学生：麦泽霖
批改：李娟
得分：37/40

1 Matrix multiplication

```
[ese-maizl@login01 fortran_demo1]$ ./Main.x
 N=
   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
 M=
    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
 M*N=
  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 Calculate the Solar Elevation Angle

```
[ese-maizl@login01 fortran_demo1]$ gfortran -c Declination_angle.f90
[ese-maizl@login01 fortran_demo1]$ gfortran -c Solar_hour_angle.f90
[ese-maizl@login01 fortran_demo1]$ gfortran -c Solar_elevation_angle.f90
[ese-maizl@login01 fortran_demo1]$
```

```
[ese-maizl@login01 fortran_demo1]$ ar rcvf libsea.a Declination_angle.o Solar_hour_angle.o Solar_elevation_angle
.o
a - Declination_angle.o
a - Solar_hour_angle.o
a - Solar_elevation_angle.o
```

```
[ese-maizl@login01 fortran_demo1]$ gfortran Solar_elevation_angle.f90 -o Solar_elevation_angle_lib.x -L. -lsea
[ese-maizl@login01 fortran_demo1]$ ./Solar_elevation_angle_lib.x
 Please enter the time and lat_lon
 Please enter the year:
2021
 Please enter the month:
12
 Please enter the day:
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 hour angle is:   -25.1704636
 The solar declination angle is:   -21.6477184
 The solar elevation angle is:   -66.372730814793130
```

The second question was completed with the help of He Jinlin, but the final calculation result seems to be a bit wrong. I haven't found the cause of the calculation error yet.

参考结果：hour angle:-28.43 °
declination：-23.13 °
SEA ; 36.61 °