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得分：35/40

Q 1:

```
[ese-zhanglc@login01 A6]$ ll
total 132
-rw-r--r-- 1 ese-zhanglc ese-ouycc   425 Dec 22 17:38 Declination_angle.f90
-rw-r--r-- 1 ese-zhanglc ese-ouycc   991 Dec 22 17:53 Main.f90
-rw-r--r-- 1 ese-zhanglc ese-ouycc   712 Dec 18 14:38 Matrix_multip.f90
-rwxr-xr-x 1 ese-zhanglc ese-ouycc 13456 Dec 18 15:27 matrix.x
-rwxr-xr-x 1 ese-zhanglc ese-ouycc    91 Dec 15 22:59 M.dat
-rwxr-xr-x 1 ese-zhanglc ese-ouycc    91 Dec 18 00:46 MN.dat
-rwxr-xr-x 1 ese-zhanglc ese-ouycc    76 Dec 15 22:59 N.dat
-rw-r--r-- 1 ese-zhanglc ese-ouycc   240 Dec 22 17:47 SEA.f90
-rw-r--r-- 1 ese-zhanglc ese-ouycc   114 Dec 22 17:41 Solar_hour_angle.f90
[ese-zhanglc@login01 A6]$
```

```
Program Main

implicit none

real,dimension(:,:).allocatable     :: M,N,R
integer                 :: i,j

open(unit=52, file='M.dat', status='old')
open(unit=25, file='N.dat', status='old')

allocate(M(5,3))
allocate(N(3,5))

!do i = 1,5
 !  do j = 1,3
  !     read(52,*) M(i,j) ! 读取方法有误
 !  enddo
!enddo

read(52,*) M
read(25,*) N

close(52)
close(25)
```

```
call Matrix_multip(M,N)
R = Matrix_multip(M,N)

open(unit=50,file='MN.dat',status='replace')
print *, 'Matrix Multiplication Result MN =:'
do i = 1,5
   do j = 1,5
      write(50,'(f9.2)') R(i,j)
   end do
   write(50,'(f9.2)')
end do
close(50)

end Program Main

subroutine Matrix_multip(A,B)

implicit none

real,intent(in),dimension(:,:)             :: A,B
real,intent(out),allocatable,dimension(:,:) :: C
integer                                    :: mrow,mcol

mrow = ubound(A,1)
mcol = ubound(B,2)
allocate(C(mrow,mcol))
C = matmul(A,B)
!write(*,'(f9.2)') 'Matrix Multiplication:' , C

end subroutine Matrix_multip
```

```
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
```

Is this your own result??

I cannot get the same result from you code,-1

Q 2: Cited by Jianglianjie https://github.com/199909jlj/

```
-rw-r--r-- 1 ese-zhanglc ese-ouycc   425 Dec 22 17:58 Declination_angle.f90
-rw-r--r-- 1 ese-zhanglc ese-ouycc   991 Dec 22 17:53 Main.f90
-rw-r--r-- 1 ese-zhanglc ese-ouycc   712 Dec 18 14:38 Matrix_multip.f90
-rwxr-xr-x 1 ese-zhanglc ese-ouycc 13456 Dec 18 15:27 matrix.x
-rwxr-xr-x 1 ese-zhanglc ese-ouycc    91 Dec 15 22:59 M.dat
-rwxr-xr-x 1 ese-zhanglc ese-ouycc    91 Dec 18 00:46 MN.dat
-rwxr-xr-x 1 ese-zhanglc ese-ouycc    76 Dec 15 22:59 N.dat
-rw-r--r-- 1 ese-zhanglc ese-ouycc   406 Dec 22 18:12 SEA.f90
-rw-r--r-- 1 ese-zhanglc ese-ouycc   581 Dec 22 18:17 Solar_hour_angle.f90
```

```
module Declination_angle

implicit none

real, parameter :: pi = 3.1415926
real, parameter :: temp = -0.397788

contains

subroutine calu_dec_angle(days,sigma)

implicit none

real(8),intent(in) :: days
real(8),intent(out) :: sigma

sigma =
asind(temp*cosd((360.0/365.24)*(days+10.0)+(360.0/pi))*0.0167*sind((360.0/365.24)*(days-2.0)))

print *, 'sigma = ' sigma

end subroutine calu_dec_angle

end module Declination_angle
```

```
module Solar_hour_angle

implicit none

real, parameter :: pi = 3.1415926

contains
subroutine calu_hour_angle(days,lst,longitude,tz,hour)

implicit none

real(8), intent(in), :: days,lst,longitude,tz
real(8), intent(out), :: hour
real(8), gamma,eot,offset,temp

gamma = (2*pi/365)*(days-1+(lst-12.0)/24.0)
eot =
229.18*(0.000075+0.001816*cos(gamma)-0.032077*sin(gamma)-0.014615*cos(2*gamma)-0.040849*sin(2*gamma))
offset = eot + 4*(longitude-15*tz)
temp = lst + offset/60.0
hour = 15*(temp-12)
print *, 'hour = ' hour

end subroutine calu_hour_angle

end module Solar_hour_angle
```

```
Program SEA

implicit none

use Declination_angle
use Solar_hour_angle

implicit none

real(8) :: days, lst, longtitude, tz

days = 327.0
lst = 15.5
longitude = -118.24
tz = -8
latitude = 32.22

call calu_dec_angle(days,sigma)
call calu_hour_angle(days,lst,longtitude,tz,hour)

result = asind(sind(latitude)*sind(sigma)+cosd(latitude)*cosd(sigma)*cosd(hour))
print *. 'result = ' result

end Program SEA
```

i cannot get right results from your codes,-4