

CMM2 CSUB Generator

Introduction

This Windows application will generate a MMBasic CSub from a C source file (.c). The CSub generated can be either a Join or Merge type. If required, the created CSub can be sent to the CMM2 SD card automatically. In addition, if a MMBasic test stub has been written it can have the newly created CSub appended, sent to the CMM2 SD card and automatically run on the CMM2.

First Use Procedure

1. It is suggested that a shortcut of CSUBGen.exe be placed on the desktop. Note the application has been created using static libraries to avoid errors of missing libraries, this however does make it somewhat larger.
2. Place the linker file *arm-gcc-link.ld* as supplied by Peter Mather in the same *bin* folder as the compiler (*arm-none-eabi-gcc.exe*) and linker (*arm-none-eabi-ld.exe*) , e.g. in *C:\Program Files (x86)\GNU Arm Embedded Toolchain\9 2020-q2-update\bin*.
3. Start CSUBGen.exe. Refer to Fig 1 below for a view of the running application GUI.
4. Set the location of the compiler-linker folder by pressing the COMPILER BUTTON in the COMPILER – LINKER FOLDER SELECTION group box and using the standard Windows folder selection dialog box to navigate to the folder (refer step 2 above for example location). The application will check to ensure *arm-none-eabi-gcc.exe*, *arm-none-eabi-ld.exe* and *arm-gcc-link.ld* reside in the selected folder. This folder will be remembered by the application so only needs to be set the once.
5. The compiler and linker commands are setup as per Peter Mather's recommendation, however there is the option to change these by pressing the CHANGE OPTION in the COMPILER-LINKER OPTIONS group box. This would only be necessary if future needs made this a requirement. The option edit dialog box has the ability to revert back to the default setting if you accidentally change these.

CSub Creation Procedure

1. Select the SOURCE FILE button and select the C source file (.c) that is to be compiled. (note the file path will be remembered by the application so it only needs updating if the C file changes).
2. Create the CSub by selecting either MERGE CSUB or JOIN CSUB. This will undertake the following steps:
 - a. If MERGE is selected a request for the name for the CSub is made.
 - b. Create a batch file in the parent folder of the bin folder selected in step 4 above in the First Use Procedure.
 - c. Start a Console window and run the batch file to create an Executable Link Format File (ELF).
 - d. If the compile and link is successful then "COMPILED COMPLETED" and "LINKED COMPLETED" will be displayed in the Console else "ERROR COMPILING" or "ERROR LINKING" will be displayed. The

Console window will remain open so you can see any errors or warnings generated by the compile and link process. To close the Console window press the ENTER button.

- e. For completeness the ELF file is transferred to the same folder as the C file at the end of this process.
3. At this stage the CSub text will be on the Clipboard and in a file named xxxx_CSub.bas in the same folder as the C file, where xxx is the name of the C file that was compiled.
4. Note to make it easier for the user the C file functions are evaluated to see what types of variables are parsed and a call format is added as a comment for each CSub call, e.g. ' Call Format for CSUB is " TESTONE INTEGER, INTEGER, FLOAT "

CSub Sending to CMM2

1. Ensure the CMM2 USB B cable is connected to a USB connection in your PC. It assumed the CMM2 is set to OPTION CONSOLE BOTH (default) to enable the console link.
2. Use Windows Device Manager (Ports devices) to ascertain what COM port number the CMM2 USB Serial Device is. The current CSUBGen application COM port settings are displayed next to the COM SETUP button. If the COM port number or CMM2 baud rate is different, then update these by pressing the COM SETUP button and selecting the correct port and baud rate.
3. At this stage the xxxx_CSub.bas can be transferred to the CMM2 SD card by pressing the SEND DATA button.
4. If a test evaluation MMBasic file has been written to test the CSub then by checking the ADD TEST CODE check box this MMBasic code will be sent to the CMM2 SD card followed by the CSub code so that the transferred file xxxx_CSub.bas on the CMM2 SD card will be a complete MMBasic test program. Note that MMBasic Test File must first be selected using the SELECT FILE button in the TEST FILE group box. This file is also remembered by the application.
5. If the RUN ON LOAD check box is checked then the xxxx_CSub.bas file on the CMM2 will run automatically. Note the RUN ON LOAD button is disabled unless the ADD TEST CODE is selected.

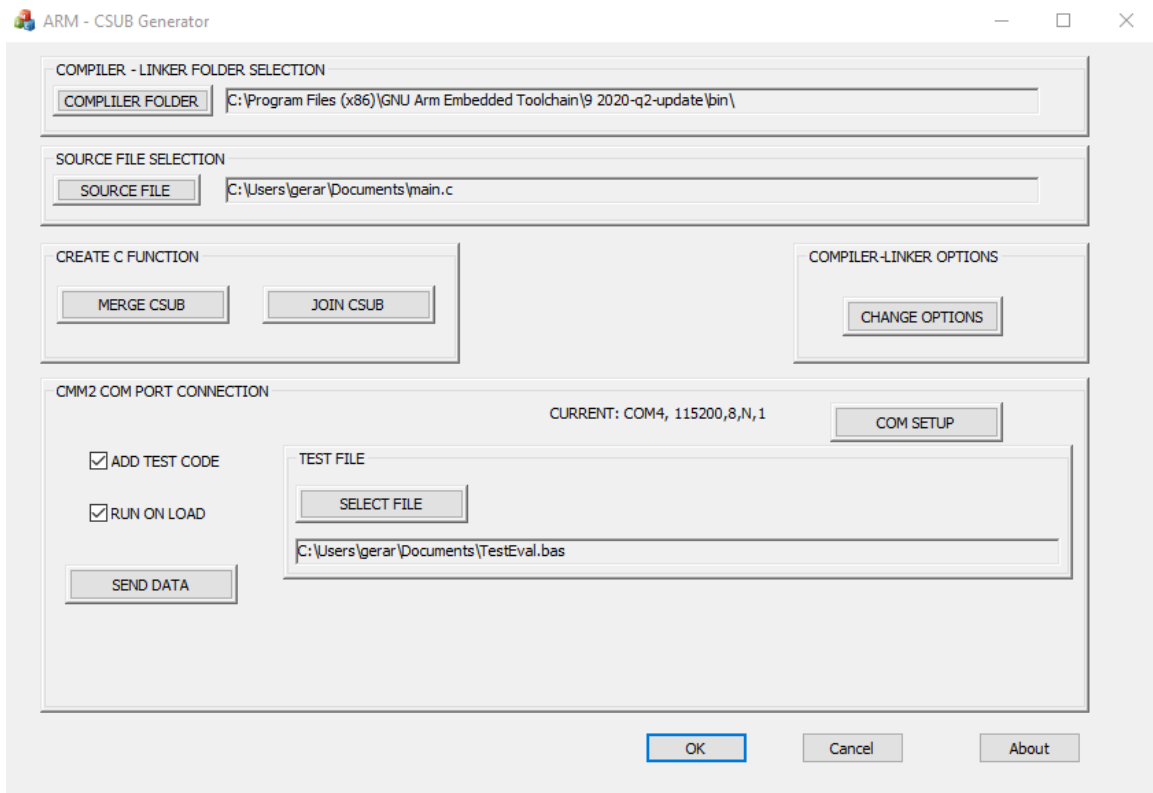


Fig 1.