

Report of assignment 6

1. Matrix Multiplication

1.1-1.3

Procedure:

I created Main.f90, then subroutine Matrix_multip.f90. Next, compile subroutine before compiling them together:

```
gfortran Main.f90 Matrix_multip.o -o Main.x  
./Main.x
```

Result:

MN.dat (this is based on write(*,*) without format f9.2):

	C ₁	C ₂	C ₃	C ₄	C ₅
1	249.3953	321.2772	135.4156	251.6617	322.833
2	229.905	277.3356	115.8036	222.606	283.0422
3	193.3823	239.8398	100.1804	191.1779	242.5956
4	206.0853	294.7257	133.523	208.9736	300.7248
5	229.905	277.3356	115.8036	222.606	283.0422

MN.dat - 记事本					
文件(E)	编辑(E)	格式(O)	查看(V)	帮助(H)	
249.395294	321.277222	135.415604	251.661697	322.833008	
229.904999	277.335602	115.803604	222.606003	283.042206	
193.382294	239.839798	100.180397	191.177887	242.595612	
206.085297	294.725708	133.522995	208.973602	300.724792	
229.904999	277.335602	115.803604	222.606003	283.042206	

Note: After I add format f9.2, it becomes like what it looks in folder now.

Since assignment doesn't acquire that MN.dat should look like Matrix, I didn't adjust it.

2. Solar Elevation Angle

2.1-2.4

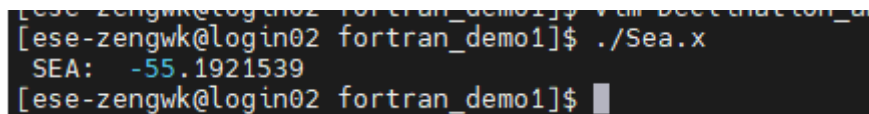
Procedure:

I created module Declination_angle.f90 and Solar_hour_angle.f90 based on better formula. Then, I wrote a program Solar_elevation_angle.f90.

Subroutines were compiled before making them a library. After forming library (libsea.a), program was compiled based library.

```
gfortran -c Declination_angle.f90
gfortran -c Solar_hour_angle.f90
ar rcvf libsea.a Declination_angle.o Solar_hour_angle.o
gfortran Solar_elevation_angle.f90 -o Sea.x -L. -lsea
```

Result:



```
[ese-zengwk@login02 fortran_demo1]$ ./Sea.x
SEA: -55.1921539
[ese-zengwk@login02 fortran_demo1]$
```

It is different with result in website:

[Solar Elevation Angle - Calculating Altitude of Sun - SolarSena](#)

Because, website doesn't use the better formulas.