

Programming with Qt for Desktops

This is a 5-day, in-depth introduction to **Qt programming**, primarily focusing on using Qt Widgets and the associated development tools (Qt Designer, Qt Creator and friends). Students will experience the challenges of cross-platform development with exercises that involve porting applications from Windows to MacOS (or vice versa).

Course Outline

Qt Core and Widgets

Qt Fundamentals

- The Story of Qt
- Developing a Hello World Application
- Hello World Using Qt Creator
- Practical Tips for Developers

Objects and Core Types

Core Classes

- String Handling
- Container Classes
- File Handling

Objects

- Qt's Object Model
- Variants
- Properties

Object Communication

- Signals & Slots
- Event Handling

Widgets & Designer

Widgets

- Designer Introduction
- Common Widgets
- Layout Management
- Guidelines for Custom Widgets

Dialogs

- Dialogs
- Common Dialogs
- Designer Forms and Code Integration

Applications and Painting

Application Creation

- Main Windows
- Designer: Main Windows, Menus, and Actions
- Settings
- The System Clipboard
- Drag and Drop
- Resources
- Translation for Developers
- Deploying Qt Applications

Painting and Styling

- Painting on Widgets
- Color Handling
- Painting Operations
- Style Sheets

Models and Views

Model/View

- Model/View Concept
- Showing Simple Data
- Proxy Models
- Custom Models

Model/View II

- Delegates
- Editing Item Data
- Data Widget Mapper
- Drag and Drop
- Custom Tree Models

Course Availability:

On-site, Open Enrollment

Subject: Qt

Duration: 5 days

Course Prerequisites:

- Working knowledge of C++ programming
- Basic knowledge of GUI programming
- Previous Qt experience is not required

Course Learning Objectives:

- A working knowledge of the capabilities and limitations of Qt
- Experience in programming with Qt
- Course slides and sample programs

Graphics View

Graphics View

- Using GraphicsView Classes
- Coordinate Systems and Transformations
- Creating Custom Items

Graphics View 2

- Widgets in a Scene
- Drag and Drop
- Effects
- Performance Tuning

Other Topics

Animation

- Starting Animation
- Animation Groups
- States and Animations
- Events and Transitions

Qt Additional Models

MultiThreaded Programming and Multimedia in Qt

Multithreaded Programming

- Qt Multithreading
- Threading Primitives
- QtConcurrent

Multimedia Programming

- Qt Multimedia

Inter-Process Communication

- QProcess
- Shared Memory with Qt
- Network Programming
- QNetworkAccessManager Request/Reply
- Bearer Management API
- TCP/UDP Sockets
- SSL Sockets
- DNS and Proxies
- QtDBus - Qt Bindings to D-Bus
- QtDBus - Advanced Topics

Other Topics

Extending Qt with Plugins

- Qt Plugins
- Plugin Example: Custom Image Formats

Data Processing

- Basic XML APIs
- SQL Database API
- SQL Models

XML Patterns

- XPath, XQuery, and XSLT
- QtXmlPatterns
- XML Schema