

## The Standard Template Library

- Fundamentals: The namespace std – Header files – Error and exception handling – Allocators
- Utilities: Pairs – make\_pair() function – Class auto\_ptr – Auxillary functions – Supplementary comparison functions
- The STL components – Containers – Iterators – Algorithms – Iterator adaptors – Manipulating algorithms – User-defined generic functions – Functions as algorithm arguments – Function object – Container elements
- Sequential containers – array – forward list – list – vector – deque – stack & queue adaptors – string (all operations of the above types)
- Associative containers – map – multimap – set – multiset (all operations)
- Iterators – forward read-write – forward const – reverse read-write – reverse const – back inserter – front inserter iterators
- Generic algorithms: Algorithms header files – non-modifying algorithms – Modifying algorithms – Removing algorithms – Mutating algorithms – Sorting algorithms – Sorting range algorithms – Numeric algorithms
- Streams: In-depth coverage of iostream, fstream and stringstream
- Allocators: Using allocators as application programmers – Using allocators as library programmers – the default allocator – user-defined allocator – allocator in detail

## Threads:

- Multithreading and concurrency, POSIX threads, Windows threads
- Managing threads.
- Sharing data between threads
- Synchronizing concurrent operations
- The C++ memory model and operations on atomic types
- Designing lock-based concurrent data structures
- Designing lock-free concurrent data structures
- Designing concurrent code
- Advanced thread management

## The Qt Framework:

### Fundamentals

- Hello, Qt World
- Making connections: signals and slots
- Laying out widgets

### Creating Dialogs

- Subclassing QDialog
- Signals and slots in-depth
- Rapid dialogue design
- Shape-changing dialogues
- Dynamic dialogs
- Built-in widgets and dialog classes

## Creating main windows:

- Subclassing QMainWindow
- Creating menus and toolbars
- Setting up a status bar
- Implementing the File menu
- Using dialogs
- Storing settings
- Multiple documents
- Splash screens

## Creating the custom widgets

- Customizing Qt widgets
- Subclassing QWidget

## Layout management

- Laying out widgets on form
- Stacked layouts
- Splitters
- Scrolling areas
- Dock and widget tool bars
- MDI – multiple document interface

## Event processing

- Reimplement event handlers
- Installing event filters