Fortran 太难了，这两题是吴文浩同学教我做的

第一题：

先写完矩阵函数和主函数，代码截图如下：

```fortran
subroutine Matrix_multip(a,b,c,n)
implicit none
integer                  ::n
real(4),dimension(n,n)  ::a,b,c
c = matmul(a,b)
return
end
```

```fortran
program Main
implicit none

integer:: u,v,i,j,n

real(4),dimension(:,:),allocatable  ::  a,b,c

u=50
v=60
open(unit=u,file='M.dat',status='old')
open(unit=v,file='N.dat',status='old')
n=3

allocate( a(n,n),b(n,n),c(n,n) )
j=1
do i =1,3
read(u,*)a(i,j),a(i,j+1),a(i,j+2)
read(v,*)b(i,j),b(i,j+1),b(i,j+2)
enddo

close(u)
close(v)

call Matrix_multip(a,b,c,n)
open(unit=u,file='MN.dat',status='replace')

do i=1,n
write(u,'(f8.1,f8.1,f8.1)') c(i,j),c(i,j+1),c(i,j+2)
enddo
close(u)

do i=1,n

write(*,*)"the answer:"
write(*,*)"line",i,":",c(i,j),c(i,j+1),c(i,j+2)
enddo

deallocate(a,b,c)
```

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第一题：

先写完矩阵函数和主函数，代码截图如下：

再编译矩阵子模块.o

再编译主函数.x

就可以得到最后的结果:

```
[ese-jiangh@login03 fortran_2]$ ./Main.x
 the answer:
 line          1 :    166.544601       540.466431       256.628113
 the answer:
 line          2 :    146.990845       431.394775       208.193146
 the answer:
 line          3 :    116.358841       510.897797       198.899948
[ese-jiangh@login03 fortran_2]$
```

第二题:

首先编译三个.f90 文件

然后用 gfortran-c 编译.o 文件

再用 ar rcvf libsolar.a AST.o Declination_angle.o 合并为库

接着编译并运行, 编译运行代码如下:

```
[ese-jiangh@login03 fortran_2]$ gfortran Cal_SZA.f90 -o Cal.SZA.x -L. -lsolar
[ese-jiangh@login03 fortran_2]$ ./Ca
-bash: ./Ca: No such file or directory
[ese-jiangh@login03 fortran_2]$ ./Cal.SZA.x
```

最后的结果如下:

SZA=56.2120705 度

```
 The day in this year is:            355
 The declination angle is:  -23.4422264       Deg
 D =   269.508209
 ET =   1.73399556
 LSTM =         120
 The apparentst solar time(AST) is :            14 :            13
 The hour angle(H) is:   33.2500000
 The altitude angle is:   33.7879295
 The zenith angle(SZA) is:   56.2120705
[ese-jiangh@login03 fortran_2]$
```