

# Abaqus Module Configuration

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# System Setup

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## ❑ Software

- ◇ Abaqus 2019 or higher, such as Abaqus 2020 as illustrated in this document
- ◇ Fortran compiler: Intel oneAPI (download for free)
  - Base Toolkit
    - <https://software.intel.com/content/www/us/en/develop/tools/oneapi/base-toolkit.html#gs.z9hjnI>
  - HPC Toolkit (where the Fortran compiler is included)
    - <https://software.intel.com/content/www/us/en/develop/tools/oneapi/hpc-toolkit.html#gs.z9hsqk>
- ◇ C++ compiler: Visual Studio 2019 community (download for free)
  - <https://visualstudio.microsoft.com/downloads/>



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## ❑ Install Intel OneAPI Toolkit

- ◆ Install OneAPI Base Toolkit
- ◆ Then install OneAPI HPC Toolkit and select all recommended installation options.



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## □ Enable ABAQUS subroutine

- ◇ Find abq2020.bat (abq2019.bat for Abaqus 2019) which is normally located at 'C:\SIMULIA\Commands\'
- ◇ Open and edit abq2019.bat file by including the following commands to set path for Fortran compiler and mkl.

```
SET PATH=%PATH%;C:\Program Files  
(x86)\Intel\oneAPI\compiler\latest\windows\bin\intel64;  
call "C:\Program Files (x86)\Intel\oneAPI\compiler\latest\env\vars.bat" -  
arch intel64  
call "C:\Program Files (x86)\Intel\oneAPI\mkl\latest\env\vars.bat" intel64
```



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## ❑ Enable ABAQUS subroutine (continued)

- ◆ Find abaqus\_v6.env file which is typically located at  
‘C:\SIMULIA\EstProducts\2020\win\_b64\SMA\site\’
- ◆ Edit abaqus\_v6.env file by adding the following line to the end of the file

```
Compile_fortran +=['/names:lowercase',]
```

- ◆ Run Abaqus Command and input the following command in the command window to verify the subroutine configuration

```
abaqus verify -user
```



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## ❑ Link DataExchange.dll for communication

- ◆ Adding the data exchange library to ABAQUS library folder
  - Copy the library files into the 'bin' folder under the ABAQUS directory, typically at  
'C:\SIMULIA\EstProducts\2020\win\_b64\code\bin\'
- ◆ Customizing the ABAQUS environment file (win86\_64.env) which is typically located at  
'C:\SIMULIA\EstProducts\2020\win\_b64\SMA\site\'
  - Adding the path of the added library into the ABAQUS environment file 'win86\_64.env' as follows

```
link_sl=['LINK',  
'/nologo', '/NOENTRY', '/INCREMENTAL:NO', '/subsystem:console', '/machine:AMD64',  
'/NODEFAULTLIB:LIBC.LIB', '/NODEFAULTLIB:LIBCMT.LIB',  
'/DEFAULTLIB:OLDNAMES.LIB', '/DEFAULTLIB:LIBIFCOREMD.LIB', '/DEFAULTLIB:LIBIFPORTMD.LIB', '/DEFAULTLIB:LIBMMD.LIB',  
'/DEFAULTLIB:kernel32.lib', '/DEFAULTLIB:user32.lib', '/DEFAULTLIB:advapi32.lib',  
'/FIXED:NO', '/dll',  
#'/debug', # <-- Debugging  
'/def:%E', '/out:%U', '%F', '%A', '%L', '%B',  
'oldnames.lib', 'user32.lib', 'ws2_32.lib', 'netapi32.lib',  
'advapi32.lib', 'msvcrt.lib', 'vcruntime.lib', 'ucrt.lib', 'C:\SIMULIA\EstProducts\2020\win_b64\code\bin\DataExchange0.lib']
```

