

QML Quick Reference

Basic Syntax

```
// Simple QML example
import QtQuick 2.12
Rectangle {
    width: 640
    height: 480
    Text {
        anchors.centerIn: parent
        text: "Hello, world!"
    }
    MouseArea {
        anchors.fill: parent
        onClicked: {
            Qt.quit()
        }
    }
}
```

QML Basic Types

bool	double	enumeration
int	list	real
string	url	var

Qt Quick Basic Types ("import QtQuick 2.12")

color	date	font
matrix4x4	point	quaternion
rect	size	vector2d
vector3d	vector4d	

Qt Quick XmlListModel QML Types ("import QtQuick.XmlListModel 2.12")

XmlListModel	XmlRole
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Qt Quick Window QML Types ("import QtQuick.Window 2.12")

CloseEvent	Window
Screen	

Qt Quick Dialogs QML Types ("import QtQuick.Dialogs 1.3")

ColorDialog	FileDialog	Message
Dialog	FontDialog	Dialog

Qt Quick Object Types ("import QtQuick 2.12")

Visual Types

Accessible	Item	SpriteSequence
AnimatedImage	ItemLoader	SystemPalette
AnimatedSprite	Rectangle	Text
BorderImage	Repeater	TextEdit
FontLoader	Rotation	TextInput
Gradient	Scale	Transform
GradientStop	Screen	Translate
Image	Sprite	Window

Positioning

Column
Flow
Grid
LayoutMirroring
Positioner
Row

Canvas

Canvas
CanvasGradient
CanvasImageData
CanvasPixelArray
Context2D
TextMetrics

Model/View

GridView	VisualData
ListElement	Group
ListModel	VisualDataModel
ListView	VisualItemModel
Package	XmlListModel
PathView	XmlRole

States, Transitions and Animations

AnchorAnimation	ParentAnimation	PathLine	RotationAnimation	State
AnchorChanges	ParentChange	PathPercent	RotationAnimator	StateChangeScript
Animation	Path	PathQuad	ScaleAnimator	StateGroup
Controller	PathAnimation	PathSvg	ScriptAction	Transition
Behavior	PathArc	PauseAnimation	Sequential	UniformAnimator
ColorAnimation	PathAttribute	PropertyAction	Animation	Vector3dAnimation
NumberAnimation	PathCubic	Property	Smoothed	ViewTransition
OpacityAnimator	PathCurve	Animation	Animation	XAnimator
ParallelAnimation	PathInterpolator	PropertyChanges	SpringAnimation	YAnimator

User Input

DoubleValidator	FocusScope	MultiPoint	PointerEvent
Drag	HandlerPoint	Handler	PointerHandler
DragEvent	HoverHandler	MultiPoint	RegExpValidator
DragHandler	IntValidator	TouchArea	Shortcut
DropArea	KeyEvent	PinchArea	SinglePoint
EnterKey	KeyNavigation	PinchEvent	Handler
EventPoint	Keys	PointHandler	TextEditText
EventTouchPoint	MouseArea	PointerDevice	Input
Flickable	MouseEvent	PointerDevice	TouchEvent
Flipable		Handler	WheelEvent

Convenience

Binding	Loader
Connections	Matrix4x4
FontMetrics	OpenGLInfo
GraphicsInfo	TextMetrics
ItemGrab	Timer
Result	WorkerScript

Qt Test

Sequence
SignalSpy
TestCase
TouchEvent

Graphical Effects

BorderImage
BorderImage
Mesh
Flipable
GridMesh
ShaderEffect
ShaderEffect
Source

Qt Quick Layouts QML Types ("import QtQuick.Layouts 1.12")

ColumnLayout	Layout	StackLayout
GridLayout	RowLayout	

Other QML Modules

Qt.labs.calendar 1.0	QtQuick.Controls.
Qt.labs.	Imagine 2.12
folderlistmodel 2.12	QtQuick.Controls.
Qt.labs.location 1.0	Material 2.12
Qt.labs.platform 1.1	QtQuick.Controls.
Qt.labs.	Styles 1.4
qmlmodels 1.0	QtQuick.Controls.
Qt.labs.settings 1.1	Styles.Flat 1.0
Qt.labs.	QtQuick.Controls.
sharedimage 1.0	Universal 2.12
Qt.labs.wave	QtQuick.Dialogs 1.3
frontmesh 1.12	QtQuick.Dialogs.
Qt3D.Animation 2.12	Private 1.1
Qt3D.Core 2.12	QtQuick.Extras 1.4
Qt3D.Extras 2.12	QtQuick.Layouts 1.12
Qt3D.Input 2.12	QtQuick.Local
Qt3D.Logic 2.12	Storage 2.12
Qt3D.Render 2.12	QtQuick.
QtAudioEngine 1.1	Particles 2.12
QtBluetooth 5.12	QtQuick.Private
QtCanvas3D 1.1	Widgets 1.1
QtCharts 2.3	QtQuick.Scene
QtData	2D 2.12
Visualization 1.3	QtQuick.Shapes 1.12
QtGamepad 1.12	QtQuick.
QtGraphical	Templates 2.12
Effects 1.0	QtQuick.VirtualKey
QtLocation 5.12	board.Settings 2.2
QtMultimedia 5.12	QtQuick.VirtualKey
QtNfc 5.12	board.Styles 2.2
QtPositioning 5.12	QtQuick.Window 2.12
QtPurchasing 1.12	QtQuick.XmlList
QtQml 2.12	Model 2.12
QtQml.Models 2.12	QtRemote
QtQml.Remote	Objects 5.12
Objects 1.0	QtScxml 5.8
QtQml.State	QtSensors 5.12
Machine 1.12	QtTest 1.12
QtQuick 2.12	QtWayland.
QtQuick.Controls 1.6	Compositor 1.3
QtQuick.	QtWebChannel 1.0
Controls 2.12	QtWebEngine 1.8
QtQuick.Controls.	QtWebSockets 1.1
Fusion 2.12	QtWebView 1.1

Qt Quick Controls QML Types ("import QtQuick.Controls 1.6" and "import QtQuick.Controls 2.12")

AbstractButton ⁽²⁾	Dialog ⁽²⁾	Page ⁽²⁾	StackView	TextArea
Action	Dialog	PageIndicator ⁽²⁾	StackView	TextField
ActionGroup ⁽²⁾	GroupBox ⁽²⁾	Pane ⁽²⁾	Delegate ⁽¹⁾	ToolBar
Application	Drawer ⁽²⁾	Popup ⁽²⁾	StatusBar ⁽¹⁾	ToolButton
Window	Exclusive	ProgressBar	SwipeDelegate ⁽²⁾	ToolSeparator ⁽²⁾
BusyIndicator	Group ⁽¹⁾	RadioButton	SwipeView ⁽²⁾	ToolTip ⁽²⁾
Button	Frame ⁽²⁾	RadioDelegate ⁽²⁾	Switch	TreeView ⁽¹⁾
ButtonGroup ⁽²⁾	GroupBox	RangeSlider ⁽²⁾	Switch	Tumbler ⁽²⁾
Calendar ⁽¹⁾	ItemDelegate ⁽²⁾	RoundButton ⁽²⁾	Delegate ⁽²⁾	
CheckBox	Label	ScrollBar ⁽²⁾	Tab ⁽¹⁾	
CheckDelegate ⁽²⁾	Menu	ScrollIndicator ⁽²⁾	TabBar ⁽²⁾	
ComboBox	MenuBar	ScrollView	TabButton ⁽²⁾	
Container ⁽²⁾	MenuItem ⁽²⁾	Slider	TabView ⁽¹⁾	
Control ⁽²⁾	MenuItem	SpinBox	TableView	
DelayButton ⁽²⁾	MenuSeparator	SplitView ⁽¹⁾	TableView	
Dial ⁽²⁾	Overlay ⁽²⁾	Stack ⁽¹⁾	Column ⁽¹⁾	

Notes:
(1) - Qt Quick Controls 1.x (deprecated) only.
(2) - Qt Quick Controls 2.x only.

QML Item Properties				
activeFocus	anchors.left	childrenRect.width	layer.samplerName	state
activeFocusOnTab	anchors.leftMargin	childrenRect.x	layer.samples	states
anchors	anchors.margins	childrenRect.y	layer.smooth	transform
anchors.align	anchors.right	clip	layer.sourceRect	transformOrigin
WhenCentered	anchors.rightMargin	data	layer.textureSize	transitions
anchors.baseline	anchors.top	enabled	layer.textureMirroring	visible
anchors.baselineOffset	anchors.topMargin	focus	layer.wrapMode	visibleChildren
anchors.bottom	anchors.verticalCenter	height	objectName	width
anchors.bottomMargin	anchors.verticalCenterOffset	implicitHeight	opacity	x
anchors.centerIn	anchors.horizontalCenterOffset	implicitWidth	parent	y
anchors.fill	anchors.horizontalCenterOffset	layer.effect	resources	z
anchors.horizontalCenter	anchors.horizontalCenterOffset	layer.enabled	rotation	
anchors.horizontalCenterOffset	anchors.horizontalCenterOffset	children	scale	
	anchors.horizontalCenterOffset	childrenRect.height	smooth	

QML Global Object					
■ Qt Object					
application	createQml	formatTime()	matrix4x4()	qsTrIdNoOp()	resolvedUrl()
atob()	Object()	hsla()	md5()	qsTrNoOp()	rgba()
binding()	darker()	hsva	openUrl	qsTranslate()	size()
boa()	exit()	include()	Externally()	qsTranslate	styleHints
callLater()	font()	inputMethod	platform	NoOp()	tint()
colorEqual()	fontFamilies()	isQObject()	point()	quaternion()	vector2d()
create	formatDate()	lighter()	qsTr()	quit()	vector3d()
Component()	formatDateTime()	locale()	qsTrId()	rect()	vector4d()

Qmlscene Options	
Usage: qmlscene [options] filename	
Options:	
--maximized.....	Run maximized
--fullscreen.....	Run fullscreen
--transparent.....	Make the window transparent
--multisample.....	Enable multisampling (OpenGL anti-aliasing)
--core-profile.....	Request a core profile OpenGL context
--no-version-detection.....	Do not try to detect the version of the .qml file
--slow-animations.....	Run all animations in slow motion
--resize-to-root.....	Resize the window to the size of the root item
--quit.....	Quit immediately after starting
--disable-context-sharing.....	Disable the use of a shared GL context for QtQuick Windows
--desktop.....	Force use of desktop GL
--gles.....	Force use of GLES
--software.....	Force use of software rendering
--scaling.....	Enable high DPI scaling
--no-scaling.....	Disable high DPI scaling
--verbose.....	Print version and graphical diagnostics for the run-time
--apptype [gui widgets].....	Select which application class to use. Default is widgets.
--textrendertype [gui native].....	Select the default render type for text-like elements
-I path.....	Add path to the list of import paths
-P path.....	Add path to the list of plugin paths
-translation translationfile.....	Set the language to run in

QML Item Methods	
childAt	mapFromGlobal
contains	mapFromItem
forceActiveFocus	mapToItem
grabToImage	nextItemInFocusChain

QML Profiler Options	
qmlprofiler [options] [program] [program-options]	
qmlprofiler [options] -a,-attach <hostname>	
Options:	
-p,-port <number>	TCP/IP port to use, default is 3768
-o,-output <file>	Save tracing data in <file>
--record <on off>.....	Controls whether recording starts immediately
--include <feature,...>	Comma-separated list of features to include when recording
--exclude <feature,...>	Comma-separated list of features to exclude when recording
--interactive.....	Manually control the recording from the command line
--verbose.....	Print debugging output
-h,-help	Displays help information
-v,-version	Displays version information

QML Program Options	
Usage: qml [options] [files]	
General Options:	
-h,-help.....	Print this usage information and exit
-v,-version.....	Print the version information and exit
-apptype [core gui widget]	Select which application class to use
	Default is gui
-quiet	Suppress all output
-I [path]	Prepend the given path to the import paths
-f [file]	Load the given file as a QML file
-config [file].....	Load the given file as the configuration file
--	Arguments after this one are ignored by the launcher, but may be used within the QML application
GL options:	
-desktop	Force use of desktop GL
-gles	Force use of GLES
-software	Force use of software rendering
-scaling.....	Enable High DPI scaling
-no-scaling	Disable High DPI scaling
Debugging options:	
-verbose	Print information about what QML is doing, like specific file URLs being loaded
-translation [file]	Load the given file as the translations file
-dummy-data [directory]	Load QML files from the given directory as context properties
-slow-animations.....	Run all animations in slow motion
-fixed-animations	Run animations off animation tick rather than wall time
Can make QML files executable on Linux/Unix/POSIX systems by adding first line like the following: #!/usr/bin/env qml	

QML JavaScript Debugger Options
Run application with option -qmljsdebugger=port:port from[port to] [host:ip address][,block]

Debugging Functions
console.assert
console.count
console.debug
console.error
console.exception
console.info
console.log
console.profile
console.profileEnd
console.time
console.timeEnd
console.trace
console.warn
print

QML Environment Variables		
QML2_IMPORT_PATH	_WORKAROUND	QSG_RENDERER_BATCH
QMLSCENE_DEVICE	QML_VISUAL_TOUCH	_NODE_THRESHOLD
QMLSCENE_IMPORT_NAME	_DEBUGGING	QSG_RENDERER_BATCH
QML_ANIMATION_TICK_DUMP	QML_XHR_DUMP	_VERTEX_THRESHOLD
QML_BAD_GUI_RENDERER_LOOP	QSG_ANTIALIASING_METHOD	QSG_RENDERER_BUFFER
QML_CHECK_TYPES	QSG_ATLAS_HEIGHT	_STRATEGY
QML_DEBUG_LEAK	QSG_ATLAS_NO_BGRA	QSG_RENDERER_DEBUG
_BACKTRACE	_WORKAROUNDS	QSG_RENDER_LOOP
QML_DISABLE_DISK_CACHE	QSG_ATLAS_OVERLAY	QSG_RENDER_TIMING
QML_DISABLE_DISTANCEFIELD	QSG_ATLAS_SIZE_LIMIT	QSG_TRANSIENT_IMAGES
QML_DUMP_ERRORS	QSG_ATLAS_TRANSIENT	QSG_VISUALIZE
QML_FBO_FLUSH_BEFORE	_IMAGE_THRESHOLD	QT_D3D_ADAPTER_INDEX
_DETACH	QSG_ATLAS_USE_BGRA	QT_HIGHDPI_DISABLE_2X
QML_FBO_OVERLAY	_FALLBACK	_IMAGE_LOADING
QML_FORCE_DISK_CACHE	QSG_ATLAS_WIDTH	QT_QPA_PLATFORM
QML_FORCE_THREADED	QSG_DISTANCEFIELD	QT_QUICK_BACKEND
_RENDERER	_ANTIALIASING	QT_QUICK_CORE_PROFILE
QML_IMPORT_TRACE	QSG_ENABLE_COMPRESSED	QT_QUICK_MULTISAMPLE
QML_LEAK_CHECK	_ATLAS	QV4_FORCE_INTERPRETER
QML_LOOKUP_HINTS	QSG_FIXED_ANIMATION_STEP	QV4_MM_AGGRESSIVE_GC
QML_NO_TOUCH	QSG_INFO	QV4_PROFILE_WRITE
_COMPRESSION	QSG_NO_DEPTH_BUFFER	_PERF_MAP
QML_PARENT_TEST	QSG_NO_STENCIL_BUFFER	QV4_SHOW_ASM
QML_PARTICLES_DEBUG	QSG_OPENGL_DEBUG	QV4_SHOW_BYTECODE
QML_SHOW_UNIT_STATS	QSG_PREFER_FULLSIZE	QV4_SHOW_ESCAPING_VARS
QML_USE_GLYPHCACHE	_GLYPHCACHE_TEXTURES	STATECHANGE_DEBUG