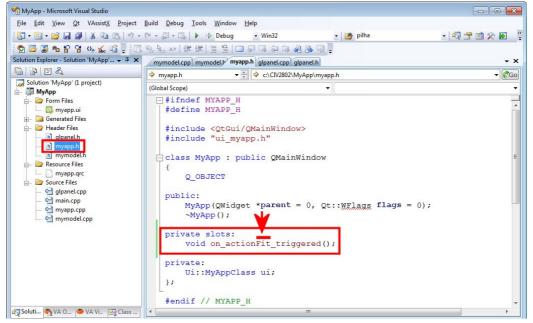


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6. Salve modifications made in Qt Designer:

🔯 Qt Designer	
<u>File Edit Form View Settings Window</u>	w <u>H</u> elp
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Check Box	
Command Link Button	
🙀 Button Box	
Item Views (Model-Based)	1
Item Widgets (Item-Based) Containers	н

7. Declaration of **slot** method in file myapp.h:



8. Definition of **slot** method in file myapp.cpp:

MyApp - Microsoft Visual Studio		×
<u>File Edit View Qt</u> VAssist <u>X</u> Project	<u>Build Debug Tools Window Help</u>	
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Solution 'MyApp' (1 project)	(Global Scope)	•
E. Cry Form Files	Finclude "myapp.h"	
🛄 🗋 myapp.ui	<pre>#include "glpanel.h"</pre>	Â
💼 🗀 Generated Files	<pre>#include "mymodel.h"</pre>	
h glpanel.h	- MyApp::MyApp(QWidget *parent, Qt::WFlags flags)	
- h myapp.h	: QMainWindow(parent, flags)	
🔲 mymodel.h		Ξ.
myapp.qrc	ui.setupUi(this);	
🖮 🗁 Source Files	// create a model object and store a pointer to it in canvas object	
glpanel.cpp	MyModel* m = new MyModel();	
🚰 myapp.cpp	ui.glcanvas->setModel(m);	-
🦾 🛀 mymodel.cpp		
	□ MyApp::~MyApp()	
	3	
	void	
	MyApp::on_actionFit_triggered()	
	ui.glcanvas->fitWorldToViewport();	
		-
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