```
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 =

     0     1     0     1     0     0     0     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 =

     0     1     0     1     0     0     0     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 =

     0     1     0     1     0     0     0     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : 0

dy =

     0

Dich chuyen theo truc z : l3

dz =

l3


T =

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

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

```
C =

     0     1     0     1     0     0     0     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 + l3]
[       0,                0,                0,       1]

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

C =

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

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

C =

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

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

C =

     0     1     0     1     0     1     0     0

Dich chuyen theo truc x : 0

dx =

     0
```

```
Dich chuyen theo truc y : l5

dy =

l5

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

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

C =

     0     1     0     1     0     1     0     1

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)), l5*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1)) - l4*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)), l4*cos(t1)*cos(t2) - l5*(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 + l3 + l5*(cos(t2)*sin(t3) + cos(t3)*sin(t2)) + l4*sin(t2)]
[       0,↙
0,↙
0,                                                                              1]

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

C =

     0     1     0     1     0     1     0     1     0

Dich chuyen theo truc x : 0

dx =

     0

Dich chuyen theo truc y : l6

dy =

l6

Dich chuyen theo truc z : 0

dz =

     0


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


ans =

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

>>
```