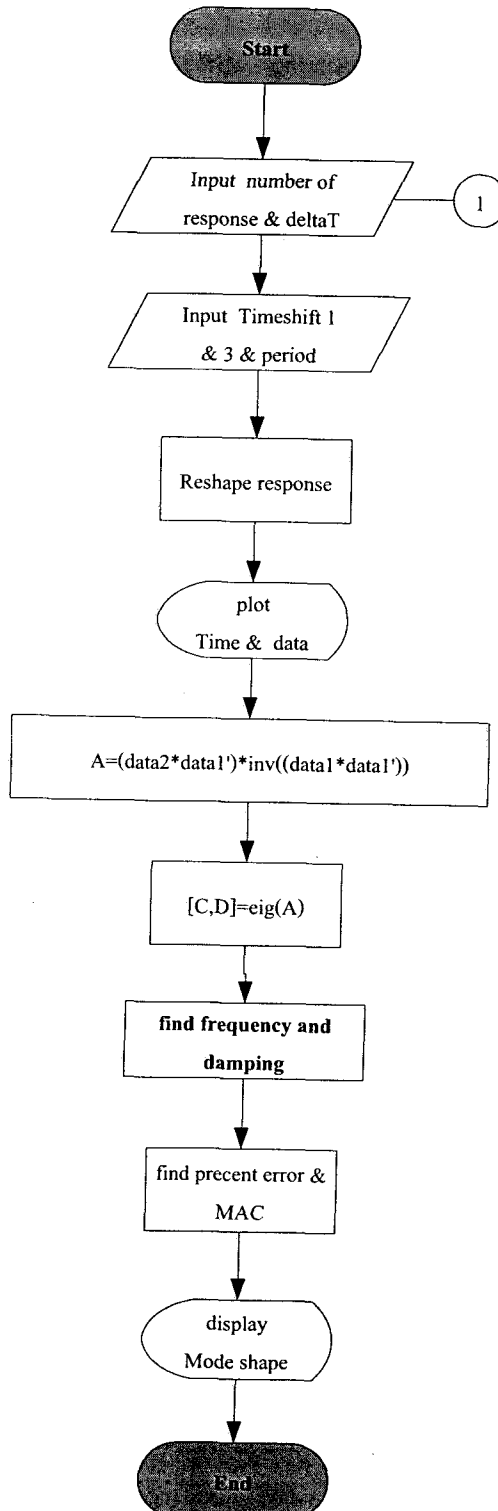


ภาคผนวกที่ ก.8

Flow chart โปรแกรมวิเคราะห์หาค่าพารามิเตอร์ต่างๆ ด้วยวิธี Ibrahim time domain

(findmodeshape.m)



โปรแกรมวิเคราะห์หาค่าพารามิเตอร์ต่างๆ ด้วยวิธี Ibrahim time domain (findmodeshape.m)

```

%%%%%% Exact of mode structure %%%%%%
clear;
void=('Input Mass & Damping');
pt=getfilevalue(void);
pt=reshape(pt,3,length(pt)/3);

dist=size(pt,1);
for i= 1:dist
    m(i,i)=pt(i,1);
    if i<=dist-1
        k(i,i)=pt(i,2)+pt(i+1,2);
        k(i,i+1)=-pt(i+1,2);
        k(i+1,i)=-pt(i+1,2);
        k(i+1,i+1)=pt(i+1,2);
        c(i,i)=pt(i,3)+pt(i+1,3);
        c(i,i+1)=-pt(i+1,3);
        c(i+1,i)=-pt(i+1,3);
        c(i+1,i+1)=pt(i+1,3);
    end
end
z=zeros(size(m));
A=[c m;m z];
B=[k z;z -m];
[v1,d1]=eig(-inv(A)*B); % eigen vector

for i=1:length(d1)/2
    t(i)=sqrt(imag(d1(2*i-1,2*i-1))^2+real(d1(2*i-1,2*i-1))^2);
    frequency_exact(i)=t(i)/2/pi;
    damp_exact(i)=-real(d1(2*i-1,2*i-1))/t(i);

    for j2=1:length(d1)/2
        j1(i,j2)=sqrt(real(v1(i,2*j2-1))^2+imag(v1(i,2*j2-1))^2)*(real(v1(i,2*j2-1))/abs(real(v1(i,2*j2-1))));
    end
end

[vv0 vv1]=max(abs(j1),[],1);
for l=1:length(d1)/2
    vvv=j1(vv1(l),l);
    v2(:,l)=j1(:,l)/vvv;
end

```

```

%%%%%% Beginning Ibrahim Time domain %%%%%
x=";
  lineNo=1;
  def={'7'};
  x=inputdlg('How many is Raesponse','Input ',lineNo,def);
  x=str2double(x);

void=('Input Data ');
data=getfilevalue(void);
data=reshape(data,x,length(data)/x);          %old style data
%data=reshape(data,length(data)/x,x);        %new style data

delt=";
  def={'0.02'};
  delt=inputdlg('Input','Delta of Time',lineNo,def);
  delt=str2double(delt);
  period=1/delt;

tishift=";
  def={'3'};
  tishift=inputdlg('Input','Time shift',lineNo,def);
  tishift=str2double(tishift);

tishift1=";
  def={'4'};
  tishift1=inputdlg('Input','Shift of delta 3',lineNo,def);
  tishift1=str2double(tishift1);

le=length(data);
figure(1);
plot((0:delt:(le-1)*delt),data);
xlabel('Time,sec');

y=";
  def={'1900'};
  y=inputdlg('Inpute','Length of Raesponse ',lineNo,def);
  y=str2double(y);

data=[data(1:(end-tishift1),:) data(tishift1+1:end,:)];
data1=data(1:y,:);
data2=data(tishift+1:y+tishift,:);

A=(data2*data1)*inv((data1*data1'));

```

```

[C D]=eig(A);
for i=1:length(D)/2
    re=real(D(2*i-1,2*i-1));
    im=imag(D(2*i-1,2*i-1));
    b11(i)=(im/re);
    b12(i)=atan(b11(i));
    b(i)=(1/(tishift))*atan(im/re);
    s1=re^2+im^2;
    a1(i)=(1/(2*tishift))*log(s1);
    w(i)=sqrt(a1(i)^2+b(i)^2);
    value(1,i)= w(i)/(2*pi)*period;
    value(2,i)=(-a1(i)/w(i));
end
len=length(value);
value1=value;
for i=1:len
    [max1,locat]=max(value1(1,i:end));
    if i==1
        location(i)=locat;
    else
        location(i)=locat+i-1;
    end
    max1=value1(:,location(i));
    vari=value1(:,i);
    value1(:,location(i))=vari;
    value1(:,i)=max1;
    frequency(i)=max1(1,1);
    damp(i)=max1(2,1);
    if i==len
        break
    end
    max1=C(:,2*location(i)-1:2*location(i));
    vari=C(:,2*i-1:2*i);
    C(:,2*location(i)-1:2*location(i))=vari;
    C(:,2*i-1:2*i)=max1;
end

for i=1:len
    w1(i)=value1(1,i)*2*pi;
    a11(i)=-value1(2,i)*w1(i);
    b1(i)=sqrt(w1(i)^2-a11(i)^2);
    angtang(i)=atan(-b1(i)/a11(i));
end

```

```

percent_error_fre=(frequency_exact-frequency).*100./frequency_exact;
percent_error_damp=(damp_exact-damp).*100./damp_exact;

for i=1:length(D)/2
    for k1=1:length(D)/2
        j(i,k1)=sqrt(real(C(i,2*k1-1))^2+imag(C(i,2*k1-1))^2)*(real(C(i,2*k1-1))/abs(real(C(i,2*k1-1))));
        j11(i,k1)=sqrt(real(C(2*i,2*k1-1))^2+imag(C(2*i,2*k1-1))^2)*(real(C(2*i,2*k1-1))/abs(real(C(2*i,2*k1-1))));
    end
    a=v1(1:x,2*i-1);
    x1=C(1:x,2*i-1);
    MAC(i)=(abs(x1'*a)^2/((x1'*x1)*(a'*a)))*100;
end

[vv0 vv1]=max(abs(j),[],1);
for l=1:length(D)/2
    vvv=j(vv1(l),l);
    v(:,l)=j(:,l)./vvv;
end

    high=3.5*(1:size(v,1));
    high=[0;high'];
    v=fliplr([zeros(1,size(v,2));v]);
    v2=fliplr([zeros(1,size(v2,2));v2]);

figure(2);
for i=1:size(v,2)
    subplot(1,size(v,2),i);
    plot(v(:,i),high,'*:',v2(:,i),high);grid on
end

uj=[frequency_exact' frequency' percent_error_fre' damp_exact' damp'
percent_error_damp' MAC'];
wk1 write('c:\windows\desktop\Allvalue.wk1',flipud(uj));
fclose('all');

```