Generating "FAST_SFunc.mexw64"
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This document is prepared keeping OpenFAST-2.2.0, may be valid for other versions of OpenFAST also. Unlike in the FASTV8, the OpenFAST -2.2.0 does not have precompiled FAST library and MEX files need to run OpenFAST through MATLAB (Simulink).

Generating "FAST_SFunc.mex64" requires the OpenFAST library files built prior to it. The procedure for the same is given below.

## 1) Generating Compiling OpenFAST for generating OpenFAST compilation

Notice that "E: \OpenFAST\openfast-2.2.0 \build\bin" is empty. Because, files are added here automatically after successful compilation.
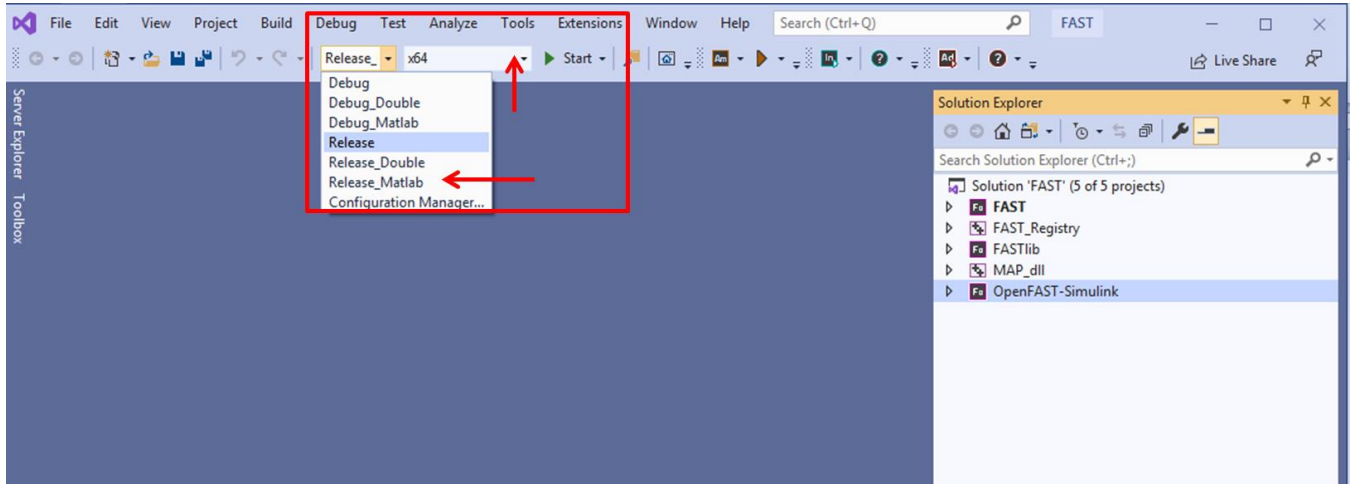
Step01)

Open "FAST.sln" file located in "E:\OpenFAST\openfast-2.2.0\vs-build\FAST".

Note that "FAST.sln" is a Visual Studio solution file, so you need Visual studio installed on your machine. I have used Visual Studio 2019 with Intel Parallel Studio_XE2019.

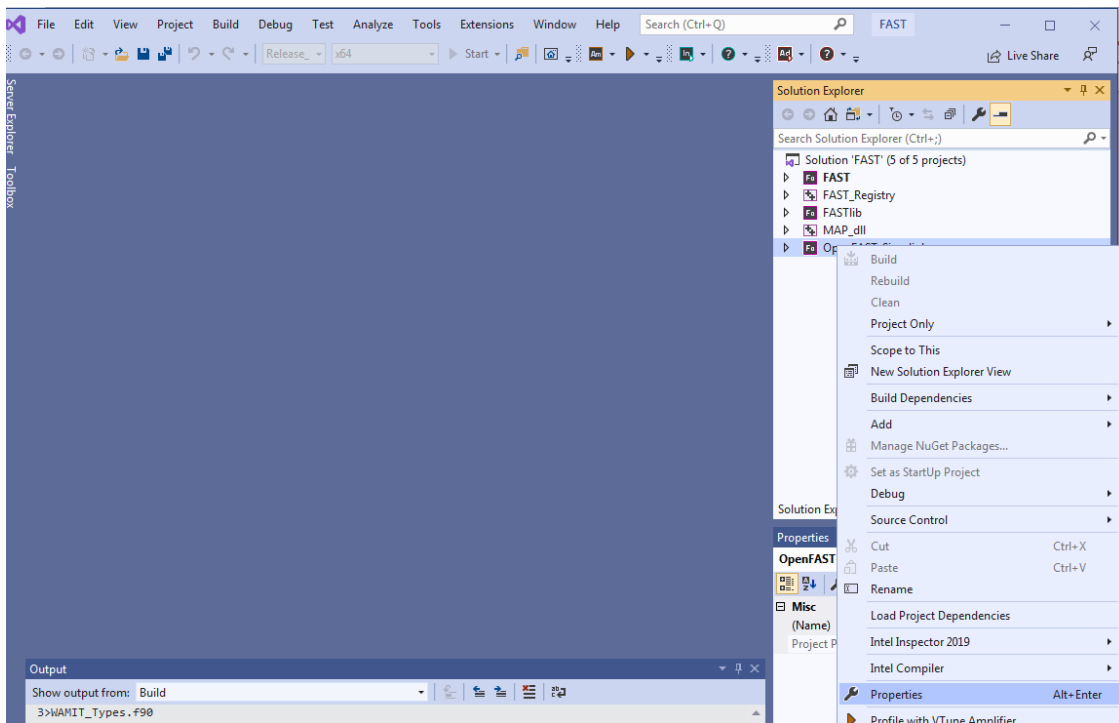In the "Visual studio", you should see a screen like below.
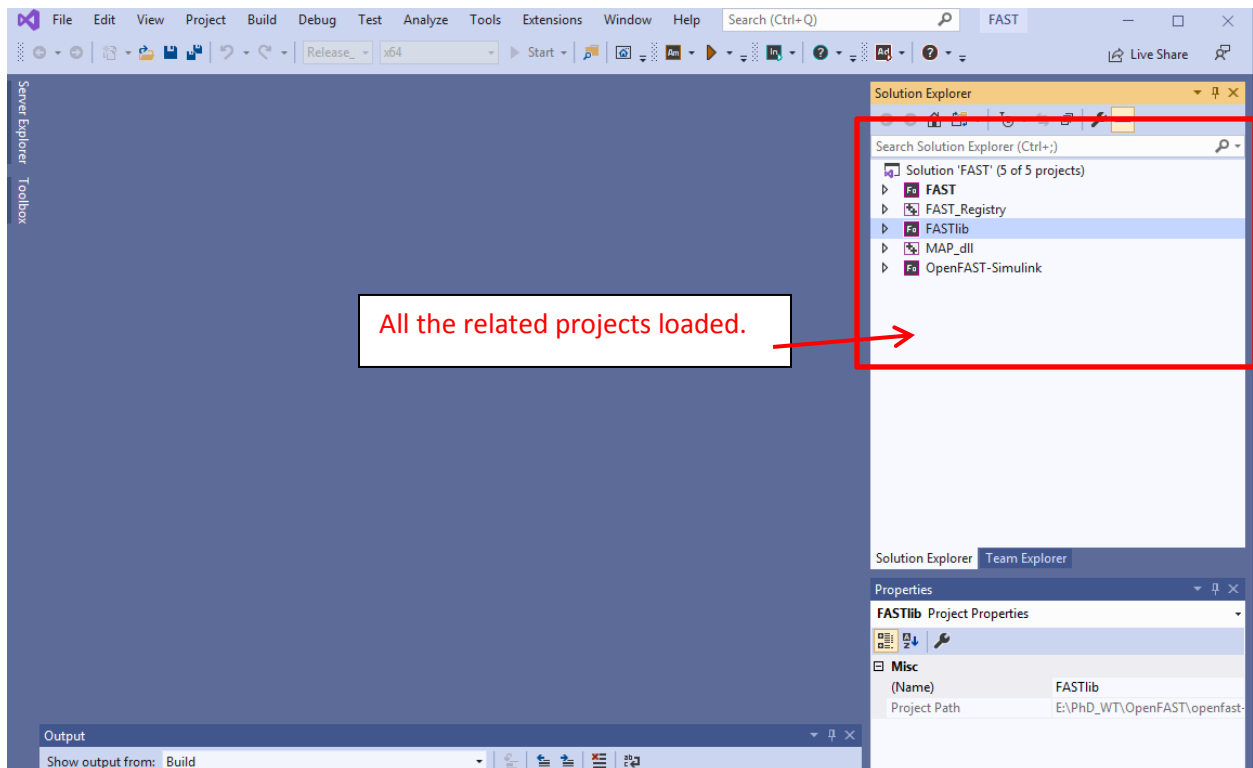
Step02) Chose "Release_MATLAB" from the drop-down menu and "x64" as shown below.
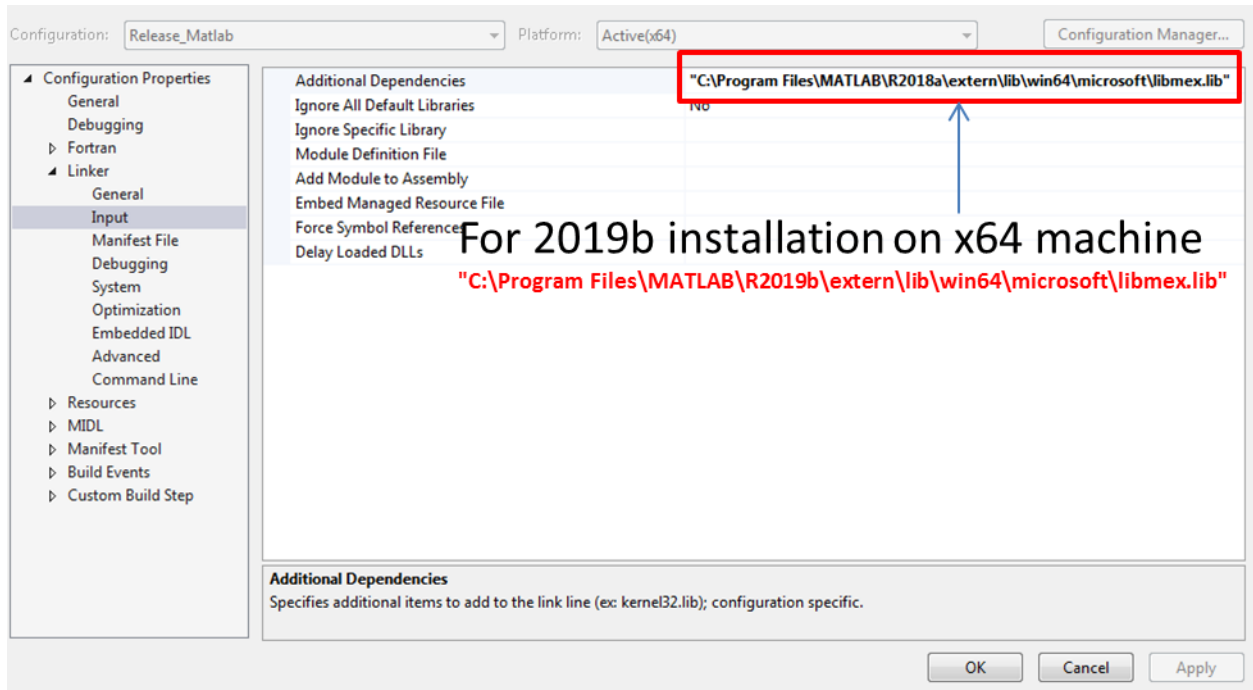

Step03)

Right click on "OpenFAST-Simulink" and select "properties" as shown below.
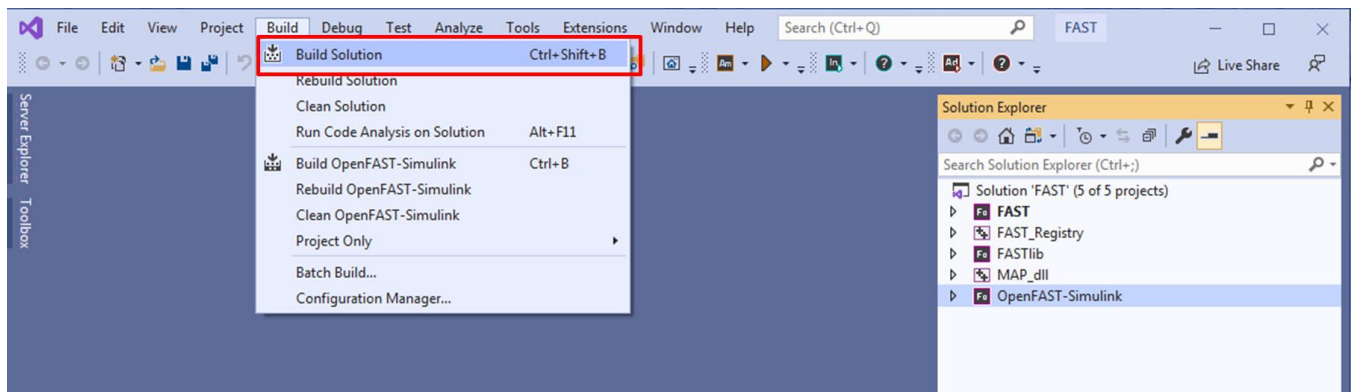
Step04)

A new dialogue box as shown in the below will popup.

Configuration Properties→ Linker→Input→ Additional Dependencies→ Choose the right path for the libmex.lib file based on your matlab installation

Step05)

Build→ Build Solution

Step06)

As already mentioned in the step01 new files are created in "E: \OpenFAST\openfast-2.2.0_Test\build\bin"

Registry.exe	21-Mar-20 4:35 PM	Application	243 KB
MAP_x64.dll	21-Mar-20 4:35 PM	Application extens...	377 KB
OpenFAST-Simulink_x64.dll	21-Mar-20 4:53 PM	Application extens...	51,488 KB
MAP_x64.exp	21-Mar-20 4:35 PM	Exports Library File	7 KB
OpenFAST-Simulink_x64.exp	21-Mar-20 4:53 PM	Exports Library File	2 KB
MAP_x64.iobj	21-Mar-20 4:35 PM	IOBJ File	1,036 KB
Registry.iobj	21-Mar-20 4:35 PM	IOBJ File	558 KB
MAP_x64.ipdb	21-Mar-20 4:35 PM	IPDB File	242 KB
Registry.ipdb	21-Mar-20 4:35 PM	IPDB File	128 KB
FASTlib_x64_Matlab.lib	21-Mar-20 4:47 PM	Object File Library	31,600 KB
MAP_x64.lib	21-Mar-20 4:35 PM	Object File Library	12 KB
OpenFAST-Simulink_x64.lib	21-Mar-20 4:53 PM	Object File Library	4 KB
MAP_x64.pdb	21-Mar-20 4:35 PM	Program Debug D...	4,076 KB
Registry.pdb	21-Mar-20 4:35 PM	Program Debug D...	4,668 KB

2) To create "FAST_SFunc.mexw64"

NOTE: OpenFAST should be compiled before this step using the procedure illustrated above.

Open the matlab file "E:\OpenFAST\openfast-2.2.0 \glue-codes\simulink\src\create_FAST_SFunc.m"

Make sure the variables "libDir" and "includeDir" are set correct. The "libDir" is the path where "FASTlib_x64_Matlab.lib" and "MAP_x64.lib" are present.

```
libDir = 'E:\OpenFAST\openfast-2.2.0\build\bin';

includeDir = 'E:\OpenFAST\openfast-2.2.0\modules\openfast-library\src';
```

Now run the "creat_FAST_SFunc.m". Upon successful run "FAST_SFunc.mexw64" is created in the location "libDir" as shown below.

Registry.exe	21-Mar-20 3:56 PM	Application	243 KB
MAP_x64.dll	21-Mar-20 3:56 PM	Application extension	377 KB
OpenFAST-Simulink_x64.dll	21-Mar-20 3:50 PM	Application extension	51,488 KB
MAP_x64.exp	21-Mar-20 3:56 PM	Exports Library File	7 KB
OpenFAST-Simulink_x64.exp	21-Mar-20 3:50 PM	Exports Library File	2 KB
MAP_x64.iobj	21-Mar-20 3:56 PM	IOBJ File	1,036 KB
Registry.iobj	21-Mar-20 3:56 PM	IOBJ File	558 KB
MAP_x64.ipdb	21-Mar-20 3:56 PM	IPDB File	242 KB
Registry.ipdb	21-Mar-20 3:56 PM	IPDB File	128 KB
FAST_SFunc.mexw64	21-Mar-20 4:12 PM	MEXW64 File	172 KB
FASTlib_x64_Matlab.lib	21-Mar-20 4:09 PM	Object File Library	31,600 KB
MAP_x64.lib	21-Mar-20 3:56 PM	Object File Library	12 KB
OpenFAST-Simulink_x64.lib	21-Mar-20 3:50 PM	Object File Library	4 KB
MAP_x64.pdb	21-Mar-20 3:56 PM	Program Debug Database	4,076 KB
Registry.pdb	21-Mar-20 3:56 PM	Program Debug Database	4,668 KB

3) To run OpenFAST through Simulink

    The procedure is same as FASTV8 except, copy the files "FAST_SFunc.mexw64", "MAP_x64.dll" and "OpenFAST-Simulink_x64.dll" to the folder where .fst file is present.