Linking Abaqus with Intel FORTRAN Compiler and Visual Studio

The system requirement for Abaqus 6.10 is available on their website http://www.3ds.com/support/certified-hardware/simulia-system-information/abaqus-610/system-requirements-for-abaqus-610-products/

Please check system requirements for your Abaqus version specifically and use the Intel Visual FORTRAN and Visual Studio versions specified in there.

Abaqus requires that you install Intel Visual FORTRAN 10.1 or 11.1 (Not old or recennt version), and either Visual Studio 2008 (also known as Visual Studio 9.0) or Visual Studio 2010 (Visual Studio 10.0). However, keep in mind that Intel Visual FORTRAN 10.1 or 11.1 won't do the automatic integration of visual studio and FORTRAN compiler, so you might have to do it manually, which is cumbersome. I got following errors when I tried Abaqus 6.10 and Intel Visual FORTRAN Visual Studio 2010:

```
LINK : fatal error LNK1181: cannot open input file 'oldnames.lib'
Abaqus Error: Problem during linking - Abaqus/Standard User Subroutines.
  This error may be due to a mismatch in the Abaqus user subroutine
arguments.
  These arguments sometimes change from release to release, so user
subroutines used with a previous release of Abaqus may need to be adjusted.
```

Here is what after lots of trying and tweaking, I finally installed, and I recommend it for you:

- Abaqus 6.10
- Visual Studio 2008
- Intel Visual FORTRAN 11.1 (You can use 11.0 or 10.1 as well if you install studio 2008)

You should keep in mind that when you are installing Visual Studio 2008 Pro, it doesn't automatically install the "C++ X64 Compiler and Tools", and you will need to choose it during installation, otherwise it will give you the following error:

```
"visual Studio 2008 does not have C++ "X64 Compiler and Tools"
```

Choose the "Custom" option for installation then in the custom option check the following box for the installation of X64 Compiler and Tools:

- Langauge Tools
  - Visual C++
    - x64 compiler tools

Once all the installations are done without any error message go to Abaqus command window: **Start Menu>Programs>Abaqus>Abaqus Command window**, then right-click on it and choose **Properties** and go to **Target.** If all the installations have been done correctly, it will show an additional path after `C:\WINDOWS\SysWOW64\cmd.exe /k`, which should be following (this was in my system, check for yours accordingly):
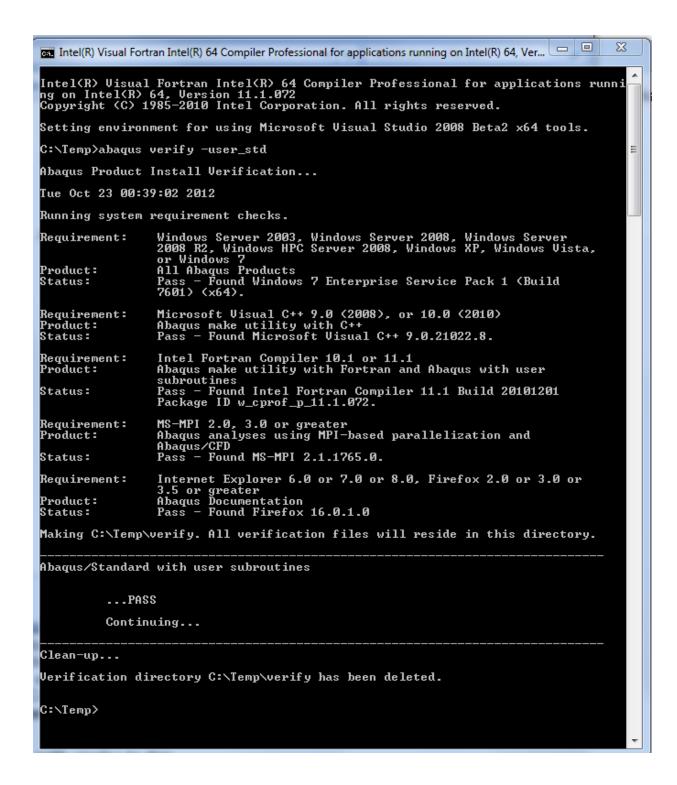
```
"C:\Program Files
(x86)\Intel\Compiler\11.1\072\bin\intel64\ifortvars_intel64.bat"
```

If it's not there, then add this line, with quotes, after `C:\WINDOWS\SysWOW64\cmd.exe /k` and your **Target** should finally be like this:

```
C:\Windows\SysWOW64\cmd.exe /k "C:\Program Files
(x86)\Intel\Compiler\11.1\072\bin\intel64\ifortvars_intel64.bat"
```

Now go to Abaqus command window and type:

```
abaqus verify –user_std
```

and press enter. If your installations satisfy the Abaqus requirements, it will show that it has passed all the test and final window will look something like below:

If you don't get **PASS** as the final result, you will need to check your system's Path variable by going to **My Computer->Properties->Advanced Properties->Environment Variables**, in the "System variables" list locate "Path", and add the following:

C:\Program Files (x86)\Intel\Compiler\11.1\072\lib\intel64

C:\Program Files (x86)\Intel\Compiler\11.1\072\mkl\em64t\bin

C:\Program Files (x86)\Microsoft Visual Studio 9.0\VC\bin\

Remember to put \ and ; appropriately. Above three is what I found in my system's Path variable after the linking process, if it doesn't work even after this for you, trying adding these to the Path:

C:\Program Files (x86)\Intel\Compiler\11.1\072\bin

C:\Program Files (x86)\Intel\Compiler\11.1\072\bin\intel64

Here's what Path in my computer looks like (there are many paths, however, just focus on Intel FORTRAN Compiler and Visual Studio paths):

%IFORT_COMPILER11%lib\Intel64;C:\Program Files (x86)\Intel\Compiler\11.1\072\mkl\em64t\bin;C:\Program Files\MATLAB\R2011b\bin;C:\Program Files\MATLAB\R2011b\bin\win64;C:\MSC.Software\Patran_x64\20102\bin;C:\Program Files\Microsoft HPC Pack 2008\Bin\;C:\Program Files\Tcl\bin;%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\;C:\Program Files (x86)\Common Files\Roxio Shared\DLLShared\;C:\Program Files (x86)\Common Files\Roxio Shared\OEM\DLLShared\;C:\Program Files (x86)\Common Files\Roxio Shared\OEM\DLLShared\;C:\Program Files (x86)\Common Files\Roxio Shared\OEM\12.0\DLLShared\;C:\Program Files (x86)\Roxio\OEM\AudioCore\;C:\Program Files (x86)\QuickTime\QTSystem\;C:\Program Files (x86)\Microsoft SQL Server\100\Tools\Binn\;C:\Program Files\Microsoft SQL Server\100\Tools\Binn\;C:\Program Files\Microsoft SQL Server\100\DTS\Binn\;C:\Program Files\TortoiseSVN\bin;C:\SIMULIA\Abaqus\Commands;C:\Program Files\Dell\DW WLAN Card;C:\Program Files (x86)\Google\Google Apps Migration\; C:\Program Files (x86)\Microsoft Visual Studio 9.0\VC\bin\;C:\Program Files (x86)\Microsoft SQL Server\90\Tools\binn\

What I understood that **%IFORT_COMPILER11%lib\Intel64** is equivalent to C:\Program Files (x86)\Intel\Compiler\11.1\072\lib\intel64. It was added after I installed Visual FORTRAN 11.1 with Visual Studio 2008.

Useful links:

http://software.intel.com/en-us/articles/intel-fortran-compiler-for-windows-required-and-optional-microsoft-development-software/

http://www-h.eng.cam.ac.uk/help/programs/fe/abaqus/faq68/UserSubConfigureInfo.html

http://imechanica.org/node/11715

http://www.imechanica.org/node/11219

http://software.intel.com/en-us/forums/topic/281658

I hope this information would be useful for you. Best of Luck!