

1. At this question, my codes are named as Main.f90 and Matrix\_multip.f90. The results are:


```
-bash-4.2$ gfortran Main.f90 Matrix_multip.o -o Main.x
-bash-4.2$ ./Main.x
M matrix
 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
N matrix
 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
The result
249.40  229.90  193.38  206.09  229.90
321.28  277.34  239.84  294.73  277.34
135.42  115.80  100.18  133.52  115.80
251.66  222.61  191.18  208.97  222.61
322.83  283.04  242.60  300.72  283.04
```


| GNU nano 2.3.1 |        |        |        | File: MN.dat |        |
|----------------|--------|--------|--------|--------------|--------|
|                | 249.40 | 229.90 | 193.38 | 206.09       | 229.90 |
|                | 321.28 | 277.34 | 239.84 | 294.73       | 277.34 |
|                | 135.42 | 115.80 | 100.18 | 133.52       | 115.80 |
|                | 251.66 | 222.61 | 191.18 | 208.97       | 222.61 |
|                | 322.83 | 283.04 | 242.60 | 300.72       | 283.04 |


2. At this question, my codes are named as Declination\_angle.f90, Solar\_hour\_angle.f90, and Solar\_elevation\_angle.f90. The results are:

```
-bash-4.2$ ar rcvf libsea.a Declination_angle.o Solar_hour_angle.o
r - Declination_angle.o
r - Solar_hour_angle.o
-bash-4.2$ gfortran Solar_elevation_angle.f90 -o Solar_elevation_angle.x -L. -lsea
-bash-4.2$ ./Solar_elevation_angle.x
Please enter the year:
2021
Please enter the month:
12
Please enter the date:
31
Please enter the hour:
10
Please enter the minute:
32
Please enter the longitude:
114.062996
Please enter the latitude:
22.542883
The solar elevation angle is 36.574228351186356
The solar declination angle is -23.0964355
The solar hour angle is -28.5503616
```


The results on the website are:


Select date: 2021/12/31 


Enter time: 10:32 


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

Solar declination: -23.16°


Select date: 2021/12/31 


Enter time: 10:32 


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


Enter longitude (e.g. Los Angeles: 118.24° W): 114.062996 East 


Solar hour angle: -28.43°

Select date: 2021/12/31 

Enter time: 10:32 

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

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°

It seems that something is wrong causing the error. However, I have checked the codes and cannot find any errors. In my opinion, it might be attributed to the precision of the numeric datatype.