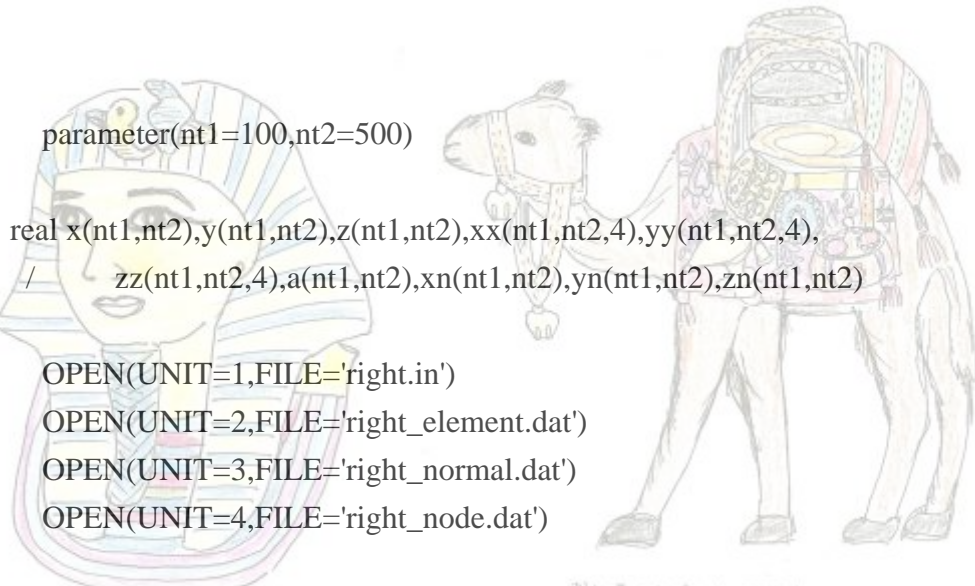


- c **** 輸入四個端點自動分割四點元素(x_const 假想邊界平面) ****
- c modified 2002/2/12 逆時針



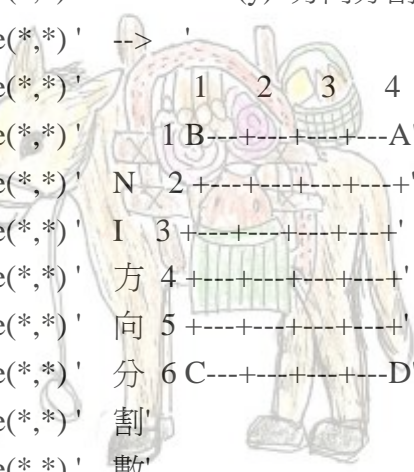
```

parameter(nt1=100,nt2=500)
real x(nt1,nt2),y(nt1,nt2),z(nt1,nt2),xx(nt1,nt2,4),yy(nt1,nt2,4),
/   zz(nt1,nt2,4),a(nt1,nt2),xn(nt1,nt2),yn(nt1,nt2),zn(nt1,nt2)

OPEN(UNIT=1,FILE='right.in')
OPEN(UNIT=2,FILE='right_element.dat')
OPEN(UNIT=3,FILE='right_normal.dat')
OPEN(UNIT=4,FILE='right_node.dat')

write(*,*) '輸入四個端點自動分割四點元素(x=const)假想邊界平面'
write(*,*) '輸入 A,B,C,D 四個端點的座標'
write(*,*)
write(*,*) '輸入 例' 2011 埃及尼羅河之旅
write(*,*)
write(*,*)
write(*,*) '      NJ (y) 方向分割數 = 5  '
write(*,*) ' --> '
write(*,*) '      1  2  3  4  5'
write(*,*) '      1 B-----+-----+-----A'
write(*,*) ' N  2 +-----+-----+-----+'
write(*,*) ' I  3 +-----+-----+-----+'
write(*,*) ' 方 4 +-----+-----+-----+'
write(*,*) ' 向 5 +-----+-----+-----+'
write(*,*) ' 分 6 C-----+-----+-----D'
write(*,*) ' 割'
write(*,*) ' 數'
write(*,*) ' 6'

no=3
write(*,*)
write(*,*) '右岸壁邊界面編號  no = 3'
  
```



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```

write(*,*)
write(*,*) '輸入 x=const x 的座標'
read(*,*) xconst
write(*,*)
write(*,*) '輸入 NI(水深) 方向的座標數'
read(*,*) ni
write(*,*)
write(*,*)
write(*,*) '輸入 NJ(x=const) 方向的座標數'
read(*,*) nj

ni1=ni-1
nj1=nj-1

read(1,*) ya, za
read(1,*) yb, zb
read(1,*) yc, zc
read(1,*) yd, zd

```



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```

y(1,1)=ya
z(1,1)=za
y(1,nj)=yb
z(1,nj)=zb
y(ni,nj)=yc
z(ni,nj)=zc
y(ni,1)=yd
z(ni,1)=zd

yab=(yb-ya)/nj1
zab=(zb-za)/nj1
ybc=(yc-yb)/ni1
zbc=(zc-zb)/ni1
ycd=(yc-yd)/nj1
zcd=(zc-zd)/nj1
yda=(yd-ya)/ni1
zda=(zd-za)/ni1

```



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```

do j=2,nj1
y(1,j)=y(1,1)+yab*(j-1)
z(1,j)=z(1,1)+zab*(j-1)
end do

```

```

do i=2,ni1
y(i,nj)=y(1,nj)+ybc*(i-1)
z(i,nj)=z(1,nj)+zbc*(i-1)
end do

```

```

do j=2,nj1
y(ni,j)=y(ni,1)+ycd*(j-1)
z(ni,j)=z(ni,1)+zcd*(j-1)
end do

```

```

do i=2,ni1
ii=ni1+2-i
y(ii,1)=y(1,1)+yda*(i-1)
z(ii,1)=z(1,1)+zda*(i-1)
end do

```



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```

do i=2,ni1
do j=2,nj1
yij=(y(i,nj)-y(i,1))/nj1
zij=(z(i,nj)-z(i,1))/nj1
y(i,j)=y(i,1)+yij*(j-1)
z(i,j)=z(i,1)+zij*(j-1)
end do
end do

```

```

do ki=1,ni1
do kj=1,nj1

```

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```

yy(ki,kj,1)=y(ki+1,kj+1)
yy(ki,kj,2)=y(ki+1,kj)
yy(ki,kj,3)=y(ki,kj)
yy(ki,kj,4)=y(ki,kj+1)

```



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```

zz(ki,kj,1)=z(ki+1,kj+1)
zz(ki,kj,2)=z(ki+1,kj)
zz(ki,kj,3)=z(ki,kj)
zz(ki,kj,4)=z(ki,kj+1)

```

```

end do
end do

```

```

do ki=1,ni
do kj=1,nj
x(ki,kj)=xconst
end do
end do

```

```

do ki=1,ni1
do kj=1,nj1
do j=1,4
xx(ki,kj,j)=xconst
end do
end do
end do

```



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```

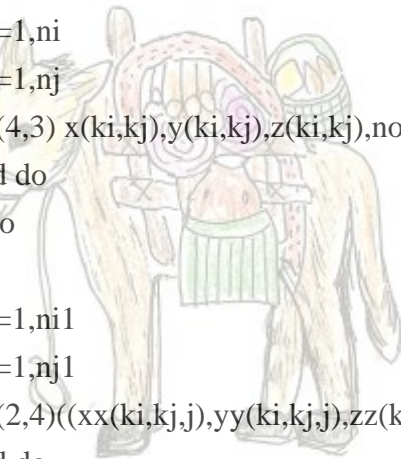
do ki=1,ni
do kj=1,nj
write(4,3) x(ki,kj),y(ki,kj),z(ki,kj),no,ki,kj
end do
end do

```

```

do ki=1,ni1
do kj=1,nj1
write(2,4)((xx(ki,kj,j),yy(ki,kj,j),zz(ki,kj,j),no,ki,kj,j),j=1,4)
end do
end do

```



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CALL normal(Xx,Yy,Zz,XN,YN,ZN,A,NT1,NT2,NI1,NJ1)

```

do ki=1,ni1
do kj=1,nj1

```

```

write(3,2) xn(ki,kj),yn(ki,kj),zn(ki,kj),a(ki,kj),no,ki,kj
end do
end do
4   FORMAT(3F10.4,4i5)
3   FORMAT(3F10.4,3i5)
2   FORMAT(4F10.4,3i5)

stop
end

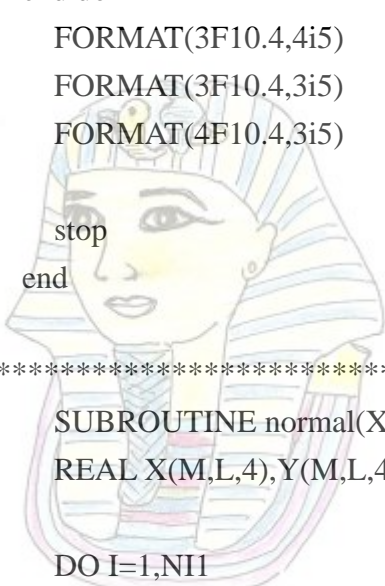
C*****
SUBROUTINE normal(X,Y,Z,XN,YN,ZN,A,M,L,NI1,NJ1)
REAL X(M,L,4),Y(M,L,4),Z(M,L,4),XN(M,L),YN(M,L),ZN(M,L),A(M,L)
DO I=1,NI1
DO J=1,NJ1
R1=X(I,j,3)-X(I,J,1)
R2=Y(I,J,3)-Y(I,J,1)
R3=Z(I,J,3)-Z(I,J,1)
R4=X(I,J,4)-X(I,J,2)
R5=Y(I,J,4)-Y(I,J,2)
R6=Z(I,J,4)-Z(I,J,2)
R=SQRT((R5*R3-R6*R2)**2+(R6*R1-R4*R3)**2+(R4*R2-R5*R1)**2)

XN(I,J)=(R5*R3-R6*R2)/R
YN(I,J)=(R6*R1-R4*R3)/R
ZN(I,J)=(R4*R2-R5*R1)/R

T1=X(I,J,2)-X(I,J,1)
T2=Y(I,J,2)-Y(I,J,1)
T3=Z(I,J,2)-Z(I,J,1)
T4=X(I,J,4)-X(I,J,1)
T5=Y(I,J,4)-Y(I,J,1)
T6=Z(I,J,4)-Z(I,J,1)

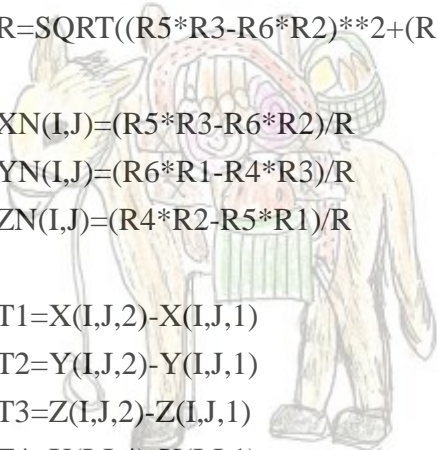
R=.5*SQRT((T2*R3-T3*R2)**2+(T3*R1-T1*R3)**2+(T1*R2-T2*R1)**2)
T=.5*SQRT((R2*T6-R3*T5)**2+(R3*T4-R1*T6)**2+(R1*T5-R2*T4)**2)
A(I,J)=R+T

```



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END DO

END DO

RETURN

END



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