```
So luong he truc toa do: 9

n =

     9

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)0

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : 0

dy =

     0

Dich chuyen theo truc z : l1

dz =

l1


T =

[ 1, 0, 0,  0]
[ 0, 1, 0,  0]
[ 0, 0, 1, l1]
[ 0, 0, 0,  1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)1

C =

  Columns 1 through 10
```

```
     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Quay quanh tuc nao x/y/z: z

Q =

z

Gia tri quay quanh truc: t1

t =

t1


T =

[ cos(t1), -sin(t1), 0,  0]
[ sin(t1),  cos(t1), 0,  0]
[       0,        0, 1, l1]
[       0,        0, 0,  1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)0

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : 0

dy =
```

```
     0

Dich chuyen theo truc z : l2

dz =

l2


T =

[ cos(t1), -sin(t1), 0,       0]
[ sin(t1),  cos(t1), 0,       0]
[       0,        0, 1, l1 + l2]
[       0,        0, 0,       1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)1

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Quay quanh tuc nao x/y/z: x

Q =

x

Gia tri quay quanh truc: t2

t =

t2


T =

[ cos(t1), -cos(t2)*sin(t1),  sin(t1)*sin(t2),       0]
[ sin(t1),  cos(t1)*cos(t2), -cos(t1)*sin(t2),       0]
[       0,          sin(t2),          cos(t2), l1 + l2]
[       0,                0,                0,       1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)0
```

```
C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : l3

dy =

l3

Dich chuyen theo truc z : 0

dz =

     0


T =

[ cos(t1), -cos(t2)*sin(t1),  sin(t1)*sin(t2),  -l3*cos(t2)*sin(t1)]
[ sin(t1),  cos(t1)*cos(t2), -cos(t1)*sin(t2),   l3*cos(t1)*cos(t2)]
[       0,          sin(t2),          cos(t2), l1 + l2 + l3*sin(t2)]
[       0,                0,                0,                   1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)1

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0
```

```
Quay quanh tuc nao x/y/z: x

Q =

x

Gia tri quay quanh truc: t3

t =

t3


T =

[ cos(t1), sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1),   cos(t2)*sin(t1)*sin
(t3) + cos(t3)*sin(t1)*sin(t2),  -l3*cos(t2)*sin(t1)]
[ sin(t1), cos(t1)*cos(t2)*cos(t3) - cos(t1)*sin(t2)*sin(t3), - cos(t1)*cos(t2)*sin
(t3) - cos(t1)*cos(t3)*sin(t2),   l3*cos(t1)*cos(t2)]
[       0,                 cos(t2)*sin(t3) + cos(t3)*sin(t2),                   cos
(t2)*cos(t3) - sin(t2)*sin(t3), l1 + l2 + l3*sin(t2)]
[       0,                                                 0,
0,                   1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)0

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : l4

dy =

l4

Dich chuyen theo truc z : 0
```

```
dz =

     0


T =

[ cos(t1), sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1),   cos(t2)*sin(t1)*sin
(t3) + cos(t3)*sin(t1)*sin(t2), l4*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin
(t1)) - l3*cos(t2)*sin(t1)]
[ sin(t1), cos(t1)*cos(t2)*cos(t3) - cos(t1)*sin(t2)*sin(t3), - cos(t1)*cos(t2)*sin
(t3) - cos(t1)*cos(t3)*sin(t2), l3*cos(t1)*cos(t2) - l4*(cos(t1)*sin(t2)*sin(t3) -
cos(t1)*cos(t2)*cos(t3))]
[       0,                cos(t2)*sin(t3) + cos(t3)*sin(t2),                  cos
(t2)*cos(t3) - sin(t2)*sin(t3),              l1 + l2 + l4*(cos(t2)*sin(t3) + cos(t3
*sin(t2)) + l3*sin(t2)]
[       0,                                                0,
0,                                                                        1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)1

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Quay quanh tuc nao x/y/z: x

Q =

x

Gia tri quay quanh truc: t4

t =

t4


T =

[ cos(t1),   cos(t4)*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1)) + sin(t4)
(cos(t2)*sin(t1)*sin(t3) + cos(t3)*sin(t1)*sin(t2)), cos(t4)*(cos(t2)*sin(t1)*sin(t3
```

```
+ cos(t3)*sin(t1)*sin(t2)) - sin(t4)*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin
(t1)), l4*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1)) - l3*cos(t2)*sin(t1)]
[ sin(t1), - cos(t4)*(cos(t1)*sin(t2)*sin(t3) - cos(t1)*cos(t2)*cos(t3)) - sin(t4)
(cos(t1)*cos(t2)*sin(t3) + cos(t1)*cos(t3)*sin(t2)), sin(t4)*(cos(t1)*sin(t2)*sin(t3
- cos(t1)*cos(t2)*cos(t3)) - cos(t4)*(cos(t1)*cos(t2)*sin(t3) + cos(t1)*cos(t3)*sin
(t2)), l3*cos(t1)*cos(t2) - l4*(cos(t1)*sin(t2)*sin(t3) - cos(t1)*cos(t2)*cos(t3))]
[       0,                                    cos(t4)*(cos(t2)*sin(t3) + cos(t3)*sin
(t2)) + sin(t4)*(cos(t2)*cos(t3) - sin(t2)*sin(t3)),
cos(t4)*(cos(t2)*cos(t3) - sin(t2)*sin(t3)) - sin(t4)*(cos(t2)*sin(t3) + cos(t3)*sin
(t2)),               l1 + l2 + l4*(cos(t2)*sin(t3) + cos(t3)*sin(t2)) + l3*sin(t2)]
[       0,
0,
0,                                                                              1]

He truc so Chuyen vi cua he truc, 0/1 (0:Tinh tien, 1:Quay)0

C =

  Columns 1 through 10

     0     1     0     1     0     1     0     1     0     1

  Column 11

     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : l5

dy =

l5

Dich chuyen theo truc z : l6

dz =

l6


T =

[ cos(t1),   cos(t4)*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1)) + sin(t4)
(cos(t2)*sin(t1)*sin(t3) + cos(t3)*sin(t1)*sin(t2)), cos(t4)*(cos(t2)*sin(t1)*sin(t3
```

```
+ cos(t3)*sin(t1)*sin(t2)) - sin(t4)*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin
(t1)), l4*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1)) + l5*(cos(t4)*(sin(t1)
*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1)) + sin(t4)*(cos(t2)*sin(t1)*sin(t3) + cos
(t3)*sin(t1)*sin(t2))) + l6*(cos(t4)*(cos(t2)*sin(t1)*sin(t3) + cos(t3)*sin(t1)*sin
(t2)) - sin(t4)*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1))) - l3*cos(t2)*sin
(t1)]
[ sin(t1), - cos(t4)*(cos(t1)*sin(t2)*sin(t3) - cos(t1)*cos(t2)*cos(t3)) - sin(t4)
(cos(t1)*cos(t2)*sin(t3) + cos(t1)*cos(t3)*sin(t2)), sin(t4)*(cos(t1)*sin(t2)*sin(t3)
- cos(t1)*cos(t2)*cos(t3)) - cos(t4)*(cos(t1)*cos(t2)*sin(t3) + cos(t1)*cos(t3)*sin
(t2)), l3*cos(t1)*cos(t2) - l5*(cos(t4)*(cos(t1)*sin(t2)*sin(t3) - cos(t1)*cos(t2)
*cos(t3)) + sin(t4)*(cos(t1)*cos(t2)*sin(t3) + cos(t1)*cos(t3)*sin(t2))) - l6*(cos
(t4)*(cos(t1)*cos(t2)*sin(t3) + cos(t1)*cos(t3)*sin(t2)) - sin(t4)*(cos(t1)*sin(t2)
*sin(t3) - cos(t1)*cos(t2)*cos(t3))) - l4*(cos(t1)*sin(t2)*sin(t3) - cos(t1)*cos(t2)
*cos(t3))]
[       0,                                    cos(t4)*(cos(t2)*sin(t3) + cos(t3)*sin
(t2)) + sin(t4)*(cos(t2)*cos(t3) - sin(t2)*sin(t3)),
cos(t4)*(cos(t2)*cos(t3) - sin(t2)*sin(t3)) - sin(t4)*(cos(t2)*sin(t3) + cos(t3)*sin
(t2)),
l1 + l2 + l4*(cos(t2)*sin(t3) + cos(t3)*sin(t2)) + l3*sin(t2) + l5*(cos(t4)*(cos(t2)
*sin(t3) + cos(t3)*sin(t2)) + sin(t4)*(cos(t2)*cos(t3) - sin(t2)*sin(t3))) + l6*(cos
(t4)*(cos(t2)*cos(t3) - sin(t2)*sin(t3)) - sin(t4)*(cos(t2)*sin(t3) + cos(t3)*sin
(t2)))]
[       0,
0,
0,
1]


ans =

[ cos(t1), -cos(t2 + t3 + t4)*sin(t1),  sin(t2 + t3 + t4)*sin(t1), -sin(t1)*(l4*cos
(t2 + t3) + l3*cos(t2) + l5*cos(t2 + t3 + t4) - l6*sin(t2 + t3 + t4))]
[ sin(t1),  cos(t2 + t3 + t4)*cos(t1), -sin(t2 + t3 + t4)*cos(t1),  cos(t1)*(l4*cos
(t2 + t3) + l3*cos(t2) + l5*cos(t2 + t3 + t4) - l6*sin(t2 + t3 + t4))]
[       0,          sin(t2 + t3 + t4),          cos(t2 + t3 + t4),  l1 + l2 + l4*sin
(t2 + t3) + l3*sin(t2) + l6*cos(t2 + t3 + t4) + l5*sin(t2 + t3 + t4)]
[       0,                          0,                          0
1]

>>
```