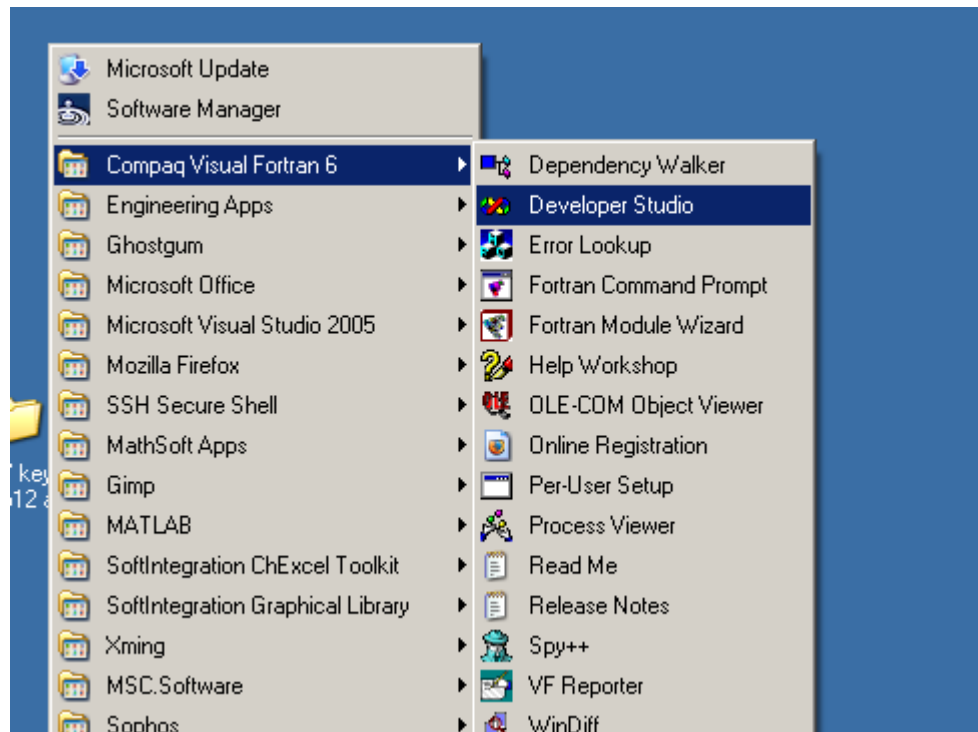


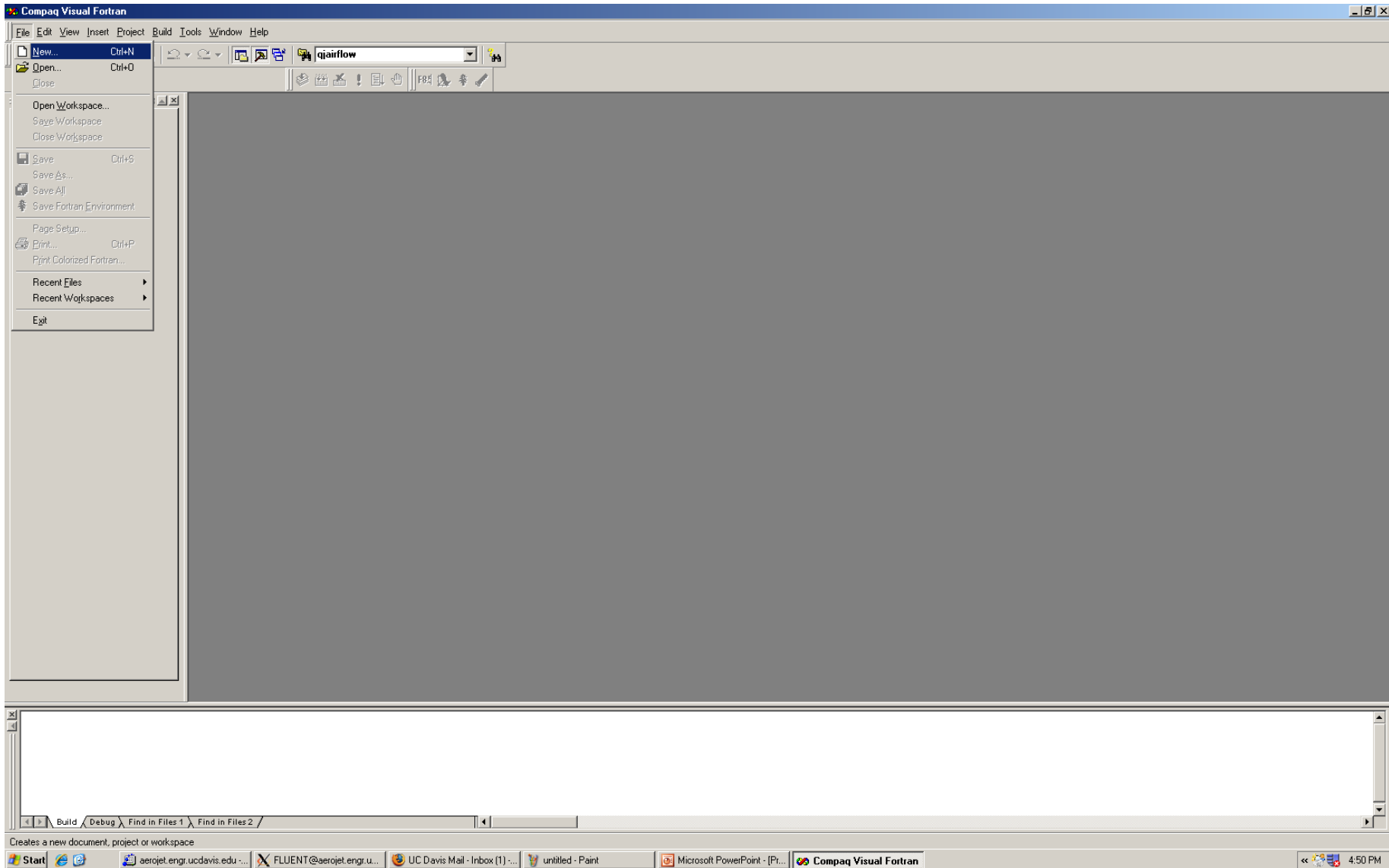
How to compile the qjairflow.f

EAE127, 2009

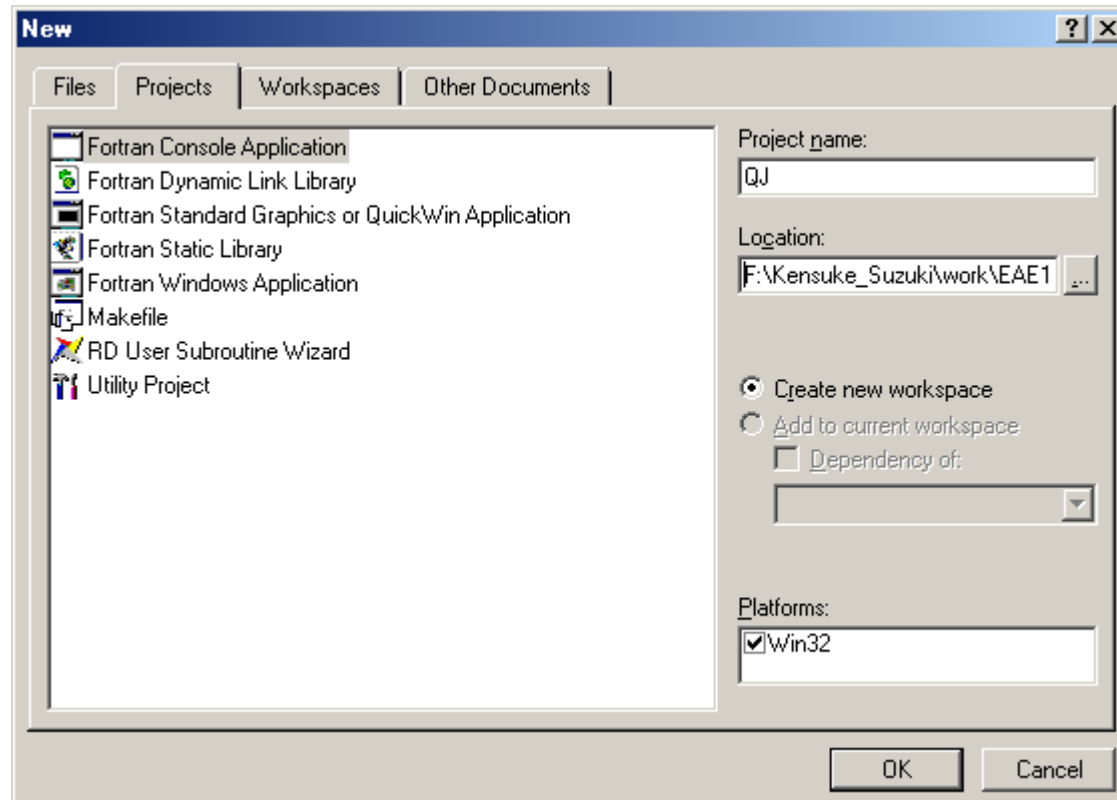
Open compaq visual Fortran Developer Studio



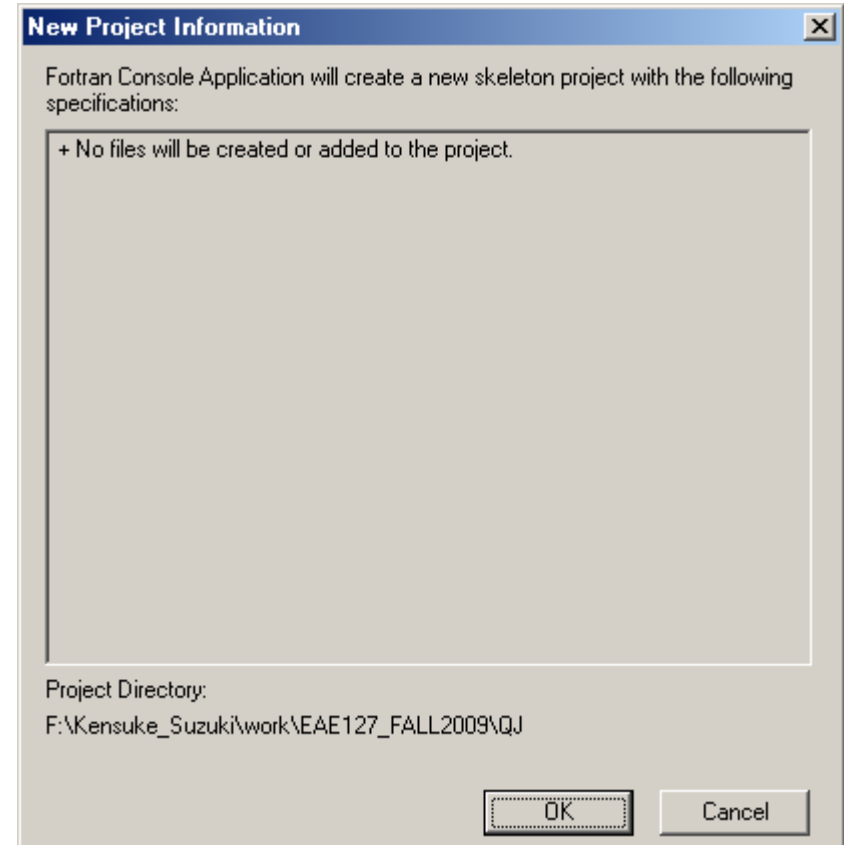
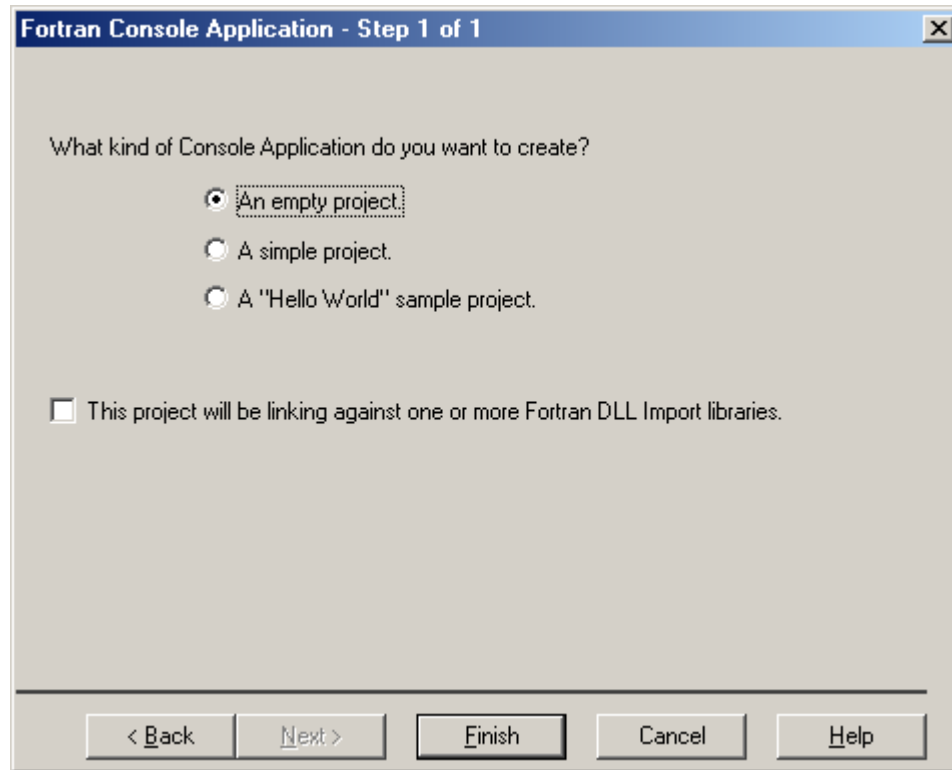
Select File -> new



Select Fortran Console Application: Specify location and project name then select OK

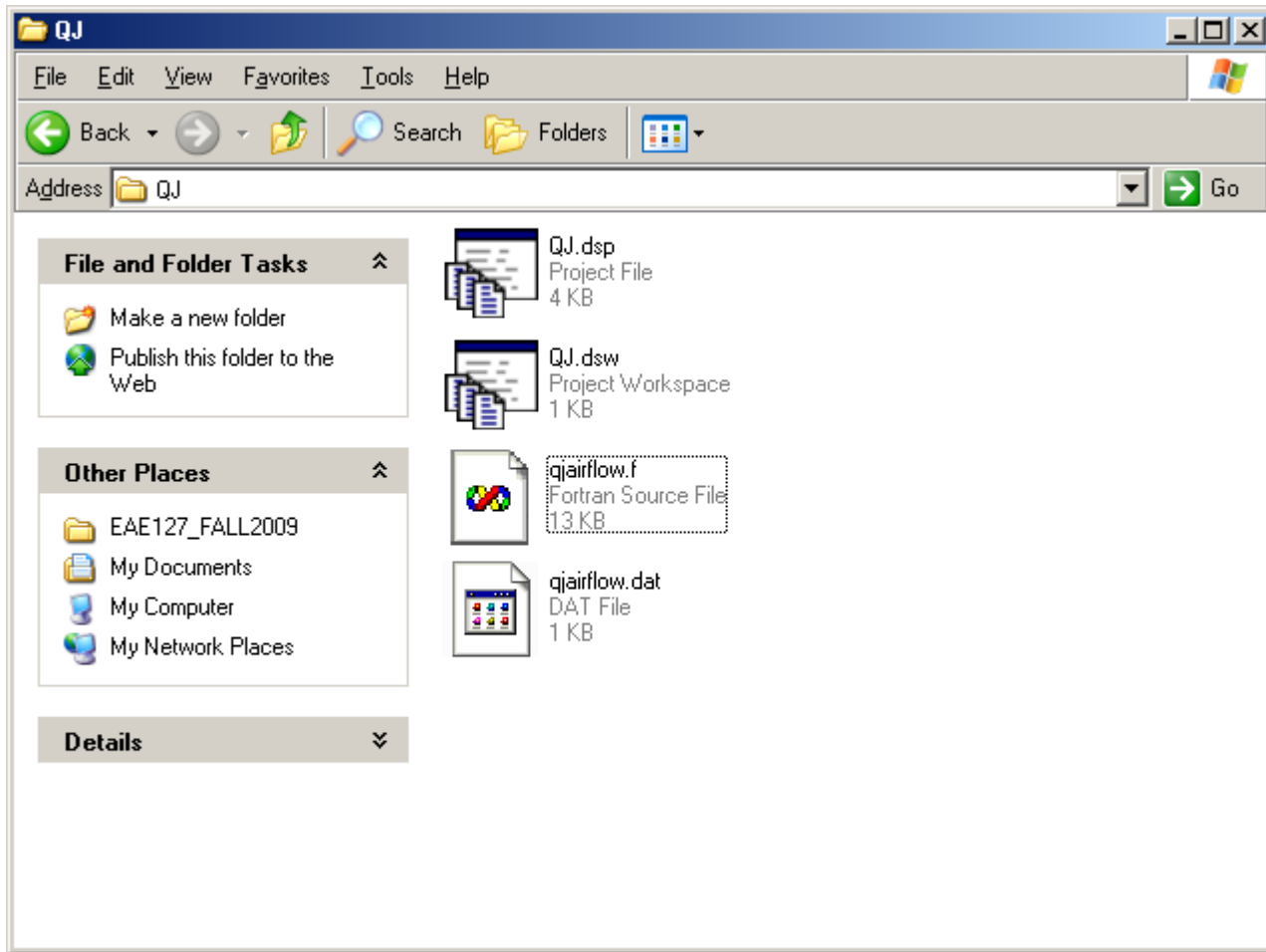


Select an empty project then select Finish, OK for the new project information

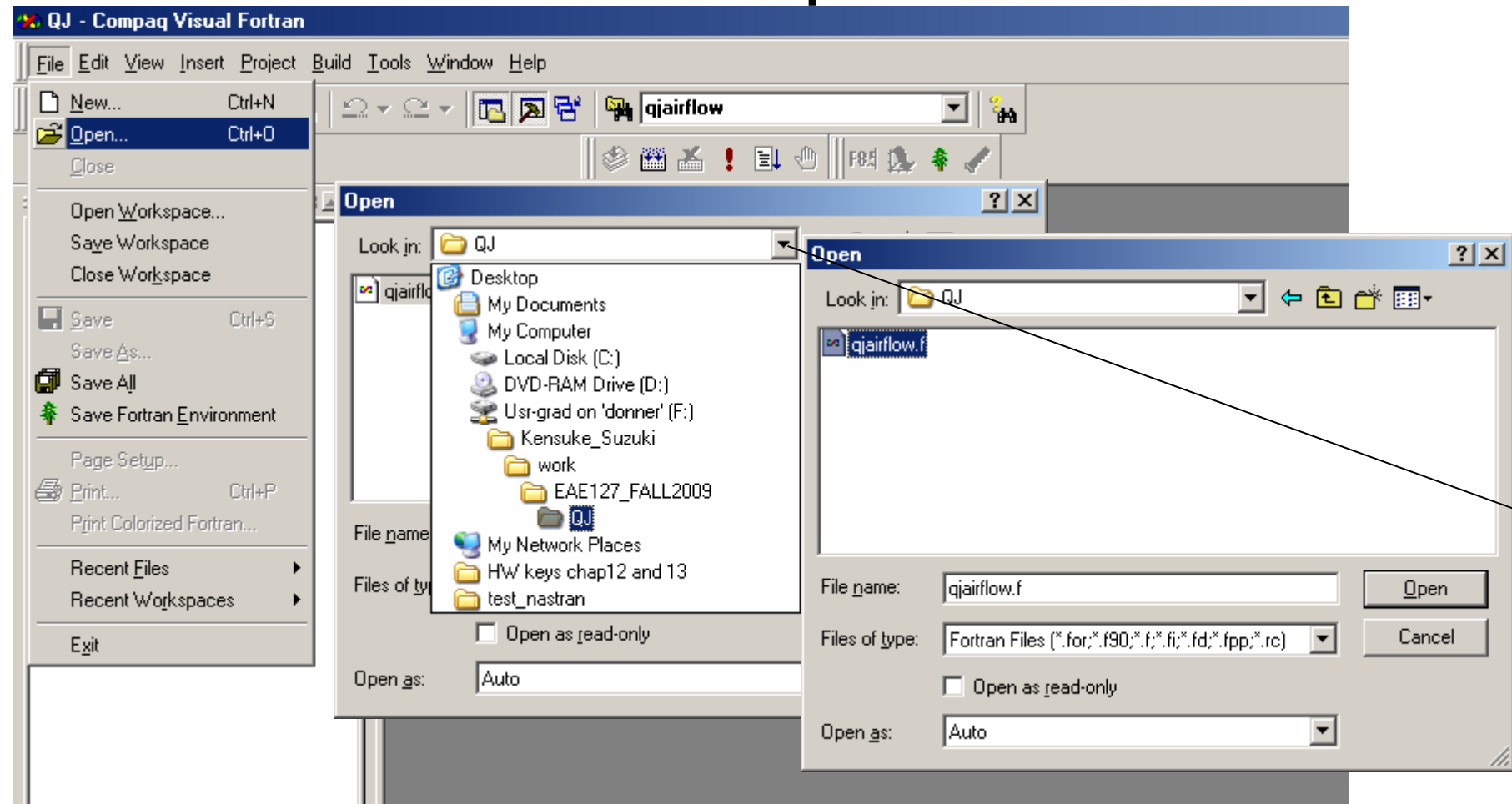


The project folder generated in the location.

Put qjairflow.f and qjairflow.dat in the created folder

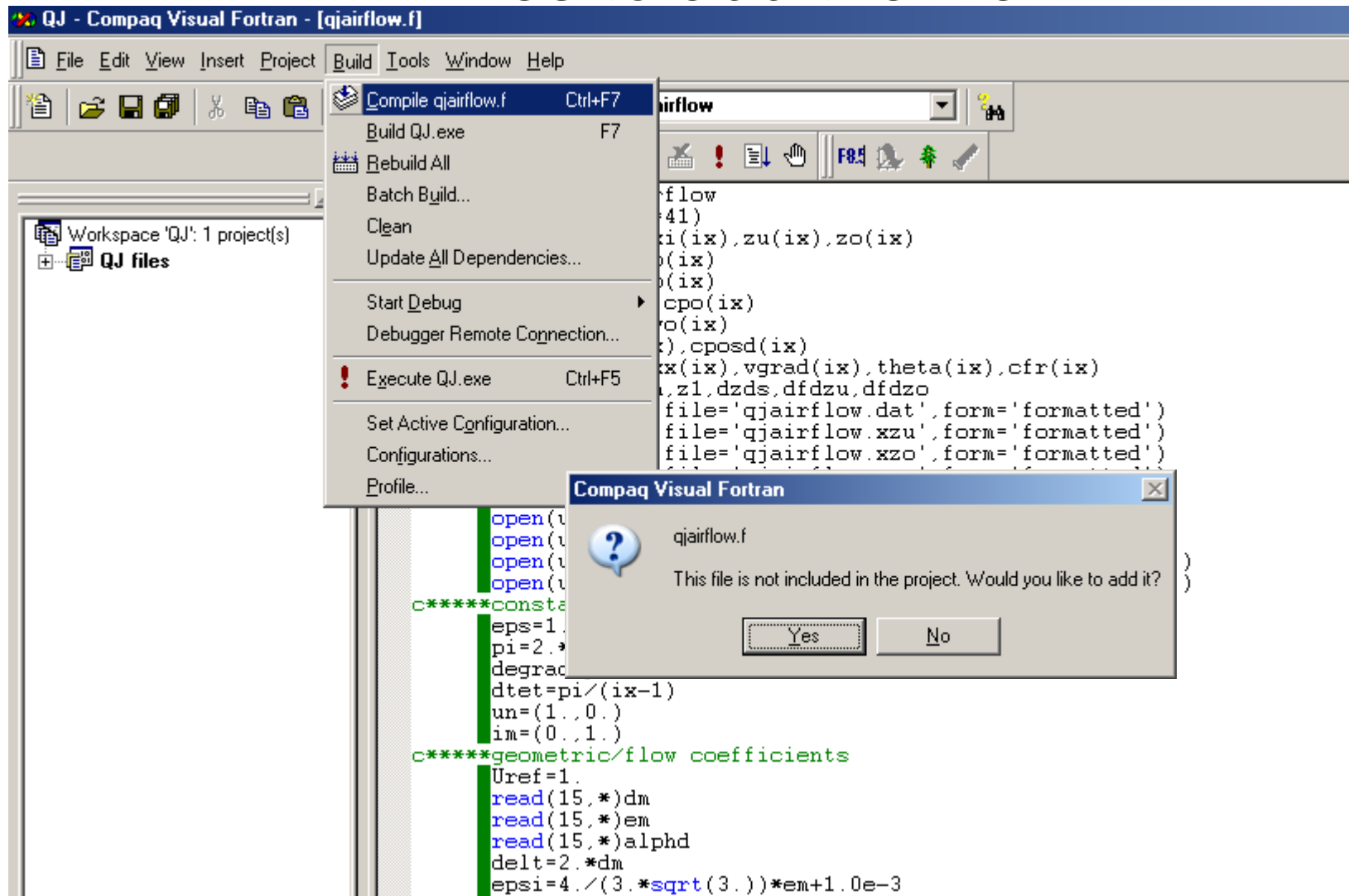


File Open, select the Fortran file then open it.



Note: When you open the folder, sometimes an old folder is automatically opened. If the filename is the same, this causes a mistake. Please specify the correct folder to open the file.

To compile:
Build -> Compile qjairflow.f
-> Yes to add the file



If there is no error, it is compiled.

```
read(15,*)dm
read(15,*)em
read(15,*)alphd
delt=2.*dm
epsi=4./(3.*sqrt(3.))*em+1.0e-3
alpha=alphd*degrad
sina=sin(alpha)
cosa=cos(alpha)
teta=-dtet
do 1 i=1,ix
  ic=ix+1-i
  teta=teta+dtet
  sint=sin(teta)
  cost=cos(teta)
  xi=.5*(1.+cost)
  x(ic)=xi
  zui=.5*(epsi*(1.-cost)*sint+delt*sint*sint)
  zoi=.5*(-epsi*(1.-cost)*sint+delt*sint*sint)
  zu(ic)=zui
  zo(ic)=zoi
  z1=(1.+epsi*(1.-cost)+delt*sint)*exp(im*teta)
  dfdzu=(z1*exp(-im*alpha)+exp(im*alpha)
    +2.*un*(epsi*cosa-delt*sina)
    /(z1+1.))*(z1*z1/(z1+un*epsi-im*delt)**2)
  z1=(1.+epsi*(1.-cost)-delt*sint)*exp(-im*teta)
  dfdzo=(z1*exp(-im*alpha)+exp(im*alpha)
    +2.*un*(epsi*cosa-delt*sina)
    /(-1.)/(z1+1.)/(z1+un*epsi-im*delt)**2)
```

Configuration: QJ - Win32 Debug
Compiling Fortran...
F:\Kensuke Suzuki\work\EA127_FALL2009\QJ\qjairflow.f
qjairflow.obj - 0 error(s), 0 warning(s)

Build Debug Find in Files 1 Find in Files 2

If there are errors, see the error message in the bottom. Double click the error message.

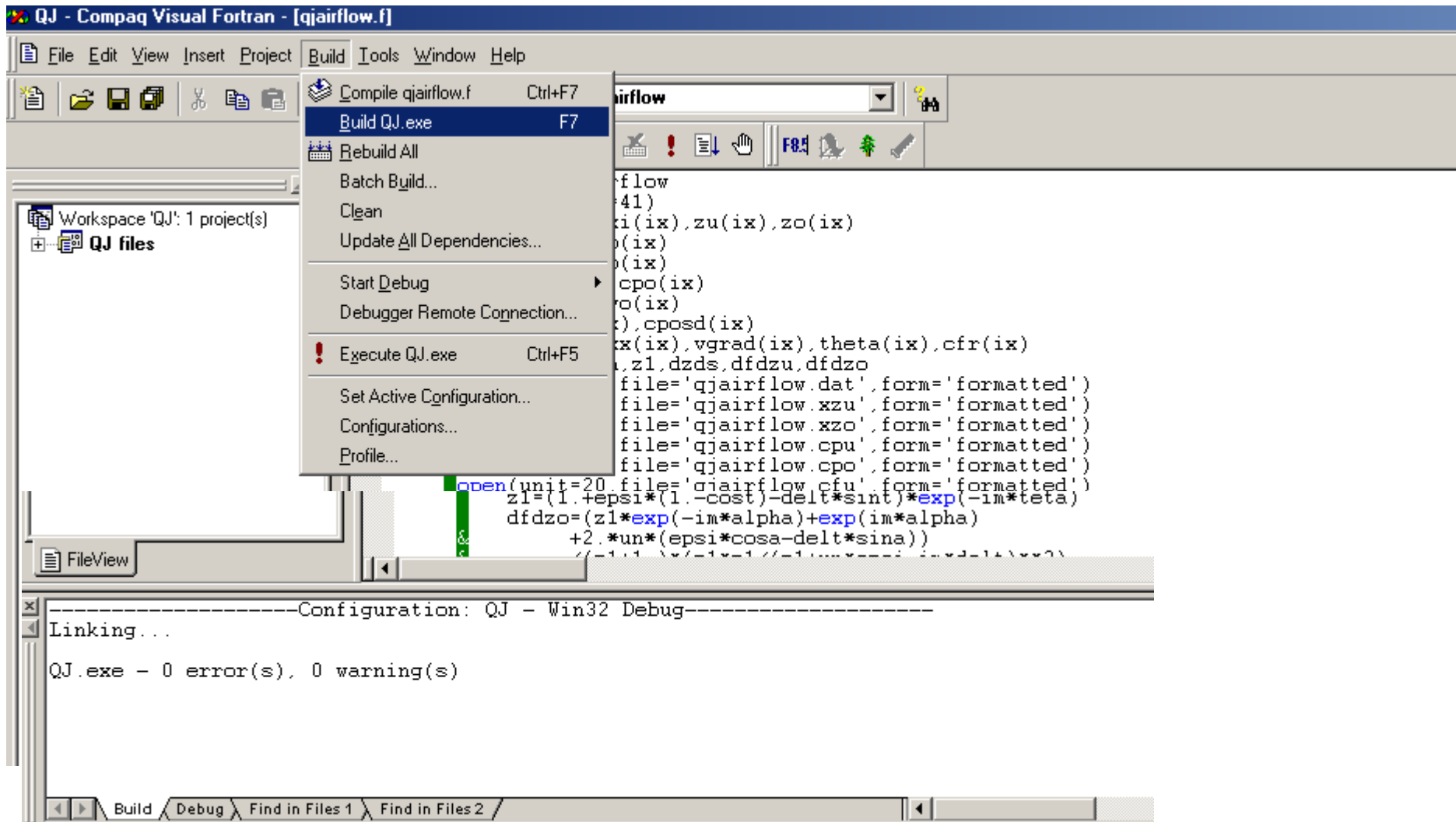
An allow tells the line.

```
-----^
degrad=pi/180.
dtet=pi/(ix-1)
un=(1.,0.)
im=(0.,1.)
      error line!!!!
c****geometric/flow coefficients
Uref=1.
read(15,*)dm
read(15,*)em
read(15,*)alphd
delt=2.*dm
epsi=4./(3.*sqrt(3.))*em+1.0e-3
alpha=alphd*degrad
sina=sin(alpha)
cosa=cos(alpha)
teta=-dtet
do 1 i=1,ix
  ic=ix+1-i
  teta=teta+dtet
  sint=sin(teta)
  cost=cos(teta)
  xi=.5*(1.+cost)
  x(ic)=xi
  zui=.5*(epsi*(1.-cost)*sint+delt*sint*sint)
  zoi=.5*(-epsi*(1.-cost)*sint+delt*sint*sint)
  zu(ic)=zui
  zo(ic)=zoi
  z1=(1.+epsi*(1.-cost)+delt*sint)*exp(im*teta)
  dfdzui=(z1*exp(-im*alpha)+exp(im*alpha)
    +2.*un*(epsi*cosa-delt*sina))
    &
    /(z1+1.)*(z1*z1/(z1+un*epsi-im*delt)**2)
  z1=(1.+epsi*(1.-cost)-delt*sint)*exp(-im*teta)
  dfdzoi=(z1*exp(-im*alpha)+exp(im*alpha)
    +2.*un*(epsi*cosa-delt*sina))
    &
    /(z1+1.)*(z1*z1/(z1+un*epsi-im*delt)**2)
-----^
F:\Kensuke Suzuki\work\EA127_FALL2009\QJ\qjairflow.f(27) : Error: A specification statement cannot appear in the executable
error line!!!!
-----^
Error executing df.exe.

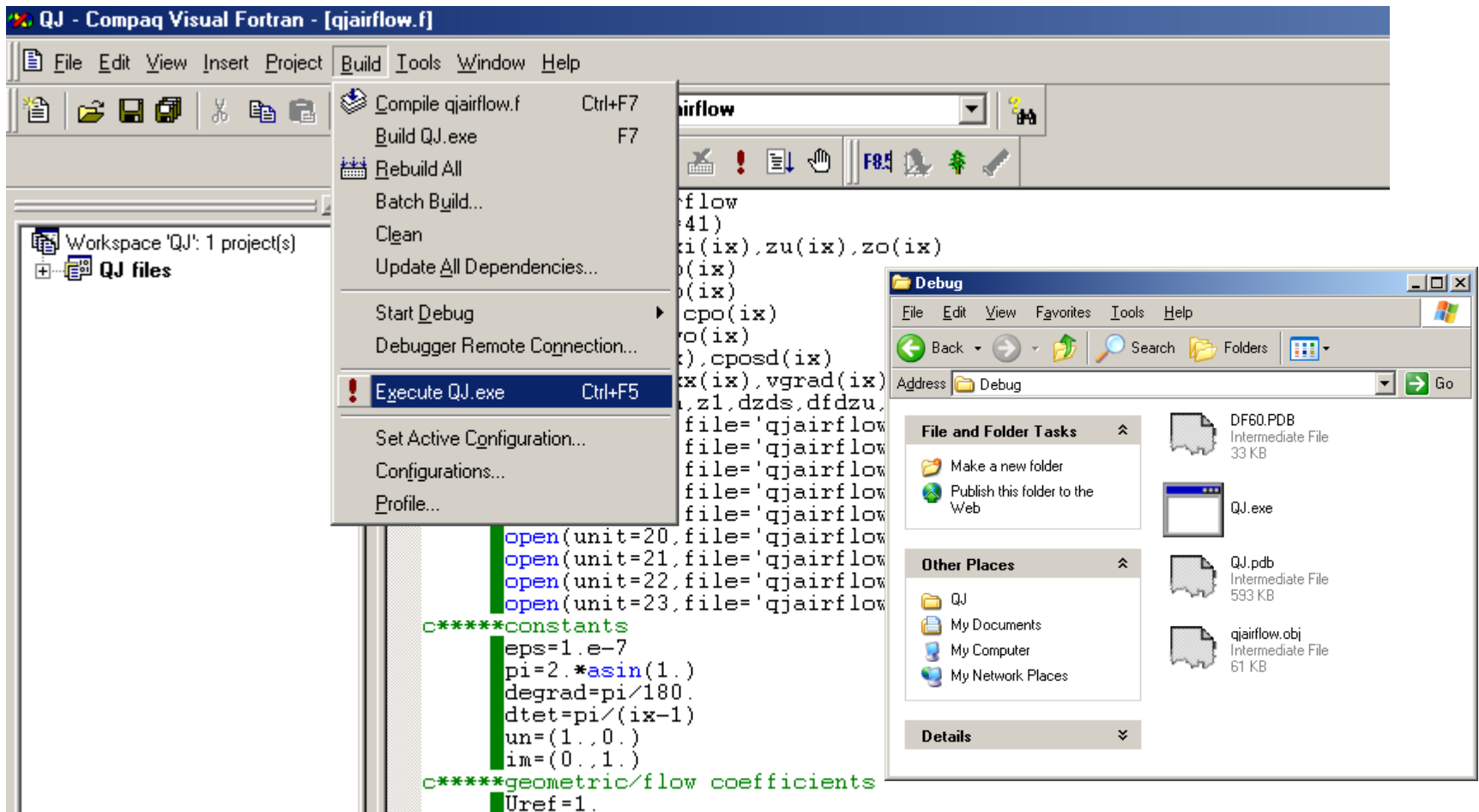
qjairflow.obj - 4 error(s), 0 warning(s)

Build Debug Find in Files 1 Find in Files 2
or: A specification statement cannot appear in the executable section.
```

After compiled without error, build exe file:
if there is no error, exe file is made

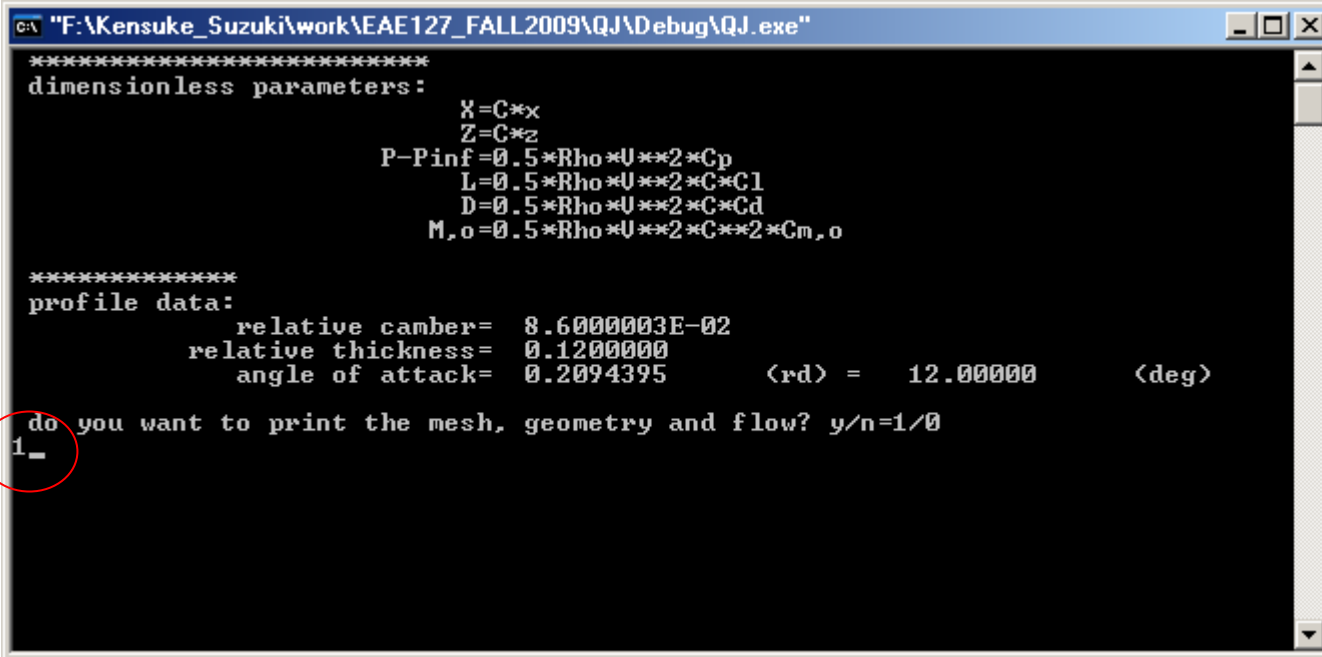


Finally, execute the file.



Note: the data file qjairflow.dat must be in the same folder as the qjairflow.f. The 'Execute QJ.exe' refers the exe file in the sub-folder, Debug; you can copy this file to different folders and use it by 'double click' to run if you want.

For geometry question, you can type 0 or 1 to display or not.



```
c:\ "F:\Kensuke_Suzuki\work\EAE127_FALL2009\QJ\Debug\QJ.exe"
*****
dimensionless parameters:
      X=C*x
      Z=C*z
      P-Pinf=0.5*Rho*U**2*Cp
      L=0.5*Rho*U**2*C*C1
      D=0.5*Rho*U**2*C*Cd
      M,o=0.5*Rho*U**2*C**2*Cm,o

*****
profile data:
      relative camber= 8.6000003E-02
      relative thickness= 0.1200000
      angle of attack= 0.2094395      (rd) = 12.00000      (deg)

do you want to print the mesh, geometry and flow? y/n=1/0
1_
```

For example, type 1 and push Enter key.

Geometry data is displayed.

Calculated C_l , C_d , $C_{m,0}$ for the exact inviscid solution and $C_{l,sd}$, $C_{d,sd}$, $C_{m,0,sd}$ for the small disturbance approximation are displayed.

```

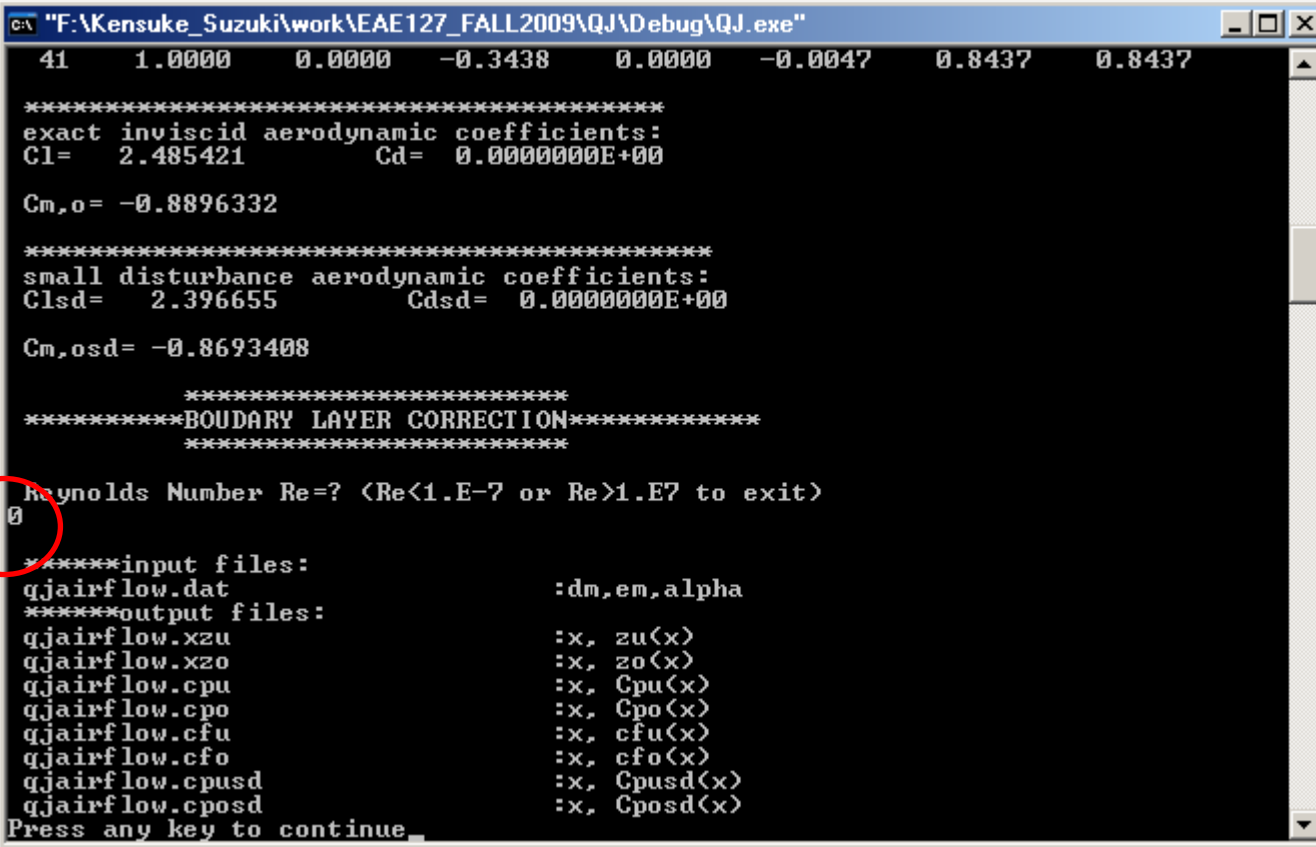
c:\ "F:\Kensuke_Suzuki\work\EAET127_FALL2009\QJ\Debug\QJ.exe"
do you want to print the mesh, geometry and flow? y/n=1/0
1
i=      x(i)=      f(i)=      fp(i)=      e(i)=      ep(i)=      uu(i)=      vo(i)=
1      0.0000      0.0000      0.3439      0.0000      12.2168      2.7988      -2.7988
2      0.0015      0.0005      0.3427      0.0094      3.0342      2.9747      -2.1151
3      0.0062      0.0021      0.3395      0.0187      1.4866      2.8316      -1.2986
4      0.0138      0.0047      0.3342      0.0276      0.9575      2.6370      -0.6821
5      0.0245      0.0082      0.3269      0.0362      0.6832      2.4729      -0.2783
6      0.0381      0.0126      0.3176      0.0442      0.5113      2.3461      -0.0158
7      0.0545      0.0177      0.3063      0.0515      0.3908      2.2488      0.1595
8      0.0737      0.0235      0.2931      0.0581      0.3000      2.1726      0.2800
9      0.0955      0.0297      0.2781      0.0638      0.2282      2.1111      0.3648
10     0.1198      0.0363      0.2614      0.0686      0.1694      2.0595      0.4257
11     0.1464      0.0430      0.2431      0.0724      0.1200      2.0147      0.4698
12     0.1753      0.0497      0.2232      0.0753      0.0778      1.9743      0.5020
13     0.2061      0.0563      0.2020      0.0771      0.0414      1.9364      0.5256
14     0.2388      0.0625      0.1796      0.0779      0.0097      1.8999      0.5429
15     0.2730      0.0683      0.1561      0.0777      -0.0180      1.8638      0.5556
16     0.3087      0.0734      0.1315      0.0766      -0.0421      1.8274      0.5650
17     0.3455      0.0778      0.1062      0.0747      -0.0630      1.7904      0.5719
18     0.3833      0.0813      0.0802      0.0720      -0.0811      1.7525      0.5772
19     0.4218      0.0839      0.0538      0.0685      -0.0965      1.7134      0.5813
20     0.4608      0.0855      0.0270      0.0645      -0.1094      1.6733      0.5848
21     0.5000      0.0860      0.0000      0.0600      -0.1199      1.6320      0.5881
22     0.5392      0.0855      -0.0270      0.0551      -0.1282      1.5898      0.5913
23     0.5782      0.0839      -0.0538      0.0500      -0.1345      1.5467      0.5948
24     0.6167      0.0813      -0.0802      0.0447      -0.1387      1.5030      0.5987
25     0.6545      0.0778      -0.1062      0.0394      -0.1410      1.4588      0.6033
26     0.6913      0.0734      -0.1315      0.0342      -0.1415      1.4144      0.6087
27     0.7270      0.0683      -0.1561      0.0292      -0.1402      1.3700      0.6150
28     0.7612      0.0625      -0.1796      0.0244      -0.1374      1.3258      0.6223
29     0.7939      0.0563      -0.2020      0.0200      -0.1330      1.2820      0.6308
30     0.8247      0.0497      -0.2232      0.0160      -0.1272      1.2388      0.6404
31     0.8536      0.0430      -0.2431      0.0124      -0.1200      1.1964      0.6514
32     0.8802      0.0363      -0.2614      0.0093      -0.1116      1.1550      0.6637
33     0.9045      0.0297      -0.2781      0.0067      -0.1021      1.1146      0.6774
34     0.9263      0.0235      -0.2931      0.0046      -0.0916      1.0755      0.6926
35     0.9455      0.0177      -0.3063      0.0030      -0.0803      1.0378      0.7093
36     0.9619      0.0126      -0.3176      0.0017      -0.0681      1.0014      0.7276
37     0.9755      0.0082      -0.3269      0.0009      -0.0554      0.9667      0.7475
38     0.9862      0.0047      -0.3342      0.0004      -0.0422      0.9334      0.7690
39     0.9938      0.0021      -0.3395      0.0001      -0.0287      0.9018      0.7922
40     0.9985      0.0005      -0.3427      0.0000      -0.0153      0.8719      0.8171
41     1.0000      0.0000      -0.3438      0.0000      -0.0047      0.8437      0.8437

*****
exact inviscid aerodynamic coefficients:
Cl= 2.485421      Cd= 0.0000000E+00
Cm,o= -0.8896332

*****
small disturbance aerodynamic coefficients:
Cl,sd= 2.396655      Cd,sd= 0.0000000E+00
Cm,osd= -0.8693408

*****BOUDARY LAYER CORRECTION*****
*****
Reynolds Number Re=? <Re<1.E-7 or Re>1.E7 to exit>
```

For inviscid model, put Reynolds Number 0 and push Enter key. Then output files are created in the same folder. Then press any key to close the window.



```
C:\ "F:\Kensuke_Suzuki\work\EAE127_FALL2009\QJ\Debug\QJ.exe"
  41   1.0000   0.0000  -0.3438   0.0000  -0.0047   0.8437   0.8437

*****
exact inviscid aerodynamic coefficients:
Cl=  2.485421      Cd=  0.0000000E+00

Cm,o= -0.8896332

*****
small disturbance aerodynamic coefficients:
Clsd=  2.396655      Cdsd=  0.0000000E+00

Cm,osd= -0.8693408

*****BOUDARY LAYER CORRECTION*****
*****
Reynolds Number Re=? <Re<1.E-7 or Re>1.E7 to exit>
0

*****input files:
qjairflow.dat           :dm,em,alpha
*****output files:
qjairflow.xzu           :x, zu(x)
qjairflow.xzo           :x, zo(x)
qjairflow.cpu           :x, Cpu(x)
qjairflow.cpo           :x, Cpo(x)
qjairflow.cfu           :x, cfu(x)
qjairflow.cfo           :x, cfo(x)
qjairflow.cpusd         :x, Cpusd(x)
qjairflow.cposd         :x, Cposd(x)
Press any key to continue.
```

Once you created the Fortran workspace, you can open 'workspace'.

