

学生：徐荣苗

批改：李娟

得分：40/40

## Assignment 6

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Q1.

```
violetxu — ssh ese-xurm@172.18.6.175 — 109x44
[ese-xurm@login02 Assignment6]$ ls ./fortran_demo1
DoLoopTest.f90  HelloWorld.x          N.dat              TestLear.x
DoLoopTest.x    IfElseTest.f90       PrecisionTest.f90  TestRelationalOps.f90
DoWhileTest.f90 ImplicitTypeTest.f90 TestArray.f90      TestUndeclared.f90
HelloWorld.f90  M.dat                TestLear.f90       VariableShowcase.f90
[ese-xurm@login02 Assignment6]$ gfortran Matrix_multip.f90 Main.f90 -o Q1.x
[ese-xurm@login02 Assignment6]$ chmod 777 ./Q1.x
[ese-xurm@login02 Assignment6]$ ./Q1.x
[ese-xurm@login02 Assignment6]$ ls ./fortran_demo1
DoLoopTest.f90  HelloWorld.x          MN.dat             TestLear.f90          VariableShowcase.f90
DoLoopTest.x    IfElseTest.f90       N.dat              TestLear.x
DoWhileTest.f90 ImplicitTypeTest.f90 PrecisionTest.f90  TestRelationalOps.f90
HelloWorld.f90  M.dat                TestArray.f90      TestUndeclared.f90
[ese-xurm@login02 Assignment6]$ nano ./fortran_demo1/MN.dat
[ese-xurm@login02 Assignment6]$
```

```
violetxu — ssh ese-xurm@172.18.6.175 — 87x39
GNU nano 2.3.1 文件： ./fortran_demo1/M.dat

19.48 15.79 19.28
19.28 12.92 15.86
15.86 11.29 14.04
11.93 18.60 18.23
19.28 12.92 15.86
```

```
violetxu — ssh ese-xurm@172.18.6.175 — 87x39
GNU nano 2.3.1 文件： ./fortran_demo1/N.dat

7.72 4.11 1.44 4.80 5.55
5.55 4.80 4.04 0.59 8.58
0.59 8.58 2.26 7.72 4.11
```

```
violetxu — ssh ese-xurm@172.18.6.175 — 87x39
GNU nano 2.3.1 文件： ./fortran_demo1/MN.dat

249.40 321.28 135.42 251.66 322.83
229.90 277.34 115.80 222.61 283.04
193.38 239.84 100.18 191.18 242.60
206.09 294.73 133.52 208.97 300.72
229.90 277.34 115.80 222.61 283.04
```


## Q2.


```
violetxu — ssh ese-xurm@172.18.6.175 — 109x44
[ese-xurm@login02 Assignment6]$ vi Solar_hour_angle.f90
[ese-xurm@login02 Assignment6]$ vi Solar_elevation_angle.f90
[ese-xurm@login02 Assignment6]$ vi Declination_angle.f90
[ese-xurm@login02 Assignment6]$ gfortran -c Solar_hour_angle.f90
[ese-xurm@login02 Assignment6]$ gfortran -c Declination_angle.f90
[ese-xurm@login02 Assignment6]$
[ese-xurm@login02 Assignment6]$ ar rcvf libsolar.a Solar_hour_angle.o Declination_angle.o
a - Solar_hour_angle.o
a - Declination_angle.o
[ese-xurm@login02 Assignment6]$ gfortran Solar_elevation_angle.f90 -o Q2.x -L. -lsolar
[ese-xurm@login02 Assignment6]$ chmod 777 ./Q2.x
[ese-xurm@login02 Assignment6]$
[ese-xurm@login02 Assignment6]$ ./Q2.x
SEA for Shenzhen (22.542883N, 114.062996E) at 10:32 (Beijing time; UTC+8) on 2021-12-31: 36.63505466177102
2
[ese-xurm@login02 Assignment6]$
[ese-xurm@login02 Assignment6]$ ls .
Declination_angle.f90  fortran_demo1  Makefile          Solar_elevation_angle.f90  Solar_hour_angle.o
declination_angle.mod  libsolar.a      Matrix_multip.f90  Solar_hour_angle.f90
Declination_angle.o    Main.f90        Q2.x              solar_hour_angle.mod
[ese-xurm@login02 Assignment6]$
```


Comparing with the answer on the website:


### Solar elevation angle calculator


Select the date & time and your timezone, enter your longitude & latitude to calculate the solar elevation angle (or solar latitude angle) and zenith angle.

Select date: 2021/12/31 

Enter time: 10:32 

Select time zone: (UTC+08:00) Beijing, Chongqing, Hor 

Enter latitude (e.g. Los Angeles: 34.052° N): 22.54288 North 

Enter longitude (e.g. Los Angeles: 118.24° W): 114.06299 East 

**Solar elevation angle: 36.61°**

Solar zenith angle: 53.39°