

```
%.....  
.....
```

```
syms p1 p2 p3 x1 x2 x3 x4 x5 x6 a1 a2 a3 a4 a5 a6 d1 d2 d3 d6 d4 d5;
```

```
R2=[cos(x1),0,sin(x1),a1*cos(x1);sin(x1),0,-cos(x1),a1*sin(x1);0,1,0,0;0,0,0,1];
```

```
%R2:T1 to 0
```

```
R2(1,:);%?????? ??????? ????????
```

```
R2(:,1); % namayesh soton aval matrix
```

```
R2(3,1) %namayesh yek onsor matrix
```

```
pp=R2(:,3);
```

```
%.....
```

```
R3=[cos(x2),-sin(x2),0,a2*cos(x2);sin(x2),cos(x2),0,a2*sin(x2);0,0,1,0;0,0,0,1];
```

```
%R3:T2 to 1
```

```
z2=R2*R3;
```

```
%z2:T2 TO 0
```

```
%.....
```

```
R4=[cos(x3),0,sin(x3),a3*cos(x3);sin(x3),0,-cos(x3),a3*sin(x3);0,1,0,0;0,0,0,1];
```

```
%R4:T3 to 2
```

```
z3=z2*R4;
```

```
%z3:T3 TO 0
```

%.....

R5=[cos(x4),0,-sin(x4),0;sin(x4),0,cos(x4),0;0,-1,0,d4;0,0,0,1];

%R5:T3 to 4

z4=z3*R5;

%z4:T4 TO 0

%.....

R54=[cos(x5),0,sin(x5),0;sin(x5),0,-cos(x5),0;0,1,0,0;0,0,0,1];

%R54:T5 to 4

z50=z4*R54;

%z50:T5 TO 0

%.....

R6=[cos(x6),-sin(x6),0,0;sin(x6),cos(x6),0,0;0,0,1,d6;0,0,0,1];

%R6:T6 to 5

z60=z50*R6;

%z60:T6 TO 0

%.....

```
p1=cos(x1)*(a1+a2*cos(x2)+a3*cos(x2+x3)+d4*sin(x2+x3)+d6*(cos(x2+x3)*cos(x4)*sin(x5)+sin(x2+x3)*cos(x5))+d6*sin(x1)*sin(x4)*sin(x5));
```

```
p2=sin(x1)*(a1+a2*cos(x2)+a3*cos(x2+x3)+d4*sin(x2+x3)+d6*(cos(x2+x3)*cos(x4)*sin(x5)+sin(x2+x3)*cos(x5))-d6*cos(x1)*sin(x4)*sin(x5));
```

```
p3 =a2*sin(x2) + a3*sin(x2+x3) - d4*cos(x2 + x3) + d6*(sin(x2 + x3)*cos(x4)*sin(x5) - cos(x2 + x3)*cos(x5));
```

```
%.....
```

```
az1=R2(:,3);
```

```
az2=z2(:,3);
```

```
% as=[az1,az2];
```

```
az3=z3(:,3);
```

```
az4=z4(:,3);
```

```
az50=z50(:,3);
```

```
az60=z60(:,3);
```

```
jw=[az1,az2,az3,az4,az50,az60];
```

```
jv= jacobian([p1;p2;p3],[x1 x2 x3 x4 x5 x6]);
```

```
%.....
```

```
%
```

```
ak=[1,2,3;5,6,7;10,20,30];
```

```
jkoli=[jv;jw];
```

```
% mm=input('please input your number');
```

```
% k=32;
```

```
% s=0.5;
```

```
% bh=(k/mm)^s;
```

```
%.....  
.....
```

```
%.....control for fanuc.....
```

```
%%
```

```
%b:???? ????
```

```
%k:???? ????
```

```
%m:??? ????
```

```
%w:?????? ??????
```

```
%kp:?????? ??????
```

```
%kv:?????? ??????
```

```
%E:damping
```

```
%F:????? ?????? ??????? ?? ??????
```

```
%v:????
```

```
%.....
```

```
%k=12;
```

```
%b=3;
```

```
%m=input('please input your germ');
```

```
%w=(k/m)^0.5;
```

```
%kp=m*(w^2);
```

```
%E=b/(2*(k*m)^0.5);
```

```
%kv=m*(2*E*w);
```

```
%xgool=input('please input your xgool');
```

```
%x=input('please input your x');
```

```
%v=input('please input your sorar');
```

```
%F=-kp*(x-xgool)-kv*v;
```

```
%.....
```

```
tp1=R2(:,4);
```

```
tp2=z2(:,4);
```

```
tp3=z3(:,4);
```

```
tp4=z4(:,4);
```

```
tp5=z50(:,4);
```

```
tp6=z60(:,4);
```

```
%.....
```

```
%tpc1=R2*tp1;
```

```
%tpc2=z2*tp2;
```

```
%tpc3=z3*tp3;
```

```
%tpc4=z4*tp4;
```

```
%tpc5=z50*tp5;
```

```
%tpc6=z60*tp6;
```

```
s=[0;0;0;0];
```

```
d2= a1*cos(x1) + a2*cos(x1)*cos(x2);
```

```
marz=jacobian(d2,x1);
```

```
%.....
```

```
onsor=R2(1,4);
```

```
onsor1=R2(2,4);
```

```
onsor2=R2(3,4);
```

```
onsor3=R2(4,4);
```

```
jvc1=jacobian([onsor;onsor1;onsor2;onsor3],[x1]);
```

```
jv1=[jvc1,s,s,s,s];
```

```
%.....
```

```
kl=z2(1,4);
```

```
kl1=z2(2,4);
```

```
kl2=z2(3,4);
```

```
kl3=z2(4,4);
```

```
jvc2=jacobian([kl;kl1;kl2;kl3],[x1 x2]);
```

```
jv2=[jvc2,s,s,s,s];
```

```
%.....
```

```
kk1=z3(1,4);
```

```
kk2=z3(2,4);
```

```
kk3=z3(3,4);
```

```
kk4=z3(4,4);
```

```
jv3=jacobian([kk1;kk2;kk3;kk3],[x1 x2 x3]);
```

```
jv3=[jvc3,s,s,s];
```

```
%.....
```

```
kk10=z4(1,4);
```

```
kk20=z4(2,4);
```

```
kk30=z4(3,4);
```

```
kk40=z4(4,4);
```

```
jv4=jacobian([kk10;kk20;kk30;kk40],[x1 x2 x3 x4]);
```

```
jv4=[jvc4,s,s];
```

```
%.....
```

```
kk100=z50(1,4);
```

```
kk200=z50(2,4);
```

```
kk300=z50(3,4);
```

```
kk400=z50(4,4);
```

```
jv5=jacobian([kk100;kk200;kk300;kk400],[x1 x2 x3 x4 x5]);
```

```
jv5=[jvc5,s];  
%.....
```

```
kk1000=z60(1,4);
```

```
kk2000=z60(2,4);
```

```
kk3000=z60(3,4);
```

```
kk4000=z60(4,4);
```

```
jvc6=jacobian([kk1000;kk2000;kk3000;kk4000],[x1 x2 x3 x4 x5 x6]);
```

```
jv6=jvc6;
```

```
jw1=[az1,0,0,0,0,0];
```

```
jw2=[az1,az2,0,0,0,0];
```

```
jw3=[az1,az2,az3,0,0,0];
```

```
jw4=[az1,az2,az3,az4,0,0];
```

```
jw5=[az1,az2,az3,az4,az50,0];
```

```
jw6=[az1,az2,az3,az4,az50,az60];
```

```
l=eye(4);
```

```
%rr=l*jw1;
```

```
m1=10;
```


m2=20;

m3=30;

m4=40;

m5=50;

m6=60;

%A=[1,2,2;4,5,6;7,8,9];

h1=jv1';

h2=jv2';

h3=jv3';

h4=jv4';

h5=jv5';

h6=jv6';

$$j1=m1*h1*jv1+jw1'*i*jw1;$$

$$j2=m2*h2*jv2+jw2'*i*jw2;$$

$$j3=m3*h3*jv3+jw3'*i*jw3;$$

$$j4=m4*h4*jv4+jw4'*i*jw4;$$

$$j5=m5*h5*jv5+jw5'*i*jw5;$$

$$j6=m6*h6*jv6+jw6'*i*jw6;$$

$$M=j1+j2+j3+j4+j5+j6;$$

%for i=1:6

% for j=1:6

% end

%end

m(1)(1)=