

Tour d'horizon de CMake

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Toulouse 26 janvier 2008

Qu'est ce qu'est « CMake » ?

C'est un logiciel qui est:

- > développé par Kitware (<http://www.cmake.org>)
- > Opensource
- > Multiplateforme (*Unix*/Mac/Windows)
- > un système de macros.

Utilité:

- > Un wrapper à la génération de Makefile.
- > Remplace automake/autoconf sous Unix.
- > génère les fichiers spécifiques aux environnements de compilation (Xcode/MSVC++/kdevelop3 etc.)

Les bases de CMake

Arborescence:

-> CMakeLists.txt

-> cmake/module/Find<name>.cmake

-> ConfigureCheck.cmake

-> config-<programme>.h.cmake

Les bases de CMake

Fonctionne sous forme de « Targets »

CMakeLists.txt

```
set(drkonqi_SRCS  
  main.cpp  
  debugger.cpp  
  crashconf.cpp  
  crashadaptor.cpp  
  drbugreport.cpp  
  backtrace.cpp  
  toplevel.cpp )
```

```
kde4_add_executable(drkonqi ${drkonqi_SRCS})
```

```
target_link_libraries(drkonqi ${KDE4_KIO_LIBS})
```

```
install(TARGETS drkonqi DESTINATION ${LIBEXEC_INSTALL_DIR})
```

Les bases de CMake

Macro standards dans CmakeLists.txt:

-> add_subdirectory(<répertoire>)

-> find_package(<module>)

-> option(<variable> <text>)

-> include (<fichier de macro>)

-> configure_file(config-<programme>.h.cmake <nom fichier généré>)

-> MESSAGE(STATUS <texte à afficher>)

Les bases de CMake

Module Find<name>.cmake

Variables standards:

- > <name>_FOUND
- > <name>_LIBRARIES
- > <name>_INCLUDE_DIRS

```
if (GMP_INCLUDE_DIR AND GMP_LIBRARIES)
  # Already in cache, be silent
  set(GMP_FIND_QUIETLY TRUE)
endif (GMP_INCLUDE_DIR AND GMP_LIBRARIES)
find_path(GMP_INCLUDE_DIR NAMES gmp.h )
find_library(GMP_LIBRARIES NAMES gmp )
if(GMP_INCLUDE_DIR AND GMP_LIBRARIES)
  set(GMP_FOUND 1)
endif(GMP_INCLUDE_DIR AND GMP_LIBRARIES)
mark_as_advanced(GMP_INCLUDE_DIR GMP_LIBRARIES)
```

Utilisation d'un module:

- > Ajouter: find_package(<nom du module>)
exemple: find_package(Eigen)

Les bases de CMake

ConfigureChecks.cmake

```
Image::Image(){
    qDebug()<<"Le système supporte les images de type :"  
        <<"png,"  
        <<"tiff";  
}
```

Ajout dans CMakeLists.txt :

-> Find_package(PNG)

-> if(PNG_FOUND)

set(HAVE_PNG 1)

endif(PNG_FOUND)

-> configure_file(config-programme.h.cmake \$

{CMAKE_CURRENT_BINARY_DIR}/config-programme.h)

Les bases de CMake

ConfigureChecks.cmake

Fichier config-programme.h.cmake:

```
#cmakedefine HAVE_PNG 1
```

il deviendra lors de la génération si PNG trouvé:

```
#define HAVE_PNG 1
```

sinon

```
// #define HAVE_PNG 1
```

```
#include <config-programme.h>
```

```
Image::Image(){  
    qDebug()<<"Le système supporte les images:"  
#ifdef HAVE_PNG  
    <<"png"  
#endif  
    <<"tiff";  
}
```


Les bases de CMake

ConfigureChecks.cmake

Recherche de fichier:

```
check_include_files(sys/stat.h HAVE_SYS_STAT_H)
```

Recherche de prototype de fonction:

```
check_prototype_exists(mkstemp "stdlib.h;unistd.h" HAVE_MKSTEMPS_PROTO)
```

Compilation:

```
check_cxx_source_compiles("
#include <sys/types.h>
#include <sys/statvfs.h>
int main(){
    struct statvfs *mntbufp;
    int flags;
    return getmntinfo(&mntbufp, flags);
}
" GETMNTINFO_USES_STATVFS )
```

Les bases de CMake

Comment utiliser CMake ?

Configuration en ligne de commande:

lancer « cmake . » en ligne de commande :)

Passage d'options:

cmake -D<option> .

Exemple: cmake -DCMAKE_INSTALL_PREFIX=/opt/kde4 .

Les bases de CMake

CCMake ? (en ncurses)

```
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ATTR_LIBS                /lib/libattr.so
BUILD_TESTING            ON
BUILD_nepomuk            ON
CMAKE_BACKWARDS_COMPATIBILITY 2.4
CMAKE_BUILD_TYPE
CMAKE_INSTALL_PREFIX     /opt/kde4
DART_TESTING_TIMEOUT     1500
EXECUTABLE_OUTPUT_PATH
GETTEXT_MSGFMT_EXECUTABLE /usr/bin/msgfmt
GETTEXT_MSGMERGE_EXECUTABLE /usr/bin/msgmerge
HAVE_STRIGI_VERSION      ON
KDE4_BUILD_TESTS        ON
KDE4_DISABLE_MULTIMEDIA OFF
KDE4_ENABLE_FINAL       OFF
KDE4_ENABLE_FPIE        OFF
KDE4_ENABLE_HTMLHANDBOOK OFF
KDE4_TEST_OUTPUT        plaintext
KDE4_USE_ALWAYS_FULL_RPATH OFF
KDE_DISTRIBUTION_TEXT   compiled sources
KHTML_BUILD_TESTREGRESSION OFF
KJS_FORCE_DISABLE_PCRE  OFF
KRB5_CONFIG              /usr/kerberos/bin/krb5-config
LIBEXSLT_LIBRARIES       /usr/lib/libexslt.so
LIBINTL_LIB_FOUND        ON
LIBRARY_OUTPUT_PATH
LIB_SUFFIX
QT_QMAKE_EXECUTABLE     /home/laurent/kde/kde4/qt-copy/bin/qmake
SOLID_PREDICATE_PARSER_UPDATE OFF
UPDATE_MIME_DATABASE_EXECUTABL /usr/bin/update-mime-database
WITH_ACL                 ON

ATTR_LIBS: Path to a library.
Press [enter] to edit option
Press [c] to configure
Press [h] for help      Press [q] to quit without generating
Press [t] to toggle advanced mode (Currently Off)

CMake Version 2.4 - patch 7
```

CMake dans KDE

Automake/Autoconf
-> Makefile.am
-> configure.in.*
-> répertoire admin

am2cmake
+
generate_findpackage_file

CMake:
-> CMakeLists.txt
-> ConfigureCheck.cmake

Questions ?