
Build a Fortran project through CMake

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In recent days I made a hard work for a more flexible Fortran project build. Using this template you will made a possible build Fortran project in Linux environment and made a data analysis program at the same time. The project in this PDF file append. 📄

Introduction

In recently work we have to compute many version Fortran program. These programs all developed in VS2010. When transform source code to Linux server and compute target data. We got a trouble that analysis dependence of code and library is very hard. So we need make a lighter faster method to build the project.

In last BLOG we have make a method use in C/C++. Now we even choose this tool to build Fortran. To make an easily faster auto dependence invokes the compiler and also makes a huge data analysis tool at the same time. In this project we make a multiple target project (two executable and one library). The module core is the target build by Fortran program. And the other executable is data analysis program. The library writing for diagram output dependence on CERN ROOT.

1 How to use this template project

At very first you need get the apped of the template project. Then UNTAR the package. Then you get the template project. You may add you projecto files the the path **Cmake-Fortran/src/core** And then you need to change the **CMakeLists.txt** file in compare to the core directory. Then I will try to describe the CMakeLists.txt change step by step

- Set the project name in **project(your project name)**
- Set compiler you need compiler the program. MPIIFORT is default.
**set (CMAKE_Fortran_COMPILER mpi-
ifort)**
- Optimaze the compiler parameter in syntax for release
**set (CMAKE_Fortran_FLAGS_RELEASE
"-O3")**
for debug
**set (CMAKE_Fortran_FLAGS_DEBUG
"-O0 -g")**
- Adject the include directory. in syntax **include_directories(**
We need have a graphics library in dependance by default.
Special explain in this syntax. you need add the

floader line by line. Don't forget there are even have a ")" at the tail of this syntax.

- Add source code file in syntax

set (src

The format is the same as add include floader.

At the capital of the file name you need add a string before it.

\${CMAKE_SOURCE_DIR}/core/

That is mainly you need to de change the CMake-Lists.txt.

2 How to use data analysis module

In this section you need have many C/C++ develop experience. And the you can use CERN ROOT freely. This module have a good feature that you can analysis huge count of data. In floader MakePlot have only one file. Edit this file read data file and get the data array send it to library event. Edit a ROOT script and change it to the CERN module by CINT.

3 build project and import the project to project

In floader script have a build script. Run it and you will configure the project and compile the project. And then open floader **build**

binthen you will see a file name MTF4.exe that is you main target of you fortran project. open your eclipse(you need install CDT) click file → import → choose General/Existing projects into weorkspace →select root directory(**the path is you project built directory**) → finish then you will see a new project in you eclipse **project explorer**