

CMM2 & MMPLUS CSUB Generator (ConCFuncSubGen.exe)

Introduction

ConCFuncSubGen.exe is a Win32 console application that will generate a MMBasic CSub or CFunction from an Executable and Linkable Format file (.elf) for the MMPlus (PIC32MX470) or CMM2 ELF (STM32H743IIT6) types (note only CSUB is supported for CMM2). The CSub or CFunction generated can be either a JOIN or MERGE type. A MERGE type is where the entry point is through the main() function whilst in a JOIN type the entry is through the individual C functions. If required the calling format for the CSub/CFunction can be added as a comment if the C source file is in the same location as the ELF file, this can be useful if doing a JOIN with lots of functions.

Procedure

1. Drop an ELF file onto the ConCFuncSubGen.exe icon or start ConCFuncSubGen.exe and drop the ELF file onto its screen when requested.
2. When requested enter 'M' for a MERGE type or J for a JOIN type. All data entry is NOT case sensitive. (Note enter means type the letter followed by the ENTER key).
3. If 'M' is entered for a MERGE type then the program will request you enter a name for the CSub/CFunction (e.g *MyCSub*). Note that a JOIN type cannot have const static data in the C source, so if detected during processing the ELF file the program will display an error on the screen and then exit.
4. The program will then display what type of ELF file that was dropped, i.e. CMM2 or MMPlus.
5. If a MMPlus file type was detected the user will be further requested to enter 'F' for generating a CFunction or enter 'S' for generating a CSub. A CMM2 file type will be forced to a CSub regardless.
6. The user will then be asked if the calling format is to be added as a comment for the entry point(s). Enter Y or N. Refer to Adding Calling Format Comment below for more details on this.
7. At this stage the CSub/CFunction will reside on the clipboard and as a file in the same folder as the ELF file with the same Title as the ELF file but with "_CSUB.bas" appended to its Title. If an error occurs during the generation the type of error will be displayed on the screen.
8. Press any key to exit the console application.

Adding Calling Format Comments

1. Note the comment will only be generated if the C source is in the same folder as the ELF file as the program needs to access the C source. This commenting of the calling format is not meant to be a definitive capture of all C calling conventions and is there to only capture common formats, and only if useful to the user.
2. For example, if a MERGE is selected with a name of *MyCSub* and the entry point is,

```
void main( long long* nIndex, char[] instring, MMFLOAT* fOne, double fArr[]),
```

A comment will be added in the CSub/CFunction of,
Call Format for CSUB is "MyCSub INTEGER ,STRING, FLOAT, FLOAT()"

3. Note if a long long or double array is parsed as a pointer, e.g. double* fArr then it will not have the () added as its ambiguous as it could be referring to an array or single variable, so for parsing long long and double arrays and requiring the calling format use [] instead of *. Also if a string is parsed as *char c []* it will be commented as a single STRING, however if it was parsed as *char * c[]* indicating an array of strings it will be commented as STRING(). .
4. Note for most small C files resolving the calling convention takes minimal time, however for larger C files this can take some time so caution should be exercised. For example, a very large function with a 220k C file may take 25 seconds to generate the calling convention, depending on the host CPU speed.
5. If no calling convention is requested then generating a CSub/CFunction takes minimal time, for example even a very large 100 kB function will take less than a second.