Cross-Platform Utilities (cxutils) Library 2.0

User Documentation



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# Introduction

## Cross-Platform Utilities Library (CxUtils)

CxUtils is a multi-platform C++ library containing many useful functions and classes for rapid development of applications. It contains tools for threads, network communication, joysticks, serial communication, shared memory, timers, and basic math operations (matrices, quaternion rotations, coordinate transformations). Using this library it should be a simple task to create a C++ application that can easily be ported between Windows, Linux, and other platforms.

## Naming Convestions and License

The CxUtils Library uses naming conventions defined by the ACTIVE Laboratory. The CxUtils library is all within the CxUtils namespace. CxUtils is released under the BSD License.

## CxUtils Library Directory Structure

* src – Contains all files for library
  + cxutils – Main folder for cxutils library header files
    - math – Subdirectory for math related header files
    - networking – Subdirectory for networking related header files
    - ipc – Shared/Mapped memory header files
    - images – Subdirectory for image related header files
      * jpg
      * png
* lib – Contains all compiled CxUtils library files produced
* bin – Contains all compiled CxUtils executable files produced
* docs – Documentation
* build - Contains folders for compilation on different platforms
  + cmake - Contains CMake project files
* ext – Contains any external libraries needed to build CxUtils

# Installation

This section explains how to install the CxUtils library on different platforms.

## Library Dependencies

In Windows using Visual Studio, you will not need to install any additional dependencies if you are using a full version (not express edition). For details on using Express Editions of VS, see the Visual Studio section below.

The following is the list of all external dependencies used by CxUtils in \*NIX:

* libX11
* libXTst
* libpthread
* libpng
* libz
* ljpeg-6b – Modified build of libjpeg provided with CxUtils in the cxutils\ext\libjpeg-6b\linux folder and is compiled automatically.

You can install these dependencies in Ubuntu with the following line in the terminal:

sudo apt-get install libpng-dev libX11-dev libxtst-dev

## CMake

The preferred method for building and installing CxUtils is to use CMake, as it will allow you to support multiple platforms and IDE's not already provided with the download. In \*NIX using CMake, from a command line navigate to the cxutils/version/build/cmake folder and type the following to build and install:

cmake .

make

sudo make install

Once installed you will need to update your ld.so.conf file to find the .so file at runtime. Add /usr/local/lib/active (or whatever install path you may have set) to your ld.so.conf file (in Ubuntu this is located at /etc/ld.so.conf). Make sure you use sudo to edit. When you finish this step, run:

sudo ldconfig

To update your system settings.

## Visual Studio

In Windows you can use the CMAKE build scripts to create Visual Studio projects that will compile out of the box.

# Examples

For additional information on what the Library offers or how the interfaces are defined, please refer to the HTML documentation provided in the docs directory of the CxUtils download, or from the online site (<http://active-ist.sourceforge.net>). There are plenty of example applications and source files provided with the library under <Install Path>/src/examples/cxutils.