

## QML Quick Reference

### Basic Syntax

```
// Simple QML example
import QtQuick
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")

color	date	font
matrix4x4	point	quaternion
rect	size	vector2d
vector3d	vector4d	

### Qt Quick Particles QML Types ("import QtQuick.Particles")

Affector	MaskShape
Age	Particle
AngleDirection	ParticleExtruder
Attractor	ParticleGroup
CumulativeDirection	ParticlePainter
Direction	ParticleSystem
EllipseShape	PointDirection
Emitter	RectangleShape
Friction	SpriteGoal
Gravity	TargetDirection
GroupGoal	TrailEmitter
ImageParticle	Turbulence
ItemParticle	Wander
LineShape	

### Qt Quick Object Types ("import QtQuick")

Accessible	DragHandler	KeyNavigation	PathElement	RegularExpression	TableView
AnchorAnimation	DropArea	Keys	PathInterpolator	Repeater	TapHandler
AnchorChanges	EnterKey	LayoutMirroring	PathLine	Rotation	Text
AnimatedImage	Flickable	ListView	PathMove	RotationAnimation	TextEdit
AnimatedSprite	Flipable	Loader	PathMultiline	RotationAnimator	TextInput
Animation	Flow	Matrix4x4	PathPercent	Row	TextMetrics
AnimationController	FocusScope	MouseArea	PathPolyline	Scale	TouchPoint
Animator	FontLoader	MouseEvent	PathQuad	ScaleAnimator	Transform
Application	FontMetrics	MultiPointHandler	PathSvg	Screen	Transition
Behavior	GestureEvent	MultiPointTouchArea	PathText	ScriptAction	Translate
BorderImage	Gradient	NumberAnimation	PathView	SequentialAnimation	UniformAnimator
BorderImageMesh	GradientStop	OpacityAnimator	PauseAnimation	ShaderEffect	Vector3dAnimation
Canvas	GraphicsInfo	Palette	PinchArea	ShaderEffectSource	ViewTransition
CanvasGradient	Grid	ParallelAnimation	PinchEvent	Shortcut	WheelEvent
CanvasImageData	GridMesh	ParentAnimation	PinchHandler	SinglePointHandler	WheelHandler
CanvasPixelArray	GridView	ParentChange	PointHandler	SmoothedAnimation	Window
ColorAnimation	HandlerPoint	Path	PointerDeviceHandler	SpringAnimation	XAnimator
ColorGroup	HoverHandler	PathAngleArc	PointerHandler	Sprite	YAnimator
Column	Image	PathAnimation	Positioner	SpriteSequence	
Context2D	IntValidator	PathArc	PropertyAction	State	
DoubleValidator	Item	PathAttribute	PropertyAnimation	StateChangeScript	
Drag	ItemGrabResult	PathCubic	PropertyChanges	StateGroup	
DragEvent	KeyEvent	PathCurve	Rectangle	SystemPalette	

### QML JavaScript Debugger Options

Run application with option  
-qmljsdebugger=port:port from[,port  
to][,host:ip address][,block[,file:local  
socket]][,services:comma-separated  
list of services to enable]

### Debugging Functions

console.assert	console.profile
console.count	console.
console.debug	profileEnd
console.error	console.timer
console.exception	console.timeEnd
console.info	console.trace
console.log	console.warn
	print

### Qt Quick Tests QML Types ("import QTest")

SignalSpy	TouchEventSequence
TestCase	

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

Dialog	FileDialog	FontDialog
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### Qt Quick Controls QML Types ("import QtQuickControls" and "import QtQuick.Controls")

AbstractButton	DialogButtonBox	Pane	StackView
Action	Drawer	Popup	SwipeDelegate
ActionGroup	Frame	ProgressBar	SwipeView
ApplicationWindow	GroupBox	RadioButton	Switch
BusyIndicator	HorizontalHeaderView	RadioDelegate	SwitchDelegate
Button	ItemDelegate	RangeSlider	TabBar
ButtonGroup	Label	RoundButton	TabButton
CheckBox	Menu	ScrollBar	TextArea
CheckDelegate	MenuBar	ScrollIndicator	TextField
ComboBox	MenuItem	ScrollView	ToolBar
Container	MenuItem	SelectionRectangle	ToolButton
Control	MenuSeparator	Slider	ToolSeparator
DelayButton	Overlay	SpinBox	ToolTip
Dial	Page	SplitHandle	Tumbler
Dialog	PageIndicator	SplitView	VerticalHeaderView

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

ColumnLayout	Layout	StackLayout
GridLayout	RowLayout	

### Other QML Modules

Qt3D.Animation	QtQuick.Controls.
Qt3D.Core	Styles
Qt3D.Extras	QtQuick.Controls.
Qt3D.Input	Styles.Flat
Qt3D.Logic	QtQuick.Controls.
Qt3D.Render	Universal
QtBluetooth	QtQuick.Dialogs
QtCanvas3D	QtQuick.Dialogs.
QtCharts	Private
QtDataVisualization	QtQuick.Extras
QtGamepad	QtQuick.Extras.
QtGraphicalEffects	Private
QtGraphicalEffects.	QtQuick.Layouts
private	QtQuick.LocalStorage
Qt.labs.calendar	QtQuick.Particles
Qt.labs.	QtQuick.
folderlistmodel	PrivateWidgets
Qt.labs.location	QtQuick.Scene2D
Qt.labs.platform	QtQuick.Scene3D
Qt.labs.qmlmodels	QtQuick.Shapes
Qt.labs.settings	QtQuick.Templates
Qt.labs.sharedimage	QtQuick.
Qt.labs.	VirtualKeyboard
wavefrontmesh	QtQuick.Virtual
QtLocation	Keyboard.Settings
QtMultimedia	QtQuick.Virtual
QtNfc	Keyboard.Styles
QtPositioning	QtQuick.Window
QtPurchasing	QtQuick.XmlListModel
QtQml	QtRemoteObjects
QtQml.Models	QtScxml
QtQml.	QtSensors
RemoteObjects	QTest
QtQml.StateMachine	QtWayland.
QtQuick	Compositor
QtQuick.Controls	QtWebChannel
QtQuick.Controls.	QtWebEngine
Fusion	QtWebEngine.
QtQuick.Controls.	Controls1Delegates
Imagine	QtWebEngine/
QtQuick.Controls.	Controls2Delegates
Material	Qt.WebSockets
QtQuick.Controls.	QtWebSockets
Private	QtWebView

## QML Item Properties

activeFocus	anchors.horizontal	anchors.vertical	data	layer.smooth	state
activeFocusOnTab	Center	CenterOffset	enabled	layer.sourceRect	states
anchors	anchors.horizontal	antialiasing	focus	layer.texture	transform
anchors.align	CenterOffset	baselineOffset	height	Mirroring	transform
WhenCentered	anchors.left	children	implicitHeight	layer.textureSize	Origin
anchors.baseline	anchors.leftMargin	childrenRect.	implicitWidth	layer.wrapMode	transitions
anchors.baselineOffset	anchors.margins	height	layer.effect	objectName	visible
anchors.bottom	anchors.right	childrenRect.	layer.enabled	opacity	visible
anchors.bottomOffset	anchors.rightMargin	width	layer.format	parent	Children
anchors.bottomMargin	anchors.top	childrenRect.x	layer.mipmap	resources	width
anchors.centerIn	anchors.topMargin	childrenRect.y	layer.sampler	rotation	x
anchors.fill	anchors.vertical	clip	Name	scale	y
	Center	containmentMask	layer.samples	smooth	z

## QML Global Object

■ <b>Qt Object</b>	btob()	darker()	hsla()	openUrl	qsTranslate()	size()
	callLater()	exit()	hsva	Externally()	qsTranslate	styleHints
	color()	font()	inputMethod	platform	NoOp()	tint()
	colorEqual()	fontFamilies()	isQObject()	point()	quaternion()	uiLanguage
	create	formatDate()	lighter()	qstr()	quit()	url()
application	Component()	format	locale()	qstrId()	rect()	vector2d()
atob()	createQml	DateTime()	matrix4x4()	qstrIdNoOp()	resolvedUrl()	vector3d()
binding()	Object()	formatTime()	md5()	qstrNoOp()	rgba()	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
--rhi [vulkan metal d3d11 gl] ...	Specify backend for the Qt graphics abstraction (RHI)
--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
--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
-l <i>path</i> .....	Add <i>path</i> to the list of import paths
-S <i>selector</i> .....	Add <i>selector</i> to the list of QQmlFileSelector selectors
-P <i>path</i> .....	Add <i>path</i> to the list of plugin paths
-translation <i>translationfile</i> .....	Set the language to run in

■ **Note:** qmlscene is deprecated. Use the qml program instead

## QML Item Methods

childAt	mapFromItem
contains	mapToGlobal
forceActiveFocus	mapToItem
grabToImage	nextItemInFocus
mapFromGlobal	Chain

## QML Profiler Options

qmlprofiler *[options]* *[program]* *[program-options]*

qmlprofiler *[options]* -a, -attach *hostname*

### Options:

-p, --port <i>number</i> .....	TCP/IP port to use, default is 3768
-o, --output <i>file</i> .....	Save tracing data in <i>file</i>
--record <i>on/off</i> .....	Controls whether recording starts immediately
--include <i>feature</i> ,.....	Comma-separated list of features to include when recording
--exclude <i>feature</i> ,.....	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...]* [-- *args...*]

### Options:

-h, --help.....	Displays help on command line options.
--help-all.....	Displays help including Qt specific options.
-v, --version.....	Displays version information.
-a, --apptype <i>core/gui/widget</i> .....	Select which application class to use. Default is gui.
-l <i>path</i> .....	Prepend the given path to the import paths.
-f <i>file</i> .....	Load the given file as a QML file.
-c, --config <i>file</i> .....	Load the given built-in configuration or configuration file.
--list-conf.....	List the built-in configurations.
--translation <i>file</i> .....	Load the given file as the translations file.
--dummy-data <i>file</i> .....	Load QML files from the given directory as context properties.
--desktop.....	Force use of desktop OpenGL (AA_UseDesktopOpenGL).
--gles.....	Force use of GLES (AA_UseOpenGLES).
--software.....	Force use of software rendering (AA_UseSoftwareOpenGL).
--core-profile.....	Force use of OpenGL Core Profile.
--disable-context-sharing.....	Disable the use of a shared GL context for QtQuick Windows.
--quiet.....	Suppress all output.
--verbose.....	Print information about what QML is doing, like specific file URLs being loaded.
--slow-animations.....	Run all animations in slow motion.
--fixed-animations.....	Run animations off animation tick rather than wall time.
-r, --rhi <i>backend</i> .....	Set the backend for the Qt graphics abstraction (RHI). Backend is one of: default, vulkan, metal, d3d11, gl.
-S <i>selector</i> .....	Add selector to the list of QQmlFileSelectors.

### Arguments:

files.....	Any number of QML files can be loaded. They will share the same engine.
args.....	Arguments after '--' are ignored, but passed through to the application.arguments variable in QML.

■ **Note:** Can make QML files executable on Linux/Unix/POSIX systems by adding first line like the following:  
#!/usr/bin/env qml

## QML Environment Variables

QMLSCENE_CORE_PROFILE	QML_XHR_ALLOW_FILE_READ	_POOL_THRESHOLD
QMLSCENE_IMPORT_NAME	QML_XHR_ALLOW_FILE_WRITE	QSG_RENDER_LOOP
QML_ANIMATION_TICK_DUMP	QML_XHR_DUMP	QSG_RENDER_TIMING
QML_BAD_GUI_RENDER_LOOP	QSG_ANTIALIASING_METHOD	QSG_RHI_BACKEND
QML_CHECK_TYPES	QSG_ATLAS_HEIGHT	QSG_SAMPLES
QML_CORE_PROFILE	QSG_ATLAS_OVERLAY	QSG_TRANSIENT_IMAGES
QML_DEBUG_LEAK	QSG_ATLAS_SIZE_LIMIT	QSG_VISUALIZE
_BACKTRACE	QSG_ATLAS_TRANSIENT	QT_BUNDLED_LIBS_PATH
QML_DISABLE_DISK_CACHE	_IMAGE_THRESHOLD	QT_CANVAS_OVERRIDE
QML_DISABLE_DISTANCEFIELD	QSG_ATLAS_WIDTH	_DEVICEPIXELRATIO
QML_DISK_CACHE_PATH	QSG_CORE_PROFILE	QT_HIGHDPI_DISABLE_2X
QML_DUMP_ERRORS	QSG_DISTANCEFIELD	_IMAGE_LOADING
QML_FORCE_DISK_CACHE	_ANTIALIASING	QT_QPA_PLATFORM
QML_FORCE_THREADED	QSG_FIXED_ANIMATION_STEP	QT_QUICK_CONTROLS_CONF
_RENDERER	QSG_INFO	QT_QUICK_CONTROLS
QML_IMPORT_PATH	QSG_NO_DEPTH_BUFFER	_FALLBACK_STYLE
QML_IMPORT_TRACE	QSG_NO_STENCIL_BUFFER	QT_QUICK_CONTROLS_STYLE
QML_LEAK_CHECK	QSG_OPENGL_DEBUG	QV4_CRASH_ON
QML_NO_TOUCH	QSG_PREFER_FULLSIZE	_STACKOVERFLOW
_COMPRESSION	_GLYPHCACHE_TEXTURES	QV4_FORCE_INTERPRETER
QML_PARTICLES_DEBUG	QSG_RENDERER_BATCH	QV4_MM_AGGRESSIVE_GC
QML_SHOW_UNIT_STATS	_NODE_THRESHOLD	QV4_PROFILE_WRITE
QML_USE_GLYPHCACHE	QSG_RENDERER_BATCH	_PERF_MAP
_WORKAROUND	_VERTEX_THRESHOLD	QV4_SHOW_ASM
QML_VISUAL_TOUCH	QSG_RENDERER_DEBUG	QV4_SHOW_BYTECODE
_DEBUGGING	QSG_RENDERER_SRB	QV4_SHOW_ESCAPING_VARS