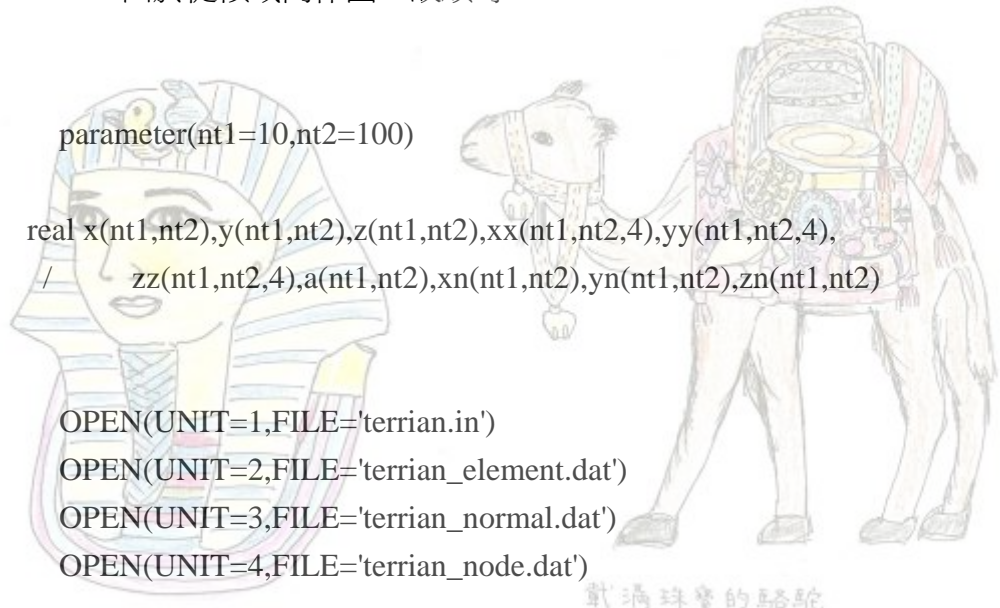


- c \*\*\*\* 從各點座標組合四點元素(海底地形) \*\*\*\*
- c modified 2000/6/13 逆時針
- c 由於從領域內作圖，故順時



```

parameter(nt1=10,nt2=100)
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='terrian.in')
OPEN(UNIT=2,FILE='terrian_element.dat')
OPEN(UNIT=3,FILE='terrian_normal.dat')
OPEN(UNIT=4,FILE='terrian_node.dat')

```

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```

write(*,*) '從各點座標組合四點元素(海底地形)'
write(*,*) '輸入 例'
write(*,*)           2011 埃及尼羅河之旅
write(*,*)
write(*,*)
write(*,*) '      NJ (x) 方向 = 5  '
write(*,*) ' -->  '
write(*,*) '      1  2  3  4  5'
write(*,*) '      1 +---+---+---+---+'
write(*,*) ' N  2 +---+---+---+---+'
write(*,*) ' I  3 +---+---+---+---+'
write(*,*) ' 方 4 +---+---+---+---+'
write(*,*) ' 向 5 +---+---+---+---+'
write(*,*) ' =  6 +---+---+---+---+'
write(*,*) ' 6'
write(*,*)
no=6
write(*,*) '不規則海底邊界面編號 no = 6'
write(*,*)
write(*,*) '輸入 NI (y) 方向的座標數'
read(*,*) ni
write(*,*)

```



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```

write(*,*)
  write(*,*) '輸入 NJ(x) 方向的座標數'
read(*,*) nj

```

```

ni1=ni-1
nj1=nj-1
kn=ni1*nj1
read(1,*) (((x(i,j),y(i,j),z(i,j)),j=1,nj),i=1,ni)

```

```

do ki=1,ni1
do kj=1,nj1
  k=kj+ni1*(ki-1)

```

```

xx(ki,kj,1)=x(ki,kj)
xx(ki,kj,2)=x(ki,kj+1)
xx(ki,kj,3)=x(ki+1,kj+1)
xx(ki,kj,4)=x(ki+1,kj)

```

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```

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

```

```

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

```

```

end do
end do

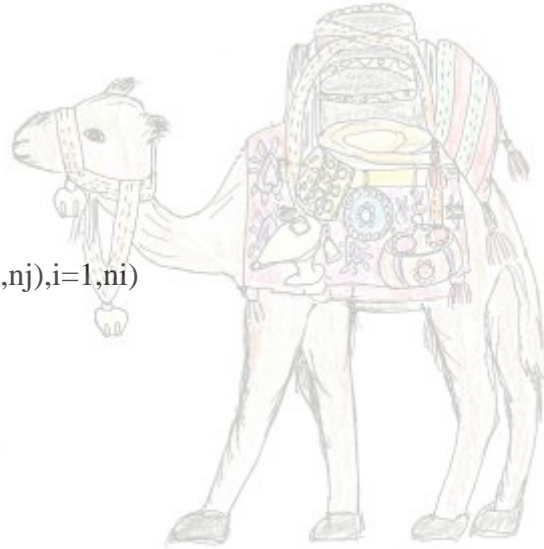
```

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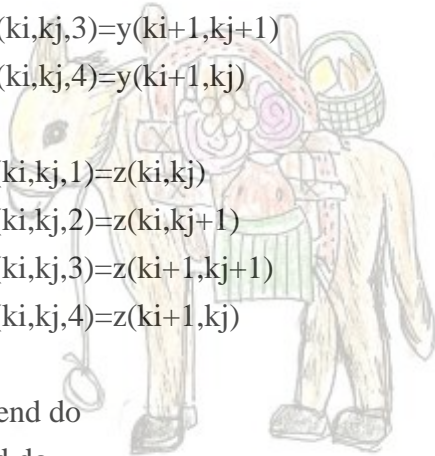
```

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

```



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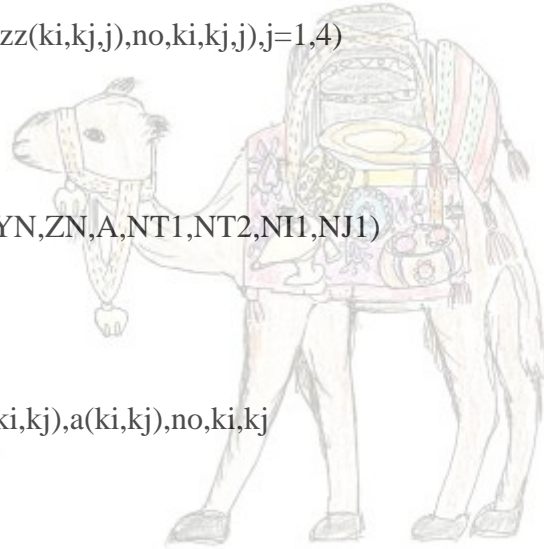


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```

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

```



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)

```

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```

stop
end

```

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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)

```

```

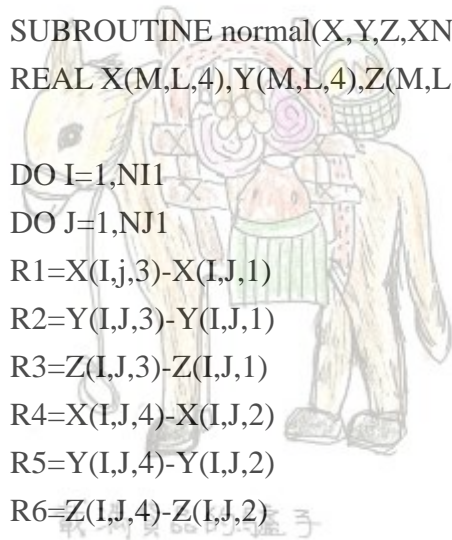
DO I=1,NI1
DO J=1,NJ1
R1=X(I,J,3)-X(I,J,1)
R2=Y(I,J,3)-Y(I,J,1)
R3=Z(I,J,3)-Z(I,J,1)
R4=X(I,J,4)-X(I,J,2)
R5=Y(I,J,4)-Y(I,J,2)
R6=Z(I,J,4)-Z(I,J,2)
R=SQRT((R5*R3-R6*R2)**2+(R6*R1-R4*R3)**2+(R4*R2-R5*R1)**2)

```

```

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

```



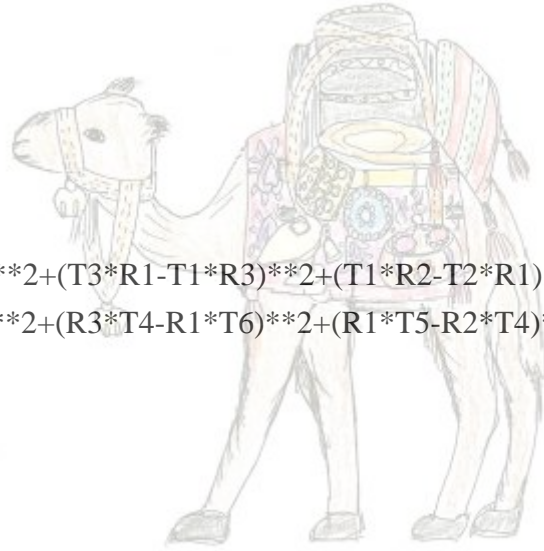
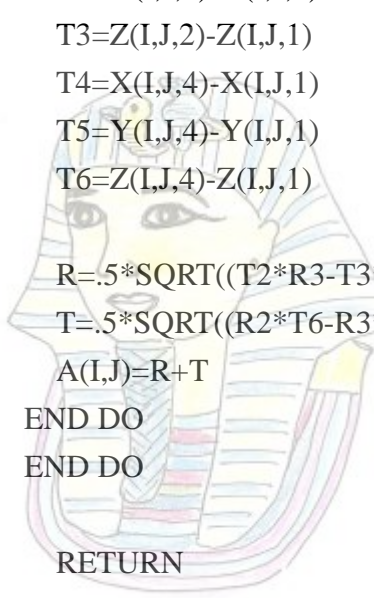
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```

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
END DO
END DO
RETURN
END

```



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