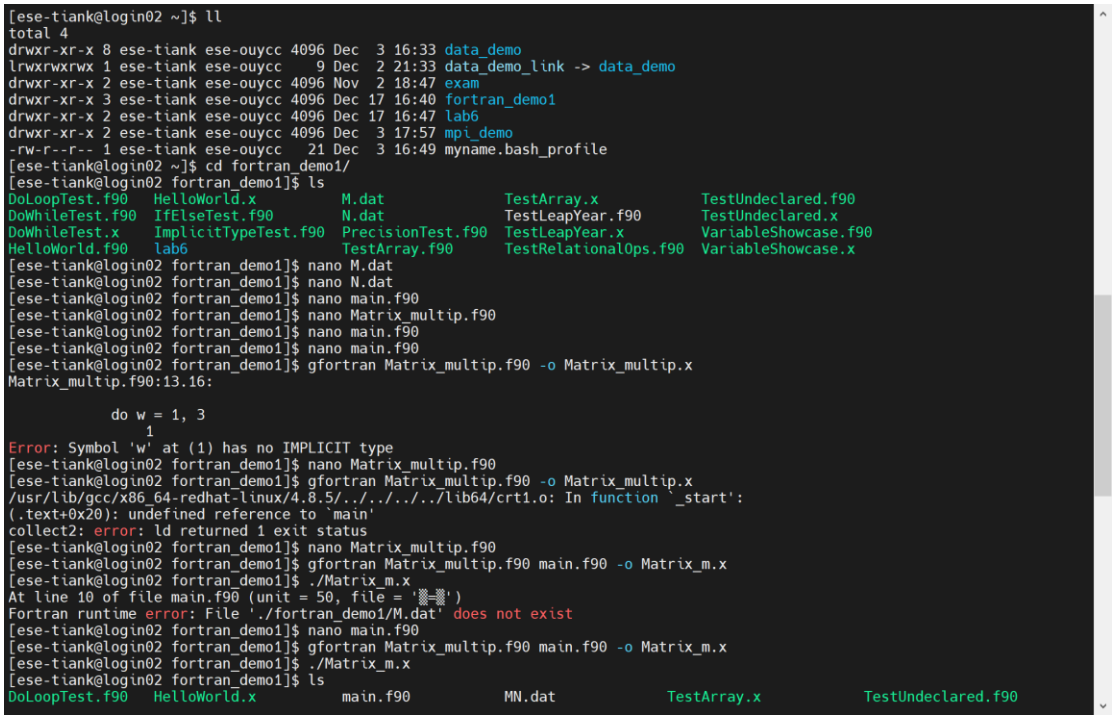
学生：田宽

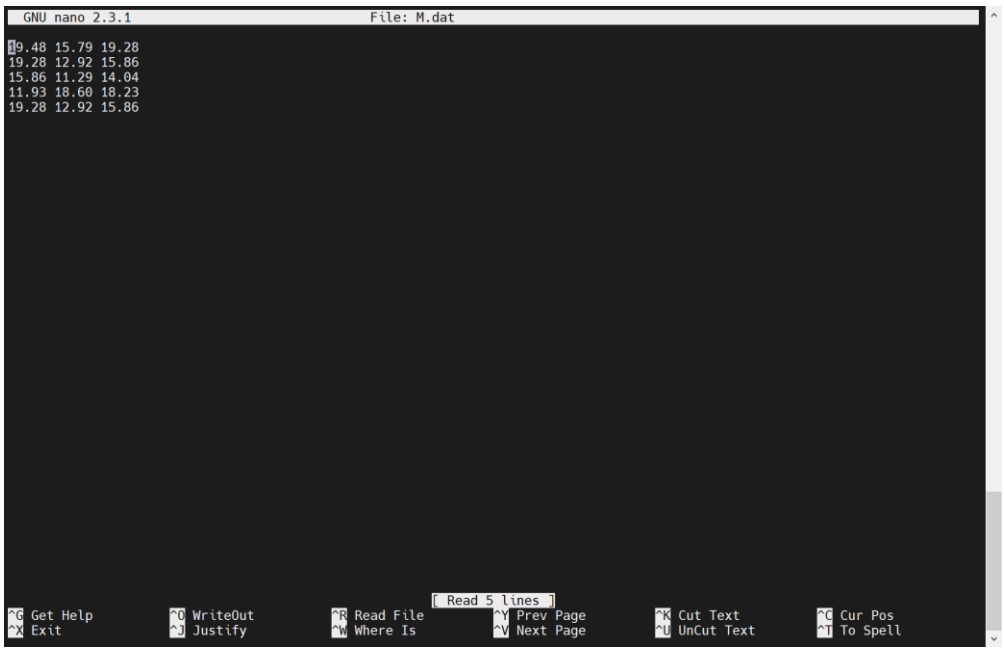
批改：李娟

得分：40/40

1、

```
[ese-tiank@login02 ~]$ cd fortran_demo1/
[ese-tiank@login02 fortran_demo1]$ ls
[ese-tiank@login02 fortran_demo1]$ nano M.dat
[ese-tiank@login02 fortran_demo1]$ nano N.dat
[ese-tiank@login02 fortran_demo1]$ nano main.f90
[ese-tiank@login02 fortran_demo1]$ nano Matrix_multip.f90
[ese-tiank@login02 fortran_demo1]$ nano main.f90
[ese-tiank@login02 fortran_demo1]$ nano Matrix_multip.f90
[ese-tiank@login02 fortran_demo1]$ gfortran Matrix_multip.f90 main.f90 -o Matrix_m.x
[ese-tiank@login02 fortran_demo1]$ ./Matrix_m.x
```





```
 GNU nano 2.3.1                          File: 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

                                [ Read 3 lines ]
^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

```
 GNU nano 2.3.1                          File: 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

                                [ Read 5 lines ]
^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

2、

[ese-tiank@login02 fortran_demo1]$ nano Declination_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_hour_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_elevation_angle.f90
[ese-tiank@login02 fortran_demo1]$ gfortran -c Declination_angle.f90
[ese-tiank@login02 fortran_demo1]$ gfortran -c Solar_hour_angle.f90
[ese-tiank@login02 fortran_demo1]$ ar rcvf libsubs.a Declination_angle.o Solar_hour_angle.o
a - Declination_angle.o
a - Solar_hour_angle.o
[ese-tiank@login02 fortran_demo1]$ gfortran Solar_elevation_angle.f90 -o Solar_elevation_angle.x -L. -lsubs
[ese-tiank@login02 fortran_demo1]$ ./Solar_elevation_angle.x
 the SEA for Shenzhen (22.542883N, 114.062996E) at 10:32 (Beijing time; UTC+8) on 2021-12-31: 36.635054661771022

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, H
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°

```
[ese-tiank@login02 fortran_demo1]$ nano Declination_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Declination_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_hour_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_elevation_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_hour_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Declination_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_elevation_angle.f90
[ese-tiank@login02 fortran_demo1]$ nano Solar_elevation_angle.f90
[ese-tiank@login02 fortran_demo1]$
[ese-tiank@login02 fortran_demo1]$ gfortran -c Declination_angle.f90
[ese-tiank@login02 fortran_demo1]$ gfortran -c Solar_hour_angle.f90
[ese-tiank@login02 fortran_demo1]$ ar rcvf libsubs.a Declination_angle.o Solar_hour_angle.o
a - Declination_angle.o
a - Solar_hour_angle.o
[ese-tiank@login02 fortran_demo1]$ gfortran Solar_elevation_angle.f90 -o Solar_elevation_angle.x -L -lsubs
/tmp/cctEx9mJ.o: In function `MAIN__':
Solar_elevation_angle.f90:(.text+0x5d): undefined reference to `__declination_angle_MOD_declin_angle'
Solar_elevation_angle.f90:(.text+0x85): undefined reference to `__solar_hour_angle_MOD_solarhour_angle'
collect2: error: ld returned 1 exit status
[ese-tiank@login02 fortran_demo1]$ gfortran Solar_elevation_angle.f90 -o Solar_elevation_angle.x -L. -lsubs
[ese-tiank@login02 fortran_demo1]$ ./Solar_elevation_angle.x
 the SEA for Shenzhen (22.542883N, 114.062996E) at 10:32 (Beijing time; UTC+8) on 2021-12-31:   36.635054661771022
```