ภาคผนวก ก

รายละเอียดโปรแกรมการสร้างเส้นอิทธิพล ของคานช่วงเดียวธรรมดา

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x=0:0.0005:3;
P1=1/8;P2=1/8;P3=1/8;P4=1/8;P5=1/8;P6=1/8;P7=1/8;P8=1/8;L=1;
l1=1/14;l2=1/14;l3=1/14;l4=1/14;l5=1/14;l6=1/14;l7=1/14;
lL1=l1;lL2=l1+l2;lL3=l1+l2+l3;
lL4=l1+l2+l3+l4;lL5=l1+l2+l3+l4+l5;
lL6=l1+l2+l3+l4+l5+l6;lL7=l1+l2+l3+l4+l5+l6+l7;
nlL1=num2str(lL1);
nlL2=num2str(lL2);
nlL3=num2str(lL3);
nlL4=num2str(lL4);
nlL5=num2str(lL5);
nlL6=num2str(lL6);
nlL7=num2str(lL7);

P9=0;
m=[P1 P2 P3 P4 P5 P6 P7 P8 P9];
[y,p]=min(m);
n=p-1;
n=num2str(n);

%Load#1
hsx01=heaviside(x)-heaviside(x-1);  %0-L
hsx02=heaviside(x-1)-heaviside(x-2);  %L-2L
hsx03=heaviside(x)-heaviside(x-0.5);%0-0.5L
hsx04=heaviside(x-0.5)-heaviside(x-1);  %0.5L-L
hsx05=heaviside(x)-heaviside(x-0.95);%0-0.95L
hsx06=heaviside(x-0.95)-heaviside((x-0.95)-(1-0.95));  %0.95L-L
%Load#2
hsx07=heaviside(x-lL1)-heaviside(x-(1+lL1));  %0-L
hsx08=heaviside(x-1-lL1)-heaviside(x-(2+lL1));  %L-2L
hsx09=heaviside(x-lL1)-heaviside(x-(0.5+lL1)); %0-0.5L
hsx10=heaviside(x-0.5-lL1)-heaviside(x-(1+lL1));  %0.5L-L
hsx11=heaviside(x-lL1)-heaviside(x-(0.95+lL1));%0-0.95L
hsx12=heaviside((x-0.95)-lL1)-heaviside((x-0.95)-((1-0.95)+lL1));  %0.95L-L
%Load#3
hsx13=heaviside(x-lL2)-heaviside(x-(1+lL2));  %0-L
hsx14=heaviside(x-1-lL2)-heaviside(x-(2+lL2));  %L-2L
hsx15=heaviside(x-lL2)-heaviside(x-(0.5+lL2));%0-0.5L
hsx16=heaviside(x-0.5-lL2)-heaviside(x-(1+lL2));  %0.5L-L
hsx17=heaviside(x-lL2)-heaviside(x-(0.95+lL2));%0-0.95L
hsx18=heaviside((x-0.95)-lL2)-heaviside((x-0.95)-((1-0.95)+lL2));  %0.95L-L
%Load#4
hsx19=heaviside(x-lL3)-heaviside(x-(1+lL3));  %0-L
hsx20=heaviside(x-1-lL3)-heaviside(x-(2+lL3));  %L-2L
hsx21=heaviside(x-lL3)-heaviside(x-(0.5+lL3));%0-0.5L
hsx22=heaviside(x-0.5-lL3)-heaviside(x-(1+lL3));  %0.5L-L
hsx23=heaviside(x-lL3)-heaviside(x-(0.95+lL3));%0-0.95L
hsx24=heaviside((x-0.95)-lL3)-heaviside((x-0.95)-((1-0.95)+lL3));  %0.95L-L
%Load#5
hsx25=heaviside(x)-heaviside(x-0.05);%0-0.05L
hsx26=heaviside(x-0.05)-heaviside(x-1);  %0.05L-L
hsx27=heaviside(x-lL1)-heaviside(x-(0.05+lL1));%0-0.05L
hsx28=heaviside((x-0.05)-lL1)-heaviside(x-(1+lL1));  %0.05L-L
hsx29=heaviside(x-lL2)-heaviside(x-(0.05+lL2));%0-0.05L
hsx30=heaviside((x-0.05)-lL2)-heaviside(x-(1+lL2));  %0.05L-L
hsx31=heaviside(x-lL3)-heaviside(x-(0.05+lL3));%0-0.05L
hsx32=heaviside((x-0.05)-lL3)-heaviside(x-(1+lL3));  %0.05L-L
%Load#1
hsx33=heaviside(x-lL4)-heaviside(x-(1+lL4));  %0-L
hsx34=heaviside(x-1-lL4)-heaviside(x-(2+lL4));  %L-2L
hsx35=heaviside(x-lL4)-heaviside(x-(0.5+lL4)); %0-0.5L
hsx36=heaviside(x-0.5-lL4)-heaviside(x-(1+lL4));  %0.5L-L
hsx37=heaviside(x-lL4)-heaviside(x-(0.95+lL4));%0-0.95L
hsx38=heaviside((x-0.95)-lL4)-heaviside((x-0.95)-((1-0.95)+lL4));  %0.95L-L
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%Load#2
hsx39=heaviside(x-lL5)-heaviside(x-(1+lL5));  %0-L
hsx40=heaviside(x-1-lL5)-heaviside(x-(2+lL5));  %L-2L
hsx41=heaviside(x-lL5)-heaviside(x-(0.5+lL5)); %0-0.5L
hsx42=heaviside(x-0.5-lL5)-heaviside(x-(1+lL5));  %0.5L-L
hsx43=heaviside(x-lL5)-heaviside(x-(0.95+lL5));%0-0.95L
hsx44=heaviside((x-0.95)-lL5)-heaviside((x-0.95)-((1-0.95)+lL5));  %0.95L-L
%Load#3
hsx45=heaviside(x-lL6)-heaviside(x-(1+lL6));  %0-L
hsx46=heaviside(x-1-lL6)-heaviside(x-(2+lL6));  %L-2L
hsx47=heaviside(x-lL6)-heaviside(x-(0.5+lL6));%0-0.5L
hsx48=heaviside(x-0.5-lL6)-heaviside(x-(1+lL6));  %0.5L-L
hsx49=heaviside(x-lL6)-heaviside(x-(0.95+lL6));%0-0.95L
hsx50=heaviside((x-0.95)-lL6)-heaviside((x-0.95)-((1-0.95)+lL6));  %0.95L-L
%Load#4
hsx51=heaviside(x-lL7)-heaviside(x-(1+lL7));  %0-L
hsx52=heaviside(x-1-lL7)-heaviside(x-(2+lL7));  %L-2L
hsx53=heaviside(x-lL7)-heaviside(x-(0.5+lL7));%0-0.5L
hsx54=heaviside(x-0.5-lL7)-heaviside(x-(1+lL7));  %0.5L-L
hsx55=heaviside(x-lL7)-heaviside(x-(0.95+lL7));%0-0.95L
hsx56=heaviside((x-0.95)-lL7)-heaviside((x-0.95)-((1-0.95)+lL7));  %0.95L-L
%Load#5
hsx57=heaviside(x-lL4)-heaviside(x-(0.05+lL4));%0-0.05L
hsx58=heaviside((x-0.05)-lL4)-heaviside(x-(1+lL4));  %0.05L-L
hsx59=heaviside(x-lL5)-heaviside(x-(0.05+lL5));%0-0.05L
hsx60=heaviside((x-0.05)-lL5)-heaviside(x-(1+lL5));  %0.05L-L
hsx61=heaviside(x-lL6)-heaviside(x-(0.05+lL6));%0-0.05L
 hsx62=heaviside((x-0.05)-lL6)-heaviside(x-(1+lL6));  %0.05L-L
hsx63=heaviside(x-lL7)-heaviside(x-(0.05+lL7));%0-0.05L
hsx64=heaviside((x-0.05)-lL7)-heaviside(x-(1+lL7));  %0.05L-L

%Displacement at L/2
vm1_1=(P1/48)*(4*(x).^3-3*L^2*(x));
vm2_1=(P1/12).*(L-(x)).*((x).^2+(L/2)^2-2*L*(x));
vm1_2=(P2/48)*(4*(x-lL1).^3-3*L^2*(x-lL1));
vm2_2=(P2/12).*(L-(x-lL1)).*((x-lL1).^2+(L/2)^2-2*L*(x-lL1));
vm1_3=(P3/48)*(4*(x-lL2).^3-3*L^2*(x-lL2));
vm2_3=(P3/12).*(L-(x-lL2)).*((x-lL2).^2+(L/2)^2-2*L*(x-lL2));
vm1_4=(P4/48)*(4*(x-lL3).^3-3*L^2*(x-lL3));
vm2_4=(P4/12).*(L-(x-lL3)).*((x-lL3).^2+(L/2)^2-2*L*(x-lL3));
vm1_5=(P5/48)*(4*(x-lL4).^3-3*L^2*(x-lL4));
vm2_5=(P5/12).*(L-(x-lL4)).*((x-lL4).^2+(L/2)^2-2*L*(x-lL4));
vm1_6=(P6/48)*(4*(x-lL5).^3-3*L^2*(x-lL5));
vm2_6=(P6/12).*(L-(x-lL5)).*((x-lL5).^2+(L/2)^2-2*L*(x-lL5));
vm1_7=(P7/48)*(4*(x-lL6).^3-3*L^2*(x-lL6));
vm2_7=(P7/12).*(L-(x-lL6)).*((x-lL6).^2+(L/2)^2-2*L*(x-lL6));
vm1_8=(P8/48)*(4*(x-lL7).^3-3*L^2*(x-lL7));
vm2_8=(P8/12).*(L-(x-lL7)).*((x-lL7).^2+(L/2)^2-2*L*(x-lL7));

%Reaction for Ra
Ra1_1=(P1/L).*(L-(x));
Ra1_2=(P2/L).*(L-(x-lL1));
Ra1_3=(P3/L).*(L-(x-lL2));
Ra1_4=(P4/L).*(L-(x-lL3));
Ra1_5=(P5/L).*(L-(x-lL4));
Ra1_6=(P6/L).*(L-(x-lL5));
Ra1_7=(P7/L).*(L-(x-lL6));
Ra1_8=(P8/L).*(L-(x-lL7));

%Reaction for Rb
Rb1_1=(P1/L).*(x);
Rb1_2=(P2/L).*(x-lL1); Rb1_3=(P3/L).*(x-lL2);
Rb1_4=(P4/L).*(x-lL3);
Rb1_5=(P5/L).*(x-lL4);
Rb1_6=(P6/L).*(x-lL5);
Rb1_7=(P7/L).*(x-lL6);
Rb1_8=(P8/L).*(x-lL7);

%Shear at support
V1_1=-(P1/L).*(x);
V2_1=(P1/L).*(L-(x));
V1_2=-(P2/L).*(x-lL1);
V2_2=(P2/L).*(L-(x-lL1));
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V1_3=-(P3/L).*(x-lL2);
V2_3=(P3/L).*(L-(x-lL2));
V1_4=-(P4/L).*(x-lL3);
V2_4=(P4/L).*(L-(x-lL3));
V1_5=-(P5/L).*(x-lL4);
V2_5=(P5/L).*(L-(x-lL4));
V1_6=-(P6/L).*(x-lL5);
V2_6=(P6/L).*(L-(x-lL5));
V1_7=-(P7/L).*(x-lL6);
V2_7=(P7/L).*(L-(x-lL6));
V1_8=-(P8/L).*(x-lL7);
V2_8=(P8/L).*(L-(x-lL7));

%Moment at midspan
Mm1_1=(P1/2).*(x);
Mm2_1=(P1/2).*(L-(x));
Mm1_2=(P2/2).*(x-lL1);
Mm2_2=(P2/2).*(L-(x-lL1));
Mm1_3=(P3/2).*(x-lL2);
Mm2_3=(P3/2).*(L-(x-lL2));
Mm1_4=(P4/2).*(x-lL3);
Mm2_4=(P4/2).*(L-(x-lL3));
Mm1_5=(P5/2).*(x-lL4);
Mm2_5=(P5/2).*(L-(x-lL4));
Mm1_6=(P6/2).*(x-lL5);
Mm2_6=(P6/2).*(L-(x-lL5));
Mm1_7=(P7/2).*(x-lL6);
Mm2_7=(P7/2).*(L-(x-lL6));
Mm1_8=(P8/2).*(x-lL7);
Mm2_8=(P8/2).*(L-(x-lL7));

%Total
vmt1=vm1_1.*hsx03+vm2_1.*hsx04;
vmt2=vm1_2.*hsx09+vm2_2.*hsx10;
vmt3=vm1_3.*hsx15+vm2_3.*hsx16;
vmt4=vm1_4.*hsx21+vm2_4.*hsx22;
vmt5=vm1_5.*hsx35+vm2_5.*hsx36;
vmt6=vm1_6.*hsx41+vm2_6.*hsx42;
vmt7=vm1_7.*hsx47+vm2_7.*hsx48;
vmt8=vm1_8.*hsx53+vm2_8.*hsx54;
vmt=vmt1+vmt2+vmt3+vmt4+vmt5+vmt6+vmt7+vmt8;
Rat1=Ra1_1.*hsx01;
Rat2=Ra1_2.*hsx07;
Rat3=Ra1_3.*hsx13;
Rat4=Ra1_4.*hsx19;
Rat5=Ra1_5.*hsx33;
Rat6=Ra1_6.*hsx39;
Rat7=Ra1_7.*hsx45;
Rat8=Ra1_8.*hsx51;
Rat=Rat1+Rat2+Rat3+Rat4+Rat5+Rat6+Rat7+Rat8;
Rbt1=Rb1_1.*hsx01;
Rbt2=Rb1_2.*hsx07;
Rbt3=Rb1_3.*hsx13;
Rbt4=Rb1_4.*hsx19;
Rbt5=Rb1_5.*hsx33;
Rbt6=Rb1_6.*hsx39;
Rbt7=Rb1_7.*hsx45;
Rbt8=Rb1_8.*hsx51;
Rbt=Rbt1+Rbt2+Rbt3+Rbt4+Rbt5+Rbt6+Rbt7+Rbt8;
VLt1=V1_1.*hsx25+V2_1.*hsx26;
VLt2=V1_2.*hsx27+V2_2.*hsx28;
VLt3=V1_3.*hsx29+V2_3.*hsx30;
VLt4=V1_4.*hsx31+V2_4.*hsx32;
VLt5=V1_5.*hsx57+V2_5.*hsx58;
VLt6=V1_6.*hsx59+V2_6.*hsx60;
VLt7=V1_7.*hsx61+V2_7.*hsx62;
VLt8=V1_8.*hsx63+V2_8.*hsx64;
VLt=VLt1+VLt2+VLt3+VLt4+VLt5+VLt6+VLt7+VLt8;
VRt1=V1_1.*hsx05+V2_1.*hsx06;
VRt2=V1_2.*hsx11+V2_2.*hsx12;
VRt3=V1_3.*hsx17+V2_3.*hsx18;
VRt4=V1_4.*hsx23+V2_4.*hsx24;
VRt5=V1_5.*hsx37+V2_5.*hsx38;
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VRt6=V1_6.*hsx43+V2_6.*hsx44;
VRt7=V1_7.*hsx49+V2_7.*hsx50;
VRt8=V1_8.*hsx55+V2_8.*hsx56;
VRt=VRt1+VRt2+VRt3+VRt4+VRt5+VRt6+VRt7+VRt8;
Mmt1=Mm1_1.*hsx03+Mm2_1.*hsx04;
Mmt2=Mm1_2.*hsx09+Mm2_2.*hsx10;
Mmt3=Mm1_3.*hsx15+Mm2_3.*hsx16;
Mmt4=Mm1_4.*hsx21+Mm2_4.*hsx22;
Mmt5=Mm1_5.*hsx35+Mm2_5.*hsx36;
Mmt6=Mm1_6.*hsx41+Mm2_6.*hsx42;
Mmt7=Mm1_7.*hsx47+Mm2_7.*hsx48;
Mmt8=Mm1_8.*hsx53+Mm2_8.*hsx54;
Mmt=Mmt1+Mmt2+Mmt3+Mmt4+Mmt5+Mmt6+Mmt7+Mmt8;
[vmy,vmx]=max(abs(vmt));
[Ray,Rax]=max(abs(Rat));
[Rby,Rbx]=max(abs(Rbt));
[VLy,VLx]=max(abs(VLt));
[VRy,VRx]=max(abs(VRt));
[Mmy,Mmx]=max(abs(Mmt)); vmx=(vmx-1)*0.0005;
Rax=(Rax-1)*0.0005;
Rbx=(Rbx-1)*0.0005;
VLx=(VLx-1)*0.0005;
VRx=(VRx-1)*0.0005;
Mmx=(Mmx-1)*0.0005;
nvmy=num2str(vmy);
nray=num2str(Ray); nrby=num2str(Rby);
nvly=num2str(VLy);
nvry=num2str(VRy);
nmmy=num2str(Mmy);
nvmx=num2str(vmx);
nrax=num2str(Rax); nrbx=num2str(Rbx);
nvlx=num2str(VLx);
nvrx=num2str(VRx);
nmmx=num2str(Mmx);

figure(1)
subplot(9,1,1);plot(x,vmt1);grid on;
title(['Influence lines of Displacement,y(L/2) for ',n,' loads l/L= ',nlL1]);
ylabel('vm1');
subplot(9,1,2);plot(x,vmt2);grid on;ylabel('vm2');
subplot(9,1,3);plot(x,vmt3);grid on;ylabel('vm3');
subplot(9,1,4);plot(x,vmt4);grid on;ylabel('vm4');
subplot(9,1,5);plot(x,vmt5);grid on;ylabel('vm5');
subplot(9,1,6);plot(x,vmt6);grid on;ylabel('vm6');
subplot(9,1,7);plot(x,vmt7);grid on;ylabel('vm7');
subplot(9,1,8);plot(x,vmt8);grid on;ylabel('vm8');
subplot(9,1,9);plot(x,vmt);grid on;ylabel('vmt');
xlabel('x');

figure(2)
subplot(9,1,1);plot(x,Mmt1);grid on;
title(['Influence lines of Moment at midspan,M(L/2) for ',n,' loads l/L= ',nlL1]);
ylabel('Mm1');
subplot(9,1,2);plot(x,Mmt2);grid on;ylabel('Mm2');
subplot(9,1,3);plot(x,Mmt3);grid on;ylabel('Mm3');
subplot(9,1,4);plot(x,Mmt4);grid on;ylabel('Mm4');
subplot(9,1,5);plot(x,Mmt5);grid on;ylabel('Mm5');
subplot(9,1,6);plot(x,Mmt6);grid on;ylabel('Mm6');
subplot(9,1,7);plot(x,Mmt7);grid on;ylabel('Mm7');
subplot(9,1,8);plot(x,Mmt8);grid on;ylabel('Mm8');
subplot(9,1,9);plot(x,Mmt);grid on;ylabel('Mmt');
xlabel('x');

figure(3)
subplot(9,1,1);plot(x,VLt1);grid on;
title(['Influence lines of Shear Near A,SA for ',n,' loads l/L= ',nlL1]);
ylabel('VL1');
subplot(9,1,2);plot(x,VLt2);grid on;ylabel('VL2');
subplot(9,1,3);plot(x,VLt3);grid on;ylabel('VL3');
subplot(9,1,4);plot(x,VLt4);grid on;ylabel('VL4');
subplot(9,1,5);plot(x,VLt5);grid on;ylabel('VL5');
subplot(9,1,6);plot(x,VLt6);grid on;ylabel('VL6');
subplot(9,1,7);plot(x,VLt7);grid on;ylabel('VL7');
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subplot(9,1,8);plot(x,VLt8);grid on;ylabel('VL8');
subplot(9,1,9);plot(x,VLt);grid on;ylabel('VLt');

xlabel('x');

figure(4)
subplot(9,1,1);plot(x,VRt1);grid on;
title(['Influence lines of Shear Near B,SB for ',n,' loads 1/L= ',nlL1]);
ylabel('VR1');
subplot(9,1,2);plot(x,VRt2);grid on;ylabel('VR2');
subplot(9,1,3);plot(x,VRt3);grid on;ylabel('VR3');
subplot(9,1,4);plot(x,VRt4);grid on;ylabel('VR4');
subplot(9,1,5);plot(x,VRt5);grid on;ylabel('VR5');
subplot(9,1,6);plot(x,VRt6);grid on;ylabel('VR6');
subplot(9,1,7);plot(x,VRt7);grid on;ylabel('VR7');
subplot(9,1,8);plot(x,VRt8);grid on;ylabel('VR8');
subplot(9,1,9);plot(x,VRt);grid on;ylabel('VRt');
xlabel('x');

figure(5)
subplot(9,1,1);plot(x,Rat1);grid on;
title(['Influence lines of Reaction at A,Ay for ',n,' loads 1/L= ',nlL1]);
ylabel('Ra1');
subplot(9,1,2);plot(x,Rat2);grid on;ylabel('Ra2');
subplot(9,1,3);plot(x,Rat3);grid on;ylabel('Ra3');
subplot(9,1,4);plot(x,Rat4);grid on;ylabel('Ra4');
subplot(9,1,5);plot(x,Rat5);grid on;ylabel('Ra5');
subplot(9,1,6);plot(x,Rat6);grid on;ylabel('Ra6');
subplot(9,1,7);plot(x,Rat7);grid on;ylabel('Ra7');
subplot(9,1,8);plot(x,Rat8);grid on;ylabel('Ra8');
subplot(9,1,9);plot(x,Rat);grid on;ylabel('Rat');
xlabel('x');

figure(6)
subplot(9,1,1);plot(x,Rbt1);grid on;
title(['Influence lines of Reaction at B,By for ',n,' loads 1/L= ',nlL1]);
ylabel('Rb1');
subplot(9,1,2);plot(x,Rbt2);grid on;ylabel('Rb2');
subplot(9,1,3);plot(x,Rbt3);grid on;ylabel('Rb3');
subplot(9,1,4);plot(x,Rbt4);grid on;ylabel('Rb4');
subplot(9,1,5);plot(x,Rbt5);grid on;ylabel('Rb5');
subplot(9,1,6);plot(x,Rbt6);grid on;ylabel('Rb6');
subplot(9,1,7);plot(x,Rbt7);grid on;ylabel('Rb7');
subplot(9,1,8);plot(x,Rbt8);grid on;ylabel('Rb8');
subplot(9,1,9);plot(x,Rbt);grid on;ylabel('Rbt');
xlabel('x');

figure(7)
plot(x,vmt1,x,vmt2,x,vmt3,x,vmt4,x,vmt5,x,vmt6,x,vmt7,x,vmt8,x,vmt);grid on;%
title(['Influence lines of Displacement,y(L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('vmt1');
xlabel('x');

figure(8)
plot(x,Mmt1,x,Mmt2,x,Mmt3,x,Mmt4,x,Mmt5,x,Mmt6,x,Mmt7,x,Mmt8,x,Mmt);grid on;%
title(['Influence lines of Moment at midspan,M(L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('Mmt1');
xlabel('x');

figure(9)
plot(x,VLt1,x,VLt2,x,VLt3,x,VLt4,x,VLt5,x,VLt6,x,VLt7,x,VLt8,x,VLt);grid on;%
title(['Influence lines of Shear Near A,SA for ',n,' loads 1/L= ',nlL1]);
ylabel('VLt1');
xlabel('x');

figure(10)
plot(x,VRt1,x,VRt2,x,VRt3,x,VRt4,x,VRt5,x,VRt6,x,VRt7,x,VRt8,x,VRt);grid on;%
title(['Influence lines of Shear Near B,SB for ',n,' loads 1/L= ',nlL1]);
ylabel('VRt1');
xlabel('x');

figure(11)
plot(x,Rat1,x,Rat2,x,Rat3,x,Rat4,x,Rat5,x,Rat6,x,Rat7,x,Rat8,x,Rat);grid on;%
```

```
title(['Influence lines of Reaction at A,Ay for ',n,' loads l/L= ',nlL1]);
ylabel('Rat1');
xlabel('x');

figure(12)
plot(x,Rbt1,x,Rbt2,x,Rbt3,x,Rbt4,x,Rbt5,x,Rbt6,x,Rbt7,x,Rbt8,x,Rbt);grid on;%
title(['Influence lines of Reaction at B,By for ',n,' loads l/L= ',nlL1]);
ylabel('Rbt1');
xlabel('x');

figure(13)
plot(x,vmt);grid on;
title(['The max.Displacement at L/2 for ',n,' loads l/L=',nlL1,',C y(L/2)max=',nvmy,',
X=',nvmx]);
ylabel('C vmt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(14)
plot(x,Mmt);grid on;
title(['The max.Moment at midspan for ',n,' loads l/L=',nlL1,',C M(L/2)max=',nmmy,',
X=',nmmx]);
ylabel('C Mmt WtL');
xlabel(['Position or time of  ',n,' loads']);

figure(15)
plot(x,VLt);grid on;
title(['The max.Shear near A for ',n,' loads l/L=',nlL1,',C SA(max)=',nvly,',
X=',nvlx]);
ylabel('C VLt WtL');
xlabel(['Position or time of  ',n,' loads']);

figure(16)
plot(x,VRt);grid on;
title(['The max.Shear near B for ',n,' loads l/L=',nlL1,',C SB(max)=',nvry,',
X=',nvrx]);
ylabel('C VRt WtL');
xlabel(['Position or time of  ',n,' loads']);

figure(17)
plot(x,Rat);grid on;
title(['The max.Reaction A for ',n,' loads l/L=',nlL1,',C Ay(max)=',nray,',
X=',nrax]);
ylabel('C Rat Wt');
xlabel(['Position or time of  ',n,' loads']);

figure(18)
plot(x,Rbt);grid on;
title(['The max.Reaction B for ',n,' loads l/L=',nlL1,',C By(max)=',nrby,',
X=',nrbx]);
ylabel('C Rbt Wt');
xlabel(['Position or time of ',n,' loads']);

%figure(13)
%plot(x,vm1_1);grid on;%axis([0 0.5 -0.2 0.2]);
%title([' 4 loads l/L=',nlL]);
%ylabel('');
%xlabel('x');

%figure(14)
%plot(x,vm2_1);grid on;%axis([0.5 1 -0.2 0.2]);
%title([' 4 loads l/L=',nlL]);
%ylabel('');
%xlabel('x');

%figure(15)
%plot(x,vm3_1);grid on;%axis([1 2 -0.02 0.02]);
%title([' 4 loads l/L=',nlL]);
%ylabel('');
%xlabel('x');

%figure(1)
%subplot(4,2,1);plot(x,hsx5);grid on;
%title([' for 4 loads l/L=',nlL]);
```

```
%ylabel('H1');
%subplot(4,2,2);plot(x,hsx6);grid on;ylabel('H2');
%subplot(4,2,3);plot(x,hsx11);grid on;ylabel('H3');
%subplot(4,2,4);plot(x,hsx12);grid on;ylabel('H4');
%subplot(4,2,5);plot(x,hsx17);grid on;ylabel('H5');
%subplot(4,2,6);plot(x,hsx18);grid on;ylabel('H6');
%subplot(4,2,7);plot(x,hsx23);grid on;ylabel('H7');
%subplot(4,2,8);plot(x,hsx24);grid on;ylabel('H8');
%xlabel('x');

%figure(6)
%subplot(5,1,1);plot(x,MLt1);grid on;
%title([' for 4 loads 1/L=',n1L]);
%ylabel('ML1');
%subplot(5,1,2);plot(x,MLt2);grid on;ylabel('ML2');
%subplot(5,1,3);plot(x,MLt3);grid on;ylabel('ML3');
%subplot(5,1,4);plot(x,MLt4);grid on;ylabel('ML4');
%subplot(5,1,5);plot(x,MLt);grid on;ylabel('MLt');
%xlabel('x');

%figure(7)
%subplot(5,1,1);plot(x,VLt1);grid on;
%title([' for 4 loads 1/L=',n1L]);
%ylabel('VL1');
%subplot(5,1,2);plot(x,VLt2);grid on;ylabel('VL2');
%subplot(5,1,3);plot(x,VLt3);grid on;ylabel('VL3');
%subplot(5,1,4);plot(x,VLt4);grid on;ylabel('VL4');
%subplot(5,1,5);plot(x,VLt);grid on;ylabel('VLt');
%xlabel('x');
```

ภาคผนวก ข

รายละเอียดโปรแกรมการสร้างเส้นอิทธิพล ของคานต่อเนื่อง 2 ช่วง

```
x=0:0.0005:4;
P1=1/8;P2=1/8;P3=1/8;P4=1/8;P5=1/8;P6=1/8;P7=1/8;P8=1/8;L=1;
l1=1/14;l2=1/14;l3=1/14;l4=1/14;l5=1/14;l6=1/14;l7=1/14;
lL1=l1;lL2=l1+l2;lL3=l1+l2+l3;
lL4=l1+l2+l3+l4;lL5=l1+l2+l3+l4+l5;
lL6=l1+l2+l3+l4+l5+l6;lL7=l1+l2+l3+l4+l5+l6+l7;
nlL1=num2str(lL1);
nlL2=num2str(lL2);
nlL3=num2str(lL3);
nlL4=num2str(lL4);
nlL5=num2str(lL5);
nlL6=num2str(lL6);
nlL7=num2str(lL7);

P9=0;
m=[P1 P2 P3 P4 P5 P6 P7 P8 P9];
[y,p]=min(m);
n=p-1;
n=num2str(n);

%Load#1
hsx1=heaviside(x)-heaviside(x-1);  %0-L
hsx2=heaviside(x-1)-heaviside(x-2);  %L-2L
hsx3=heaviside(x)-heaviside(x-0.5);%0-0.5L
hsx4=heaviside(x-0.5)-heaviside(x-1);  %0.5L-L
hsx5=heaviside(x)-heaviside(x-0.95);%0-0.95L
hsx6=heaviside(x-0.95)-heaviside(x-1);  %0.95L-L
%Load#2
hsx7=heaviside(x-lL1)-heaviside(x-(1+lL1));  %0-L
hsx8=heaviside(x-1-lL1)-heaviside(x-(2+lL1));  %L-2L
hsx9=heaviside(x-lL1)-heaviside(x-(0.5+lL1)); %0-0.5L
hsx10=heaviside(x-0.5-lL1)-heaviside(x-(1+lL1));  %0.5L-L
hsx11=heaviside(x-lL1)-heaviside(x-(0.95+lL1));%0-0.95L
hsx12=heaviside((x-0.95)-lL1)-heaviside(x-(1+lL1));  %0.95L-L
%Load#3
hsx13=heaviside(x-lL2)-heaviside(x-(1+lL2));  %0-L
hsx14=heaviside(x-1-lL2)-heaviside(x-(2+lL2));  %L-2L
hsx15=heaviside(x-lL2)-heaviside(x-(0.5+lL2));%0-0.5L
hsx16=heaviside(x-0.5-lL2)-heaviside(x-(1+lL2));  %0.5L-L
hsx17=heaviside(x-lL2)-heaviside(x-(0.95+lL2));%0-0.95L
hsx18=heaviside((x-0.95)-lL2)-heaviside(x-(1+lL2));  %0.95L-L
%Load#4
hsx19=heaviside(x-lL3)-heaviside(x-(1+lL3));  %0-L
hsx20=heaviside(x-1-lL3)-heaviside(x-(2+lL3));  %L-2L
hsx21=heaviside(x-lL3)-heaviside(x-(0.5+lL3));%0-0.5L
hsx22=heaviside(x-0.5-lL3)-heaviside(x-(1+lL3));  %0.5L-L
hsx23=heaviside(x-lL3)-heaviside(x-(0.95+lL3));%0-0.95L
hsx24=heaviside((x-0.95)-lL3)-heaviside(x-(1+lL3));  %0.95L-L
%Load#5
hsx25=heaviside(x)-heaviside(x-0.05);%0-0.05L
hsx26=heaviside(x-0.05)-heaviside(x-1);  %0.05L-L
hsx27=heaviside(x-lL1)-heaviside(x-(0.05+lL1));%0-0.05L
hsx28=heaviside((x-0.05)-lL1)-heaviside(x-(1+lL1));  %0.05L-L
hsx29=heaviside(x-lL2)-heaviside(x-(0.05+lL2));%0-0.05L
hsx30=heaviside((x-0.05)-lL2)-heaviside(x-(1+lL2));  %0.05L-L
hsx31=heaviside(x-lL3)-heaviside(x-(0.05+lL3));%0-0.05L
hsx32=heaviside((x-0.05)-lL3)-heaviside(x-(1+lL3));  %0.05L-L
%Load#6
hsx33=heaviside(x-1)-heaviside(x-1.95);%L-1.95L
hsx34=heaviside(x-1.95)-heaviside(x-2);  %1.95L-2L
hsx35=heaviside(x-lL1-1)-heaviside(x-(1.95+lL1));%L-1.95L
hsx36=heaviside((x-1.95)-lL1)-heaviside(x-(2+lL1));  %1.95L-2L
hsx37=heaviside(x-lL2-1)-heaviside(x-(1.95+lL2));%L-1.95L
hsx38=heaviside((x-1.95)-lL2)-heaviside(x-(2+lL2));  %1.95L-2L
```

```
hsx39=heaviside(x-lL3-1)-heaviside(x-(1.95+lL3));%L-1.95L
hsx40=heaviside((x-1.95)-lL3)-heaviside(x-(2+lL3));  %1.95L-2L
%Load#7
hsx41=heaviside(x-1)-heaviside(x-1.5);%L-1.5L
hsx42=heaviside(x-1.5)-heaviside(x-2);  %1.5L-2L
hsx43=heaviside(x-lL1-1)-heaviside(x-(1.5+lL1));%L-1.5L
hsx44=heaviside((x-1.5)-lL1)-heaviside(x-(2+lL1));  %1.5L-2L
hsx45=heaviside(x-lL2-1)-heaviside(x-(1.5+lL2));%L-1.5L
hsx46=heaviside((x-1.5)-lL2)-heaviside(x-(2+lL2));  %1.5L-2L
hsx47=heaviside(x-lL3-1)-heaviside(x-(1.5+lL3));%L-1.5L
hsx48=heaviside((x-1.5)-lL3)-heaviside(x-(2+lL3));  %1.5L-2L
%Load#1
hsx49=heaviside(x-lL4)-heaviside(x-(1+lL4));  %0-L
hsx50=heaviside(x-1-lL4)-heaviside(x-(2+lL4));  %L-2L
hsx51=heaviside(x-lL4)-heaviside(x-(0.5+lL4));  %0-0.5L
hsx52=heaviside(x-0.5-lL4)-heaviside(x-(1+lL4));  %0.5L-L
hsx53=heaviside(x-lL4)-heaviside(x-(0.95+lL4));%0-0.95L
hsx54=heaviside((x-0.95)-lL4)-heaviside(x-(1+lL4));  %0.95L-L
%Load#2
hsx55=heaviside(x-lL5)-heaviside(x-(1+lL5));  %0-L
hsx56=heaviside(x-1-lL5)-heaviside(x-(2+lL5));  %L-2L
hsx57=heaviside(x-lL5)-heaviside(x-(0.5+lL5));  %0-0.5L
hsx58=heaviside(x-0.5-lL5)-heaviside(x-(1+lL5));  %0.5L-L
hsx59=heaviside(x-lL5)-heaviside(x-(0.95+lL5));%0-0.95L
hsx60=heaviside((x-0.95)-lL5)-heaviside(x-(1+lL5));  %0.95L-L
%Load#3
hsx61=heaviside(x-lL6)-heaviside(x-(1+lL6));  %0-L
hsx62=heaviside(x-1-lL6)-heaviside(x-(2+lL6));  %L-2L
hsx63=heaviside(x-lL6)-heaviside(x-(0.5+lL6));%0-0.5L
hsx64=heaviside(x-0.5-lL6)-heaviside(x-(1+lL6));  %0.5L-L
hsx65=heaviside(x-lL6)-heaviside(x-(0.95+lL6));%0-0.95L
hsx66=heaviside((x-0.95)-lL6)-heaviside(x-(1+lL6));  %0.95L-L
%Load#4
hsx67=heaviside(x-lL7)-heaviside(x-(1+lL7));  %0-L
hsx68=heaviside(x-1-lL7)-heaviside(x-(2+lL7));  %L-2L
hsx69=heaviside(x-lL7)-heaviside(x-(0.5+lL7));%0-0.5L
hsx70=heaviside(x-0.5-lL7)-heaviside(x-(1+lL7));  %0.5L-L
hsx71=heaviside(x-lL7)-heaviside(x-(0.95+lL7));%0-0.95L
hsx72=heaviside((x-0.95)-lL7)-heaviside(x-(1+lL7));  %0.95L-L
%Load#5
hsx73=heaviside(x-lL4)-heaviside(x-(0.05+lL4));%0-0.05L
hsx74=heaviside((x-0.05)-lL4)-heaviside(x-(1+lL4));  %0.05L-L
hsx75=heaviside(x-lL5)-heaviside(x-(0.05+lL5));%0-0.05L
hsx76=heaviside((x-0.05)-lL5)-heaviside(x-(1+lL5));  %0.05L-L
hsx77=heaviside(x-lL6)-heaviside(x-(0.05+lL6));%0-0.05L
hsx78=heaviside((x-0.05)-lL6)-heaviside(x-(1+lL6));  %0.05L-L
hsx79=heaviside(x-lL7)-heaviside(x-(0.05+lL7));%0-0.05L
hsx80=heaviside((x-0.05)-lL7)-heaviside(x-(1+lL7));  %0.05L-L
%Load#6
hsx81=heaviside(x-lL4-1)-heaviside(x-(1.95+lL4));%L-1.95L
hsx82=heaviside((x-1.95)-lL4)-heaviside(x-(2+lL4));  %1.95L-2L
hsx83=heaviside(x-lL5-1)-heaviside(x-(1.95+lL5));%L-1.95L
hsx84=heaviside((x-1.95)-lL5)-heaviside(x-(2+lL5));  %1.95L-2L
hsx85=heaviside(x-lL6-1)-heaviside(x-(1.95+lL6));%L-1.95L
hsx86=heaviside((x-1.95)-lL6)-heaviside(x-(2+lL6));  %1.95L-2L
hsx87=heaviside(x-lL7-1)-heaviside(x-(1.95+lL7));%L-1.95L
hsx88=heaviside((x-1.95)-lL7)-heaviside(x-(2+lL7));  %1.95L-2L
%Load#7
hsx89=heaviside(x-lL4-1)-heaviside(x-(1.5+lL4));%L-1.5L
hsx90=heaviside((x-1.5)-lL4)-heaviside(x-(2+lL4));  %1.5L-2L
hsx91=heaviside(x-lL5-1)-heaviside(x-(1.5+lL5));%L-1.5L
hsx92=heaviside((x-1.5)-lL5)-heaviside(x-(2+lL5));  %1.5L-2L
hsx93=heaviside(x-lL6-1)-heaviside(x-(1.5+lL6));%L-1.5L
hsx94=heaviside((x-1.5)-lL6)-heaviside(x-(2+lL6));  %1.5L-2L
hsx95=heaviside(x-lL7-1)-heaviside(x-(1.5+lL7));%L-1.5L
hsx96=heaviside((x-1.5)-lL7)-heaviside(x-(2+lL7));  %1.5L-2L

%Displacement at L/2
vm1_1=P1*(13/192*(x).^3-3/64*(x));
vm2_1=P1*(-19/192*(x).^3+1/4*(x).^2-11/64*(x)+1/48);
vm3_1=P1*(1/64*(x).^3-3/32*(x).^2+11/64*(x)-3/32);
vm1_2=P2*(13/192*(x-lL1).^3-3/64*(x-lL1));
vm2_2=P2*(-19/192*(x-lL1).^3+1/4*(x-lL1).^2-11/64*(x-lL1)+1/48);
```

```
vm3_2=P2*(1/64*(x-lL1).^3-3/32*(x-lL1).^2+11/64*(x-lL1)-3/32);
vm1_3=P3*(13/192*(x-lL2).^3-3/64*(x-lL2));
vm2_3=P3*(-19/192*(x-lL2).^3+1/4*(x-lL2).^2-11/64*(x-lL2)+1/48);
vm3_3=P3*(1/64*(x-lL2).^3-3/32*(x-lL2).^2+11/64*(x-lL2)-3/32);
vm1_4=P4*(13/192*(x-lL3).^3-3/64*(x-lL3));
vm2_4=P4*(-19/192*(x-lL3).^3+1/4*(x-lL3).^2-11/64*(x-lL3)+1/48);
vm3_4=P4*(1/64*(x-lL3).^3-3/32*(x-lL3).^2+11/64*(x-lL3)-3/32);
vm1_5=P5*(13/192*(x-lL4).^3-3/64*(x-lL4));
vm2_5=P5*(-19/192*(x-lL4).^3+1/4*(x-lL4).^2-11/64*(x-lL4)+1/48);
vm3_5=P5*(1/64*(x-lL4).^3-3/32*(x-lL4).^2+11/64*(x-lL4)-3/32);
vm1_6=P6*(13/192*(x-lL5).^3-3/64*(x-lL5));
vm2_6=P6*(-19/192*(x-lL5).^3+1/4*(x-lL5).^2-11/64*(x-lL5)+1/48);
vm3_6=P6*(1/64*(x-lL5).^3-3/32*(x-lL5).^2+11/64*(x-lL5)-3/32);
vm1_7=P7*(13/192*(x-lL6).^3-3/64*(x-lL6));
vm2_7=P7*(-19/192*(x-lL6).^3+1/4*(x-lL6).^2-11/64*(x-lL6)+1/48);
vm3_7=P7*(1/64*(x-lL6).^3-3/32*(x-lL6).^2+11/64*(x-lL6)-3/32);
vm1_8=P8*(13/192*(x-lL7).^3-3/64*(x-lL7));
vm2_8=P8*(-19/192*(x-lL7).^3+1/4*(x-lL7).^2-11/64*(x-lL7)+1/48);
vm3_8=P8*(1/64*(x-lL7).^3-3/32*(x-lL7).^2+11/64*(x-lL7)-3/32);

%Shear on Left Span
VL1_1=P1*((1/6*(x).^3-5/6*L^2*(x))/(2/3*L^3));
VL2_1=(P1*(1))+VL1_1;
VL3_1=(P1*(-((1/3*(x-L).^3)/(2/3*L^3))))+VL2_1;
VL1_2=P2*((1/6*(x-lL1).^3-5/6*L^2*(x-lL1))/(2/3*L^3));
VL2_2=(P2*(1))+VL1_2;
VL3_2=(P2*(-((1/3*((x-lL1)-L).^3)/(2/3*L^3))))+VL2_2;
VL1_3=P3*((1/6*(x-lL2).^3-5/6*L^2*(x-lL2))/(2/3*L^3));
VL2_3=(P3*(1))+VL1_3;
VL3_3=(P3*(-((1/3*((x-lL2)-L).^3)/(2/3*L^3))))+VL2_3;
VL1_4=P4*((1/6*(x-lL3).^3-5/6*L^2*(x-lL3))/(2/3*L^3));
VL2_4=(P4*(1))+VL1_4;
VL3_4=(P4*(-((1/3*((x-lL3)-L).^3)/(2/3*L^3))))+VL2_4;
VL1_5=P5*((1/6*(x-lL4).^3-5/6*L^2*(x-lL4))/(2/3*L^3));
VL2_5=(P5*(1))+VL1_5;
VL3_5=(P5*(-((1/3*((x-lL4)-L).^3)/(2/3*L^3))))+VL2_5;
VL1_6=P6*((1/6*(x-lL5).^3-5/6*L^2*(x-lL5))/(2/3*L^3));
VL2_6=(P6*(1))+VL1_6;
VL3_6=(P6*(-((1/3*((x-lL5)-L).^3)/(2/3*L^3))))+VL2_6;
VL1_7=P7*((1/6*(x-lL6).^3-5/6*L^2*(x-lL6))/(2/3*L^3));
VL2_7=(P7*(1))+VL1_7;
VL3_7=(P7*(-((1/3*((x-lL6)-L).^3)/(2/3*L^3))))+VL2_7;
VL1_8=P8*((1/6*(x-lL7).^3-5/6*L^2*(x-lL7))/(2/3*L^3));
VL2_8=(P8*(1))+VL1_8;
VL3_8=(P8*(-((1/3*((x-lL7)-L).^3)/(2/3*L^3))))+VL2_8;

%Shear on Right Span
VR1_1=P1*((-1/6*(x).^3+1/6*L^2*(x))/(2/3*L^3));
VR2_1=(P1*((1/3*(x-L).^3)/(2/3*L^3)))+VR1_1;
VR3_1=(P1*(1))+VR2_1;
VR1_2=P2*((-1/6*(x-lL1).^3+1/6*L^2*(x-lL1))/(2/3*L^3));
VR2_2=(P2*((1/3*(x-lL1-L).^3)/(2/3*L^3)))+VR1_2;
VR3_2=(P2*(1))+VR2_2;
VR1_3=P3*((-1/6*(x-lL2).^3+1/6*L^2*(x-lL2))/(2/3*L^3));
VR2_3=(P3*((1/3*(x-lL2-L).^3)/(2/3*L^3)))+VR1_3;
VR3_3=(P3*(1))+VR2_3;
VR1_4=P4*((-1/6*(x-lL3).^3+1/6*L^2*(x-lL3))/(2/3*L^3));
VR2_4=(P4*((1/3*(x-lL3-L).^3)/(2/3*L^3)))+VR1_4;
VR3_4=(P4*(1))+VR2_4;
VR1_5=P5*((-1/6*(x-lL4).^3+1/6*L^2*(x-lL4))/(2/3*L^3));
VR2_5=(P5*((1/3*(x-lL4-L).^3)/(2/3*L^3)))+VR1_5;
VR3_5=(P5*(1))+VR2_5;
VR1_6=P6*((-1/6*(x-lL5).^3+1/6*L^2*(x-lL5))/(2/3*L^3));
VR2_6=(P6*((1/3*(x-lL5-L).^3)/(2/3*L^3)))+VR1_6;
VR3_6=(P6*(1))+VR2_6;
VR1_7=P7*((-1/6*(x-lL6).^3+1/6*L^2*(x-lL6))/(2/3*L^3));
VR2_7=(P7*((1/3*(x-lL6-L).^3)/(2/3*L^3)))+VR1_7;
VR3_7=(P7*(1))+VR2_7;
VR1_8=P8*((-1/6*(x-lL7).^3+1/6*L^2*(x-lL7))/(2/3*L^3));
VR2_8=(P8*((1/3*(x-lL7-L).^3)/(2/3*L^3)))+VR1_8;
VR3_8=(P8*(1))+VR2_8;

%Moment at 0.5L
```

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ML1_1=P1*((1/(3*L)*(x).^3+L*(x))/(8/3*L));
ML2_1=(P1*(-(x-0.5*L)))+ML1_1;
ML3_1=(P1*(-(4/(6*L)*(x-L).^3)/(8/3*L)))+ML2_1;
ML1_2=P2*((1/(3*L)*(x-lL1).^3+L*(x-lL1))/(8/3*L));
ML2_2=(P2*(-(x-lL1-0.5*L)))+ML1_2;
ML3_2=(P2*(-(4/(6*L)*(x-lL1-L).^3)/(8/3*L)))+ML2_2;
ML1_3=P3*((1/(3*L)*(x-lL2).^3+L*(x-lL2))/(8/3*L));
ML2_3=(P3*(-(x-lL2-0.5*L)))+ML1_3;
ML3_3=(P3*(-(4/(6*L)*(x-lL2-L).^3)/(8/3*L)))+ML2_3;
ML1_4=P4*((1/(3*L)*(x-lL3).^3+L*(x-lL3))/(8/3*L));
ML2_4=(P4*(-(x-lL3-0.5*L)))+ML1_4;
ML3_4=(P4*(-(4/(6*L)*(x-lL3-L).^3)/(8/3*L)))+ML2_4;
ML1_5=P5*((1/(3*L)*(x-lL4).^3+L*(x-lL4))/(8/3*L));
ML2_5=(P5*(-(x-lL4-0.5*L)))+ML1_5;
ML3_5=(P5*(-(4/(6*L)*(x-lL4-L).^3)/(8/3*L)))+ML2_5;
ML1_6=P6*((1/(3*L)*(x-lL5).^3+L*(x-lL5))/(8/3*L));
ML2_6=(P6*(-(x-lL5-0.5*L)))+ML1_6;
ML3_6=(P6*(-(4/(6*L)*(x-lL5-L).^3)/(8/3*L)))+ML2_6;
ML1_7=P7*((1/(3*L)*(x-lL6).^3+L*(x-lL6))/(8/3*L));
ML2_7=(P7*(-(x-lL6-0.5*L)))+ML1_7;
ML3_7=(P7*(-(4/(6*L)*(x-lL6-L).^3)/(8/3*L)))+ML2_7;
ML1_8=P8*((1/(3*L)*(x-lL7).^3+L*(x-lL7))/(8/3*L));
ML2_8=(P8*(-(x-lL7-0.5*L)))+ML1_8;
ML3_8=(P8*(-(4/(6*L)*(x-lL7-L).^3)/(8/3*L)))+ML2_8;

%Moment at 1.5L
MR1_1=P1*((1/(3*L)*(x).^3-L/3*(x))/(8/3*L));
MR2_1=(P1*(-((4/(6*L)*(x-L).^3)/(8/3*L))))+MR1_1;
MR3_1=(P1*(-(x-1.5*L)))+MR2_1;
MR1_2=P2*((1/(3*L)*(x-lL1).^3-L/3*(x-lL1))/(8/3*L));
MR2_2=(P2*(-((4/(6*L)*(x-lL1-L).^3)/(8/3*L))))+MR1_2;
MR3_2=(P2*(-(x-lL1-1.5*L)))+MR2_2;
MR1_3=P3*((1/(3*L)*(x-lL2).^3-L/3*(x-lL2))/(8/3*L));
MR2_3=(P3*(-((4/(6*L)*(x-lL2-L).^3)/(8/3*L))))+MR1_3;
MR3_3=(P3*(-(x-lL2-1.5*L)))+MR2_3;
MR1_4=P4*((1/(3*L)*(x-lL3).^3-L/3*(x-lL3))/(8/3*L));
MR2_4=(P4*(-((4/(6*L)*(x-lL3-L).^3)/(8/3*L))))+MR1_4;
MR3_4=(P4*(-(x-lL3-1.5*L)))+MR2_4;
MR1_5=P5*((1/(3*L)*(x-lL4).^3-L/3*(x-lL4))/(8/3*L));
MR2_5=(P5*(-((4/(6*L)*(x-lL4-L).^3)/(8/3*L))))+MR1_5;
MR3_5=(P5*(-(x-lL4-1.5*L)))+MR2_5;
MR1_6=P6*((1/(3*L)*(x-lL5).^3-L/3*(x-lL5))/(8/3*L));
MR2_6=(P6*(-((4/(6*L)*(x-lL5-L).^3)/(8/3*L))))+MR1_6;
MR3_6=(P6*(-(x-lL5-1.5*L)))+MR2_6;
MR1_7=P7*((1/(3*L)*(x-lL6).^3-L/3*(x-lL6))/(8/3*L));
MR2_7=(P7*(-((4/(6*L)*(x-lL6-L).^3)/(8/3*L))))+MR1_7;
MR3_7=(P7*(-(x-lL6-1.5*L)))+MR2_7;
MR1_8=P8*((1/(3*L)*(x-lL7).^3-L/3*(x-lL7))/(8/3*L));
MR2_8=(P8*(-((4/(6*L)*(x-lL7-L).^3)/(8/3*L))))+MR1_8;
MR3_8=(P8*(-(x-lL7-1.5*L)))+MR2_8;

%Moment at Support B
MB1_1=P1*((1/(6*L)*(x).^3-L/6*(x))/(2/3*L));
MB2_1=(P1*(-(x-L)-((1/(3*L)*(x-L).^3)/(2/3*L))))+MB1_1;
MB1_2=P2*((1/(6*L)*(x-lL1).^3-L/6*(x-lL1))/(2/3*L));
MB2_2=(P2*(-(x-lL1-L)-((1/(3*L)*(x-lL1-L).^3)/(2/3*L))))+MB1_2;
MB1_3=P3*((1/(6*L)*(x-lL2).^3-L/6*(x-lL2))/(2/3*L));
MB2_3=(P3*(-(x-lL2-L)-((1/(3*L)*(x-lL2-L).^3)/(2/3*L))))+MB1_3;
MB1_4=P4*((1/(6*L)*(x-lL3).^3-L/6*(x-lL3))/(2/3*L));
MB2_4=(P4*(-(x-lL3-L)-((1/(3*L)*(x-lL3-L).^3)/(2/3*L))))+MB1_4;
MB1_5=P5*((1/(6*L)*(x-lL4).^3-L/6*(x-lL4))/(2/3*L));
MB2_5=(P5*(-(x-lL4-L)-((1/(3*L)*(x-lL4-L).^3)/(2/3*L))))+MB1_5;
MB1_6=P6*((1/(6*L)*(x-lL5).^3-L/6*(x-lL5))/(2/3*L));
MB2_6=(P6*(-(x-lL5-L)-((1/(3*L)*(x-lL5-L).^3)/(2/3*L))))+MB1_6;
MB1_7=P7*((1/(6*L)*(x-lL6).^3-L/6*(x-lL6))/(2/3*L));
MB2_7=(P7*(-(x-lL6-L)-((1/(3*L)*(x-lL6-L).^3)/(2/3*L))))+MB1_7;
MB1_8=P8*((1/(6*L)*(x-lL7).^3-L/6*(x-lL7))/(2/3*L));
MB2_8=(P8*(-(x-lL7-L)-((1/(3*L)*(x-lL7-L).^3)/(2/3*L))))+MB1_8;

%Reaction at B
RB1_1=P1*((0.25*L^2*(x)-1/12*(x).^3)/(1/6*L^3));
RB2_1=(P1*(1/6*(x-L).^3)/(1/6*L^3))+RB1_1;
RB1_2=P2*((0.25*L^2*(x-lL1)-1/12*(x-lL1).^3)/(1/6*L^3));
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RB2_2=(P2*(1/6*(x-1L1-L).^3)/(1/6*L^3))+RB1_2;
RB1_3=P3*((0.25*L^2*(x-1L2)-1/12*(x-1L2).^3)/(1/6*L^3));
RB2_3=(P3*(1/6*(x-1L2-L).^3)/(1/6*L^3))+RB1_3;
RB1_4=P4*((0.25*L^2*(x-1L3)-1/12*(x-1L3).^3)/(1/6*L^3));
RB2_4=(P4*(1/6*(x-1L3-L).^3)/(1/6*L^3))+RB1_4;
RB1_5=P5*((0.25*L^2*(x-1L4)-1/12*(x-1L4).^3)/(1/6*L^3));
RB2_5=(P5*(1/6*(x-1L4-L).^3)/(1/6*L^3))+RB1_5;
RB1_6=P6*((0.25*L^2*(x-1L5)-1/12*(x-1L5).^3)/(1/6*L^3));
RB2_6=(P6*(1/6*(x-1L5-L).^3)/(1/6*L^3))+RB1_6;
RB1_7=P7*((0.25*L^2*(x-1L6)-1/12*(x-1L6).^3)/(1/6*L^3));
RB2_7=(P7*(1/6*(x-1L6-L).^3)/(1/6*L^3))+RB1_7;
RB1_8=P8*((0.25*L^2*(x-1L7)-1/12*(x-1L7).^3)/(1/6*L^3));
RB2_8=(P8*(1/6*(x-1L7-L).^3)/(1/6*L^3))+RB1_8;

%Reaction for M(L/2)
%Rm1_4=P4.*(L-(x-3*1L))/(4*L^3).*(4*L^2-(x-3*1L).*(L+(x-3*1L)));
%Rm3_4=-P4.*(2-(x-3*1L)).*((x-3*1L)-1)/(4*L^3).*(L+(2-(x-3*1L)));
%Rm1_3=P3.*(L-(x-2*1L))/(4*L^3).*(4*L^2-(x-2*1L).*(L+(x-2*1L)));
%Rm3_3=-P3.*(2-(x-2*1L)).*((x-2*1L)-1)/(4*L^3).*(L+(2-(x-2*1L)));
%Rm1_2=P2.*(L-(x-1*1L))/(4*L^3).*(4*L^2-(x-1*1L).*(L+(x-1*1L)));
%Rm3_2=-P2.*(2-(x-1*1L)).*((x-1*1L)-1)/(4*L^3).*(L+(2-(x-1*1L)));
%Rm1_1=P1.*(L-(x-0*1L))/(4*L^3).*(4*L^2-(x-0*1L).*(L+(x-0*1L)));
%Rm3_1=-P1.*(2-(x-0*1L)).*((x-0*1L)-1)/(4*L^3).*(L+(2-(x-0*1L)));
%Reaction for V(L)
%Rv1_4=P4.*(L-(x-3*1L))/(4*L^3).*(4*L^2-(x-3*1L).*(L+(x-3*1L)));
%Rv3_4=-P4.*(2-(x-3*1L)).*((x-3*1L)-1)/(4*L^3).*(L+(2-(x-3*1L)));
%Rv1_3=P3.*(L-(x-2*1L))/(4*L^3).*(4*L^2-(x-2*1L).*(L+(x-2*1L)));
%Rv3_3=-P3.*(2-(x-2*1L)).*((x-2*1L)-1)/(4*L^3).*(L+(2-(x-2*1L)));
%Rv1_2=P2.*(L-(x-1*1L))/(4*L^3).*(4*L^2-(x-1*1L).*(L+(x-1*1L)));
%Rv3_2=-P2.*(2-(x-1*1L)).*((x-1*1L)-1)/(4*L^3).*(L+(2-(x-1*1L)));
%Rv1_1=P1.*(L-(x-0*1L))/(4*L^3).*(4*L^2-(x-0*1L).*(L+(x-0*1L)));
%Rv3_1=-P1.*(2-(x-0*1L)).*((x-0*1L)-1)/(4*L^3).*(L+(2-(x-0*1L)));
%%Moment at mid support
%ML1_1=P1/(4*L^2).*(x-0*1L).*(L-(x-0*1L)).*(L+(x-0*1L));
%ML2_1=P1/(4*L^2).*(2*L-(x-0*1L)).*((x-0*1L)-1).*(L+(2*L-(x-0*1L)));
%ML1_2=P2/(4*L^2).*(x-1*1L).*(L-(x-1*1L)).*(L+(x-1*1L));
%ML2_2=P2/(4*L^2).*(2*L-(x-1*1L)).*((x-1*1L)-1).*(L+(2*L-(x-1*1L)));
%ML1_3=P3/(4*L^2).*(x-2*1L).*(L-(x-2*1L)).*(L+(x-2*1L));
%ML2_3=P3/(4*L^2).*(2*L-(x-2*1L)).*((x-2*1L)-1).*(L+(2*L-(x-2*1L)));
%ML1_4=P4/(4*L^2).*(x-3*1L).*(L-(x-3*1L)).*(L+(x-3*1L));
%ML2_4=P4/(4*L^2).*(2*L-(x-3*1L)).*((x-3*1L)-1).*(L+(2*L-(x-3*1L)));
%Moment at mid span
%Mm1_1=-P1.*(L/2-(x-0*1L))+Rm1_1*L/2;
%Mm2_1=Rm1_1*L/2;
%Mm3_1=Rm3_1*L/2;
%Mm1_2=-P2.*(L/2-(x-1*1L))+Rm1_2*L/2;
%Mm2_2=Rm1_2*L/2;
%Mm3_2=Rm3_2*L/2;
%Mm1_3=-P3.*(L/2-(x-2*1L))+Rm1_3*L/2;
%Mm2_3=Rm1_3*L/2;
%Mm3_3=Rm3_3*L/2;
%Mm1_4=-P4.*(L/2-(x-3*1L))+Rm1_4*L/2;
%Mm2_4=Rm1_4*L/2;
%Mm3_4=Rm3_4*L/2;
%Shear at mid support
%VL1_1=P1-Rv1_1;
%VL2_1=-Rv1_1;
%VL3_1=-Rv3_1;
%VL1_2=P2-Rv1_2;
%VL2_2=-Rv1_2;
%VL3_2=-Rv3_2;
%VL1_3=P3-Rv1_3;
%VL2_3=-Rv1_3;
%VL3_3=-Rv3_3;
%VL1_4=P4-Rv1_4;
%VL2_4=-Rv1_4;
%VL3_4=-Rv3_4;
%Total
vmt1=vm1_1.*hsx3+vm2_1.*hsx4+vm3_1.*hsx2;
vmt2=vm1_2.*hsx9+vm2_2.*hsx10+vm3_2.*hsx8;
vmt3=vm1_3.*hsx15+vm2_3.*hsx16+vm3_3.*hsx14;
vmt4=vm1_4.*hsx21+vm2_4.*hsx22+vm3_4.*hsx20;
vmt5=vm1_5.*hsx51+vm2_5.*hsx52+vm3_5.*hsx50;
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vmt6=vm1_6.*hsx57+vm2_6.*hsx58+vm3_6.*hsx56;
vmt7=vm1_7.*hsx63+vm2_7.*hsx64+vm3_7.*hsx62;
vmt8=vm1_8.*hsx69+vm2_8.*hsx70+vm3_8.*hsx68;
vmt=vmt1+vmt2+vmt3+vmt4+vmt5+vmt6+vmt7+vmt8;
%Mmt1=Mm1_1.*hsx3+Mm2_1.*hsx4+Mm3_1.*hsx2;
%Mmt2=Mm1_2.*hsx9+Mm2_2.*hsx10+Mm3_2.*hsx8;
%Mmt3=Mm1_3.*hsx15+Mm2_3.*hsx16+Mm3_3.*hsx14;
%Mmt4=Mm1_4.*hsx21+Mm2_4.*hsx22+Mm3_4.*hsx20;
%Mmt=Mmt1+Mmt2;%+Mmt3+Mmt4;
%MLt1=ML1_1.*hsx1+ML2_1.*hsx2;
%MLt2=ML1_2.*hsx7+ML2_2.*hsx8;
%MLt3=ML1_3.*hsx13+ML2_3.*hsx14;
%MLt4=ML1_4.*hsx19+ML2_4.*hsx20;
%MLt=MLt1+MLt2;%+MLt3+MLt4;
VLt1=VL1_1.*hsx5+VL2_1.*hsx6+VL3_1.*hsx2;
VLt2=VL1_2.*hsx11+VL2_2.*hsx12+VL3_2.*hsx8;
VLt3=VL1_3.*hsx17+VL2_3.*hsx18+VL3_3.*hsx14;
VLt4=VL1_4.*hsx23+VL2_4.*hsx24+VL3_4.*hsx20;
VLt5=VL1_5.*hsx53+VL2_5.*hsx54+VL3_5.*hsx50;
VLt6=VL1_6.*hsx59+VL2_6.*hsx60+VL3_6.*hsx56;
VLt7=VL1_7.*hsx65+VL2_7.*hsx66+VL3_7.*hsx62;
VLt8=VL1_8.*hsx71+VL2_8.*hsx72+VL3_8.*hsx68;
VLt=VLt1+VLt2+VLt3+VLt4+VLt5+VLt6+VLt7+VLt8;
VRt1=VR1_1.*hsx1+VR2_1.*hsx33+VR3_1.*hsx34;
VRt2=VR1_2.*hsx7+VR2_2.*hsx35+VR3_2.*hsx36;
VRt3=VR1_3.*hsx13+VR2_3.*hsx37+VR3_3.*hsx38;
VRt4=VR1_4.*hsx19+VR2_4.*hsx39+VR3_4.*hsx40;
VRt5=VR1_5.*hsx49+VR2_5.*hsx81+VR3_5.*hsx82;
VRt6=VR1_6.*hsx55+VR2_6.*hsx83+VR3_6.*hsx84;
VRt7=VR1_7.*hsx61+VR2_7.*hsx85+VR3_7.*hsx86;
VRt8=VR1_8.*hsx67+VR2_8.*hsx87+VR3_8.*hsx88;
VRt=VRt1+VRt2+VRt3+VRt4+VRt5+VRt6+VRt7+VRt8;
MLt1=ML1_1.*hsx3+ML2_1.*hsx4+ML3_1.*hsx2;
MLt2=ML1_2.*hsx9+ML2_2.*hsx10+ML3_2.*hsx8;
MLt3=ML1_3.*hsx15+ML2_3.*hsx16+ML3_3.*hsx14;
MLt4=ML1_4.*hsx21+ML2_4.*hsx22+ML3_4.*hsx20;
MLt5=ML1_5.*hsx51+ML2_5.*hsx52+ML3_5.*hsx50;
MLt6=ML1_6.*hsx57+ML2_6.*hsx58+ML3_6.*hsx56;
MLt7=ML1_7.*hsx63+ML2_7.*hsx64+ML3_7.*hsx62;
MLt8=ML1_8.*hsx69+ML2_8.*hsx70+ML3_8.*hsx68;
MLt=MLt1+MLt2+MLt3+MLt4+MLt5+MLt6+MLt7+MLt8;
MRt1=MR1_1.*hsx1+MR2_1.*hsx41+MR3_1.*hsx42;
MRt2=MR1_2.*hsx7+MR2_2.*hsx43+MR3_2.*hsx44;
MRt3=MR1_3.*hsx13+MR2_3.*hsx45+MR3_3.*hsx46;
MRt4=MR1_4.*hsx19+MR2_4.*hsx47+MR3_4.*hsx48;
MRt5=MR1_5.*hsx49+MR2_5.*hsx89+MR3_5.*hsx90;
MRt6=MR1_6.*hsx55+MR2_6.*hsx91+MR3_6.*hsx92;
MRt7=MR1_7.*hsx61+MR2_7.*hsx93+MR3_7.*hsx94;
MRt8=MR1_8.*hsx67+MR2_8.*hsx95+MR3_8.*hsx96;
MRt=MRt1+MRt2+MRt3+MRt4+MRt5+MRt6+MRt7+MRt8;
MBt1=MB1_1.*hsx1+MB2_1.*hsx2;
MBt2=MB1_2.*hsx7+MB2_2.*hsx8;
MBt3=MB1_3.*hsx13+MB2_3.*hsx14;
MBt4=MB1_4.*hsx19+MB2_4.*hsx20;
MBt5=MB1_5.*hsx49+MB2_5.*hsx50;
MBt6=MB1_6.*hsx55+MB2_6.*hsx56;
MBt7=MB1_7.*hsx61+MB2_7.*hsx62;
MBt8=MB1_8.*hsx67+MB2_8.*hsx68;
MBt=MBt1+MBt2+MBt3+MBt4+MBt5+MBt6+MBt7+MBt8;
RBt1=RB1_1.*hsx1+RB2_1.*hsx2;
RBt2=RB1_2.*hsx7+RB2_2.*hsx8;
RBt3=RB1_3.*hsx13+RB2_3.*hsx14;
RBt4=RB1_4.*hsx19+RB2_4.*hsx20;
RBt5=RB1_5.*hsx49+RB2_5.*hsx50;
RBt6=RB1_6.*hsx55+RB2_6.*hsx56;
RBt7=RB1_7.*hsx61+RB2_7.*hsx62;
RBt8=RB1_8.*hsx67+RB2_8.*hsx68;
RBt=RBt1+RBt2+RBt3+RBt4+RBt5+RBt6+RBt7+RBt8;
RAt1=VL2_1.*hsx1+VL3_1.*hsx2;
RAt2=VL2_2.*hsx7+VL3_2.*hsx8;
RAt3=VL2_3.*hsx13+VL3_3.*hsx14;
RAt4=VL2_4.*hsx19+VL3_4.*hsx20;
RAt5=VL2_5.*hsx49+VL3_5.*hsx50;
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RAt6=VL2_6.*hsx55+VL3_6.*hsx56;
RAt7=VL2_7.*hsx61+VL3_7.*hsx62;
RAt8=VL2_8.*hsx67+VL3_8.*hsx68;
RAt=RAt1+RAt2+RAt3+RAt4+RAt5+RAt6+RAt7+RAt8;
RCt1=-(VR1_1.*hsx1+VR2_1.*hsx2);
RCt2=-(VR1_2.*hsx7+VR2_2.*hsx8);
RCt3=-(VR1_3.*hsx13+VR2_3.*hsx14);
RCt4=-(VR1_4.*hsx19+VR2_4.*hsx20);
RCt5=-(VR1_5.*hsx49+VR2_5.*hsx50);
RCt6=-(VR1_6.*hsx55+VR2_6.*hsx56);
RCt7=-(VR1_7.*hsx61+VR2_7.*hsx62);
RCt8=-(VR1_8.*hsx67+VR2_8.*hsx68);
RCt=RCt1+RCt2+RCt3+RCt4+RCt5+RCt6+RCt7+RCt8;
[vmy,vmx]=max(abs(vmt));
%[Mmy,Mmx]=max(abs(Mmt));
%[MLy,MLx]=max(abs(MLt));
[VLy,VLx]=max(abs(VLt));
[VRy,VRx]=max(abs(VRt));
[MLy,MLx]=max(abs(MLt));
[MRy,MRx]=max(abs(MRt));
[MBy,MBx]=max(abs(MBt));
[RBy,RBx]=max(abs(RBt));
[RAy,RAx]=max(abs(RAt));
[RCy,RCx]=max(abs(RCt));
vmx=(vmx-1)*0.0005;
%Mmx=Mmx*0.0005;
%MLx=MLx*0.0005;
VLx=(VLx-1)*0.0005;
VRx=(VRx-1)*0.0005;
MLx=(MLx-1)*0.0005;
MRx=(MRx-1)*0.0005;
MBx=(MBx-1)*0.0005;
RBx=(RBx-1)*0.0005;
RAx=(RAx-1)*0.0005;
RCx=(RCx-1)*0.0005;
nvmy=num2str(vmy);
%nmmy=num2str(Mmy);
%nmly=num2str(MLy);
nvly=num2str(VLy);
nvry=num2str(VRy);
nmly=num2str(MLy);
nmry=num2str(MRy);
nmby=num2str(MBy);
nrby=num2str(RBy);
nray=num2str(RAy);
nrcy=num2str(RCy);
nvmx=num2str(vmx);
%nmmx=num2str(Mmx);
%nmlx=num2str(MLx);
nvlx=num2str(VLx);
nvrx=num2str(VRx);
nmlx=num2str(MLx);
nmrx=num2str(MRx);
nmbx=num2str(MBx);
nrbx=num2str(RBx);
nrax=num2str(RAx);
nrcx=num2str(RCx);

figure(1)
subplot(9,1,1);plot(x,vmt1);grid on;
title(['Influence lines of Displacement,y(L/2) for ',n,' loads l/L= ',nlL1]);
ylabel('ym1');
subplot(9,1,2);plot(x,vmt2);grid on;ylabel('ym2');
subplot(9,1,3);plot(x,vmt3);grid on;ylabel('ym3');
subplot(9,1,4);plot(x,vmt4);grid on;ylabel('ym4');
subplot(9,1,5);plot(x,vmt5);grid on;ylabel('ym5');
subplot(9,1,6);plot(x,vmt6);grid on;ylabel('ym6');
subplot(9,1,7);plot(x,vmt7);grid on;ylabel('ym7');
subplot(9,1,8);plot(x,vmt8);grid on;ylabel('ym8');
subplot(9,1,9);plot(x,vmt);grid on;ylabel('ymt');
xlabel('x');

figure(2)
```

```
subplot(9,1,1);plot(x,MLt1);grid on;
title(['Influence lines of Moment,M(L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('ML1');
subplot(9,1,2);plot(x,MLt2);grid on;ylabel('ML2');
subplot(9,1,3);plot(x,MLt3);grid on;ylabel('ML3');
subplot(9,1,4);plot(x,MLt4);grid on;ylabel('ML4');
subplot(9,1,5);plot(x,MLt5);grid on;ylabel('ML5');
subplot(9,1,6);plot(x,MLt6);grid on;ylabel('ML6');
subplot(9,1,7);plot(x,MLt7);grid on;ylabel('ML7');
subplot(9,1,8);plot(x,MLt8);grid on;ylabel('ML8');
subplot(9,1,9);plot(x,MLt);grid on;ylabel('MLt');
xlabel('x');

figure(3)
subplot(9,1,1);plot(x,MBt1);grid on;
title(['Influence lines of Moment at B,M(L) for ',n,' loads 1/L= ',nlL1]);
ylabel('MB1');
subplot(9,1,2);plot(x,MBt2);grid on;ylabel('MB2');
subplot(9,1,3);plot(x,MBt3);grid on;ylabel('MB3');
subplot(9,1,4);plot(x,MBt4);grid on;ylabel('MB4');
subplot(9,1,5);plot(x,MBt5);grid on;ylabel('MB5');
subplot(9,1,6);plot(x,MBt6);grid on;ylabel('MB6');
subplot(9,1,7);plot(x,MBt7);grid on;ylabel('MB7');
subplot(9,1,8);plot(x,MBt8);grid on;ylabel('MB8');
subplot(9,1,9);plot(x,MBt);grid on;ylabel('MBt');
xlabel('x');

figure(4)
subplot(9,1,1);plot(x,MRt1);grid on;
title(['Influence lines of Moment,M(3L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('MR1');
subplot(9,1,2);plot(x,MRt2);grid on;ylabel('MR2');
subplot(9,1,3);plot(x,MRt3);grid on;ylabel('MR3');
subplot(9,1,4);plot(x,MRt4);grid on;ylabel('MR4');
subplot(9,1,5);plot(x,MRt5);grid on;ylabel('MR5');
subplot(9,1,6);plot(x,MRt6);grid on;ylabel('MR6');
subplot(9,1,7);plot(x,MRt7);grid on;ylabel('MR7');
subplot(9,1,8);plot(x,MRt8);grid on;ylabel('MR8');
subplot(9,1,9);plot(x,MRt);grid on;ylabel('MRt');
xlabel('x');

figure(5)
subplot(9,1,1);plot(x,VLt1);grid on;
title(['Influence lines of Shear Near Support B,SB(L) for ',n,' loads 1/L= ',nlL1]);
ylabel('VL1');
subplot(9,1,2);plot(x,VLt2);grid on;ylabel('VL2');
subplot(9,1,3);plot(x,VLt3);grid on;ylabel('VL3');
subplot(9,1,4);plot(x,VLt4);grid on;ylabel('VL4');
subplot(9,1,5);plot(x,VLt5);grid on;ylabel('VL5');
subplot(9,1,6);plot(x,VLt6);grid on;ylabel('VL6');
subplot(9,1,7);plot(x,VLt7);grid on;ylabel('VL7');
subplot(9,1,8);plot(x,VLt8);grid on;ylabel('VL8');
subplot(9,1,9);plot(x,VLt);grid on;ylabel('VLt');
xlabel('x');

figure(6)
subplot(9,1,1);plot(x,VRt1);grid on;
title(['Influence lines of Shear Near Support C,SC for ',n,' loads 1/L= ',nlL1]);
ylabel('VR1');
subplot(9,1,2);plot(x,VRt2);grid on;ylabel('VR2');
subplot(9,1,3);plot(x,VRt3);grid on;ylabel('VR3');
subplot(9,1,4);plot(x,VRt4);grid on;ylabel('VR4');
subplot(9,1,5);plot(x,VRt5);grid on;ylabel('VR5');
subplot(9,1,6);plot(x,VRt6);grid on;ylabel('VR6');
subplot(9,1,7);plot(x,VRt7);grid on;ylabel('VR7');
subplot(9,1,8);plot(x,VRt8);grid on;ylabel('VR8');
subplot(9,1,9);plot(x,VRt);grid on;ylabel('VRt');
xlabel('x');

figure(7)
subplot(9,1,1);plot(x,RAt1);grid on;
title(['Influence lines of Reaction at A,Ay for ',n,' loads 1/L= ',nlL1]);
ylabel('RA1');
```

```
subplot(9,1,2);plot(x,RAt2);grid on;ylabel('RA2');
subplot(9,1,3);plot(x,RAt3);grid on;ylabel('RA3');
subplot(9,1,4);plot(x,RAt4);grid on;ylabel('RA4');
subplot(9,1,5);plot(x,RAt5);grid on;ylabel('RA5');
subplot(9,1,6);plot(x,RAt6);grid on;ylabel('RA6');
subplot(9,1,7);plot(x,RAt7);grid on;ylabel('RA7');
subplot(9,1,8);plot(x,RAt8);grid on;ylabel('RA8');
subplot(9,1,9);plot(x,RAt);grid on;ylabel('RAt');
xlabel('x');

figure(8)
subplot(9,1,1);plot(x,RBt1);grid on;
title(['Influence lines of Reaction at B,By for ',n,' loads 1/L= ',nlL1]);
ylabel('RB1');
subplot(9,1,2);plot(x,RBt2);grid on;ylabel('RB2');
subplot(9,1,3);plot(x,RBt3);grid on;ylabel('RB3');
subplot(9,1,4);plot(x,RBt4);grid on;ylabel('RB4');
subplot(9,1,5);plot(x,RBt5);grid on;ylabel('RB5');
subplot(9,1,6);plot(x,RBt6);grid on;ylabel('RB6');
subplot(9,1,7);plot(x,RBt7);grid on;ylabel('RB7');
subplot(9,1,8);plot(x,RBt8);grid on;ylabel('RB8');
subplot(9,1,9);plot(x,RBt);grid on;ylabel('RBt');
xlabel('x');

figure(9)
subplot(9,1,1);plot(x,RCt1);grid on;
title(['Influence lines of Reaction at C,Cy for ',n,' loads 1/L= ',nlL1]);
ylabel('RC1');
subplot(9,1,2);plot(x,RCt2);grid on;ylabel('RC2');
subplot(9,1,3);plot(x,RCt3);grid on;ylabel('RC3');
subplot(9,1,4);plot(x,RCt4);grid on;ylabel('RC4');
subplot(9,1,5);plot(x,RCt5);grid on;ylabel('RC5');
subplot(9,1,6);plot(x,RCt6);grid on;ylabel('RC6');
subplot(9,1,7);plot(x,RCt7);grid on;ylabel('RC7');
subplot(9,1,8);plot(x,RCt8);grid on;ylabel('RC8');
subplot(9,1,9);plot(x,RCt);grid on;ylabel('RCt');
xlabel('x');

figure(10)
plot(x,vmt1,x,vmt2,x,vmt3,x,vmt4,x,vmt5,x,vmt6,x,vmt7,x,vmt8,x,vmt);grid on;%
title(['Influence lines of Displacement,y(L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('ymt1');
xlabel('x');

figure(11)
plot(x,MLt1,x,MLt2,x,MLt3,x,MLt4,x,MLt5,x,MLt6,x,MLt7,x,MLt8,x,MLt);grid on;%
title(['Influence lines of Moment,M(L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('MLt1');
xlabel('x');

figure(12)
plot(x,MBt1,x,MBt2,x,MBt3,x,MBt4,x,MBt5,x,MBt6,x,MBt7,x,MBt8,x,MBt);grid on;%
title(['Influence lines of Moment at B,M(L) for ',n,' loads 1/L= ',nlL1]);
ylabel('MBt1');
xlabel('x');

figure(13)
plot(x,MRt1,x,MRt2,x,MRt3,x,MRt4,x,MRt5,x,MRt6,x,MRt7,x,MRt8,x,MRt);grid on;%
title(['Influence lines of Moment,M(3L/2) for ',n,' loads 1/L= ',nlL1]);
ylabel('MRt1');
xlabel('x');

figure(14)
plot(x,VLt1,x,VLt2,x,VLt3,x,VLt4,x,VLt5,x,VLt6,x,VLt7,x,VLt8,x,VLt);grid on;%
title(['Influence lines of Shear Near Support B,SB(L) for ',n,' loads 1/L= ',nlL1]);
ylabel('VLt1');
xlabel('x');

figure(15)
plot(x,VRt1,x,VRt2,x,VRt3,x,VRt4,x,VRt5,x,VRt6,x,VRt7,x,VRt8,x,VRt);grid on;%
title(['Influence lines of Shear Near Support C,SC for ',n,' loads 1/L= ',nlL1]);
ylabel('VRt1');
xlabel('x');
```

```
figure(16)
plot(x,RAt1,x,RAt2,x,RAt3,x,RAt4,x,RAt5,x,RAt6,x,RAt7,x,RAt8,x,RAt);grid on;%
title(['Influence lines of Reaction at A,Ay for ',n,' loads l/L= ',nlL1]);
ylabel('RAt1');
xlabel('x');

figure(17)
plot(x,RBt1,x,RBt2,x,RBt3,x,RBt4,x,RBt5,x,RBt6,x,RBt7,x,RBt8,x,RBt);grid on;%
title(['Influence lines of Reaction at B,By for ',n,' loads l/L= ',nlL1]);
ylabel('RBt1');
xlabel('x');

figure(18)
plot(x,RCt1,x,RCt2,x,RCt3,x,RCt4,x,RCt5,x,RCt6,x,RCt7,x,RCt8,x,RCt);grid on;%
title(['Influence lines of Reaction at C,Cy for ',n,' loads l/L= ',nlL1]); ylabel
('RCt1');
xlabel('x');

figure(19)
plot(x,vmt);grid on;
title(['The max.y(L/2) for ',n,' loads l/L= ',nlL1,',y(L/2)max=',nvmy,', X=',nvmx]);
ylabel('C ymt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(20)
plot(x,MLt);grid on;
title(['The max.M(L/2) for ',n,' loads l/L= ',nlL1,',M(L/2)max=',nmly,', X=',nmlx]);
ylabel('C MLt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(21)
plot(x,MBt);grid on;
title(['The max.M(L) for ',n,' loads l/L= ',nlL1,',M(L)max=',nmby,', X=',nmbx]);
ylabel('C MBt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(22)
plot(x,MRt);grid on;
title(['The max.M(3L/2) for ',n,' loads l/L= ',nlL1,',M(3L/2)max=',nmry,', X=',nmrx]);
ylabel('C MRt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(23)
plot(x,VLt);grid on;
title(['The max.SB(L) for ',n,' loads l/L= ',nlL1,',SB(L)max=',nvly,', X=',nvlx]);
ylabel('C VLt Wt');
xlabel(['Position or time of ',n,' loads']);

figure(24)
plot(x,VRt);grid on;
title(['The max.SC for ',n,' loads l/L= ',nlL1,',SC max=',nvry,', X=',nvrx]);
ylabel('C VRt Wt');
xlabel(['Position or time of ',n,' loads']);

figure(25)
plot(x,RAt);grid on;
title(['The max.Ay for ',n,' loads l/L= ',nlL1,',Ay max=',nray,', X=',nrax]);
ylabel('C RAt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(26)
plot(x,RBt);grid on;
title(['The max.By for ',n,' loads l/L= ',nlL1,',By max=',nrby,', X=',nrbx]);
ylabel('C RBt WtL');
xlabel(['Position or time of ',n,' loads']);

figure(27)
plot(x,RCt);grid on;
title(['The max.Cy for ',n,' loads l/L= ',nlL1,',Cy max=',nrcy,', X=',nrcx]);
ylabel('C RCt WtL');
xlabel(['Position or time of ',n,' loads']);
```

```
vmtd1=vmt;
VLtd1=VLt;
VRtd1=VRt;
MLtd1=MLt;
MRtd1=MRt;
MBtd1=MBt;
RBtd1=RBt;
RAtd1=RAt;
RCtd1=RCt;

%figure(28)
%plot(x,vm1_1);grid on;%axis([0 0.5 -0.2 0.2]);
%title([' 4 loads 1/L=',nlL]);
%ylabel('');
%xlabel('x');

%figure(14)
%plot(x,vm2_1);grid on;%axis([0.5 1 -0.2 0.2]);
%title([' 4 loads 1/L=',nlL]);
%ylabel('');
%xlabel('x');

%figure(15)
%plot(x,vm3_1);grid on;%axis([1 2 -0.02 0.02]);
%title([' 4 loads 1/L=',nlL]);
%ylabel('');
%xlabel('x');

%figure(1)
%subplot(4,2,1);plot(x,hsx5);grid on;
%title([' for 4 loads 1/L=',nlL]);
%ylabel('H1');
%subplot(4,2,2);plot(x,hsx6);grid on;ylabel('H2');
%subplot(4,2,3);plot(x,hsx11);grid on;ylabel('H3');
%subplot(4,2,4);plot(x,hsx12);grid on;ylabel('H4');
%subplot(4,2,5);plot(x,hsx17);grid on;ylabel('H5');
%subplot(4,2,6);plot(x,hsx18);grid on;ylabel('H6');
%subplot(4,2,7);plot(x,hsx23);grid on;ylabel('H7');
%subplot(4,2,8);plot(x,hsx24);grid on;ylabel('H8');
%xlabel('x');

%figure(6)
%subplot(5,1,1);plot(x,MLt1);grid on;
%title([' for 4 loads 1/L=',nlL]);
%ylabel('ML1');
%subplot(5,1,2);plot(x,MLt2);grid on;ylabel('ML2');
%subplot(5,1,3);plot(x,MLt3);grid on;ylabel('ML3');
%subplot(5,1,4);plot(x,MLt4);grid on;ylabel('ML4');
%subplot(5,1,5);plot(x,MLt);grid on;ylabel('MLt');
%xlabel('x');

%figure(7)
%subplot(5,1,1);plot(x,VLt1);grid on;
%title([' for 4 loads 1/L=',nlL]);
%ylabel('VL1');
%subplot(5,1,2);plot(x,VLt2);grid on;ylabel('VL2');
%subplot(5,1,3);plot(x,VLt3);grid on;ylabel('VL3'); %subplot(5,1,4);plot(x,VLt4);grid
on;ylabel('VL4');
%subplot(5,1,5);plot(x,VLt);grid on;ylabel('VLt');
%xlabel('x');
```

ภาคผนวก ค

รายละเอียดโปรแกรม Heaviside

```
function out = Heaviside(in)
%Heaviside(in)=0,for elements of in <  0
%             =1,for elements of in >= 0

out = ones(size(in));
kneg=find(in<0);
out(kneg)=zeros(size(kneg));
```