
Advanced Programming with QML

Based on Qt 5.9, created on February 11, 2019

The logo for KDAB, featuring a stylized white lightning bolt icon to the left of the text 'KDAB' in a white, sans-serif font, all set against a blue rectangular background with a white diagonal cutout at the bottom left corner.

KDAB

The Qt, OpenGL and C++ Experts

Fundamentals of Qt

- The Story of Qt
- "Hello World" with QtQuick
- Important Application Classes
- Introducing Qt Creator
- Practical Tips for Developers

Under the Hood - Introduction to Qt

- Objects in Qt
 - Common Features of Qt's Object Model
 - Qt Meta Object System
 - Object Communication Using Signals & Slots
 - Defining Invokable Methods
- Variants and Properties
 - Variants
 - Properties

Integrating QML with C++

- Exporting Data and Functions to QML
 - Exporting Values to QML
 - Exporting Qt Objects to QML
- Creating New QML Elements
 - Creating Non-GUI Elements
 - Creating GUI Elements
- Advanced Custom Property Types
 - Grouped Properties
 - Collections of Custom Types
 - Attached Properties
- Tips and Tricks

Advanced Qt/QML

- Advanced QML and C++ Integration
 - Advanced Component Creation
 - QML C++ Singletons
 - QJSValue
 - qmlRegisterType
- Further Qml and OpenGL Integration
 - OpenGL underlays and overlays
 - Controlling the Rendering
- The (basic) OpenGL pipeline
- Advanced QML Performance
 - Advanced QML SceneGraph
 - Texture Compression
- Advanced Animations
 - Animations
 - Animators

Supplemental Topics

QML Topics

- States and Transitions
- Declarative State Machines
- In-depth Model/View
- Painting and Effects
- JavaScript in QML
- Modules
- Plug-ins
- WebEngine
- WebKit
- Drag and Drop
- Layouts
- QtQuick Controls
- QtQuick Controls 2

Qt Core Extras

- String Handling
- Container Classes
- Advanced Container Classes
- File I/O
- Memory mapped files
- Smart Pointers in Qt

Supplemental Topics

Modern C++ Quick Tour

- Introduction to Modern C++
- Explicit Virtual Overrides
- Uniform Initialization
- Constructors
- Type Inference
- Range-Based for Loop
- Lambdas
- Functional Programming

Multithreading

- Concepts
- Synchronization Primitives
- Foundation
- QtConcurrent
- Atomic Operations
- Relation to Model/View

Supplemental Topics

Model/View

- Concepts
- Models
- ObjectModel

XML, JSON and SQL

- Basic XML APIs
- XPath, XQuery and XSLT
- XML Schema
- JSON
- SQL Database API

Supplemental Topics

Application Infrastructure

- The Event System
- Printing
- Internationalization
- Plug-ins
- State Machine Framework
- Resources
- Settings
- Platform, device, locale or resolution specific files
- Multimedia with Phonon

Development and Testing

- Visual Studio Integration
- Deployment
- Development Tools for Linux
- QMake
- Some Thoughts About Portability
- Qt Debugging Aids
- QTestLib
- Testing with Squish
- Introduction to Git
- Introduction to CMake

Supplemental Topics

Qt 3D Quick Tour

- Overview of Qt 3D
- Drawing with Qt 3D
- Input Handling with Qt 3D
- Integrations and Helpers

Graphics and Styling

- Graphics View
- Graphics View II
- QImage
- Custom Image Formats
- OpenGL in Qt
- 2D transformations

Supplemental Topics

Interprocess Communication

- Network Programming
- QtDBus
- QtDBus II
- QProcess
- Shared Memory with Qt

Qt Widgets

- QtWidgets
- Main Windows
- WebEngineWidgets
- WebKit (C++)
- Application Scripting

Supplemental Topics

Qt for Embedded Linux

- Wayland Compositor
- QPA

Qt for Android

- Setup
- Extending Using JNI
- Qt on Android Tips and Tricks