PROGRAM SIMULASI

Low Pass Filter

```
function pushbutton1_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% N=str2double(get(handles.n,'value'));
contents=get(handles.n,'value');
switch contents
    case 1
         n=2;

    case 2
         n=3;

    case 3
         n=4;

    case 4
         n=5;

    case 5
         n=6;

    case 6
         n=7;
    otherwise
end
Rp=str2num(get(handles.rp,'string'));
Wn=str2num(get(handles.wp,'string'));
[a,b]=cheby1(n,Rp,(2*pi*Wn),'s');
[h,w]=freqs(a,b);
m=20*log10(abs(h));
plot(w/(2*pi),m);
y=str2num(get(handles.Ymin,'string'));
z=str2num(get(handles.Ymax,'string'));
X=str2num(get(handles.X,'string'));
xo=0;
% an=angle(X);
% plot(y/pi,an);
axis([xo X z y])
ylabel('Magnitude (dB)')
xlabel('Frekuensi (Hz)')



function back_Callback(hObject, eventdata, handles)
% hObject    handle to back (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
close LPF;
fig=openfig('menuutama.fig');
handles=guihandles(fig);
guidata(fig,handles);
```

```
function semuaorde_Callback(hObject, eventdata, handles)
% hObject    handle to semuaorde (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
A=2;
B=3;
C=4;
D=5;
E=6;
F=7;
Rp=str2double(get(handles.rp,'string'));
Wn=str2double(get(handles.wp,'string'));
[g,a]=cheby1(A,Rp,(2*pi*Wn),'s');
[z n]=freqs(g,a);

[h,b]=cheby1(B,Rp,(2*pi*Wn),'s');
[o p]=freqs(h,b);

[i,c]=cheby1(C,Rp,(2*pi*Wn),'s');
[q r]=freqs(i,c);

[j,d]=cheby1(D,Rp,(2*pi*Wn),'s');
[s t]=freqs(j,d);

[k,e]=cheby1(E,Rp,(2*pi*Wn),'s');
[v w]=freqs(k,e);

[l,f]=cheby1(F,Rp,(2*pi*Wn),'s');
[x y]=freqs(l,f);
% axis([0 1 -1 2])
hold on
m=20*log10(abs(z));
plot(n/(2*pi),m);

m=20*log10(abs(o));
plot(p/(2*pi),m);

m=20*log10(abs(q));
plot(r/(2*pi),m);

m=20*log10(abs(s));
plot(t/(2*pi),m);

m=20*log10(abs(v));
plot(w/(2*pi),m);

m=20*log10(abs(x));
plot(y/(2*pi),m);
% an=angle(X);
% plot(y/pi,an);
axis([0 8 -50 2])
ylabel('Magnitude (dB)')
xlabel('Frekuensi (Hz)')
hold off
legend('','orde 2','orde 3','orde 4','orde 5','orde 6','orde 7')


function pushbutton5_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton5 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
close LPF;
fig=openfig('rangkaianlpf.fig');
```

```
handles=guihandles(fig);
guidata(fig,handles);
```

Design Low Pass Filter

```
function ripple_Callback(hObject, eventdata, handles)
% hObject    handle to ripple (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
switch get(hObject,'value')
    case 1 %---ripple 0.01 ---%
        switch get(handles.n,'value')
            case 1 %--n=2--%

set(handles.RsRl,'string',{'1.101','1.111','1.25','1.429','1.667','2','2.
5','3.333','5','10'});
            case 2 %--n=3--%

set(handles.RsRl,'string',{'1','0.9','0.8','0.7','0.6','0.5','0.4','0.3',
'0.2','0.1'});
            case 3 %--n=4--%

set(handles.RsRl,'string',{'1','1.111','1.25','1.429','1.667','2','2.5','
3.333','5','10'});
            case 4 %--n=5--%

set(handles.RsRl,'string',{'1','0.9','0.8','0.7','0.6','0.5','0.4','0.3',
'0.2','0.1'});
            case 5 %--n=6--%

set(handles.RsRl,'string',{'1.101','1.111','1.25','1.429','1.667','2','2.
5','3.333','5','10'});
            case 6 %--n=7--%

set(handles.RsRl,'string',{'1','0.9','0.8','0.7','0.6','0.5','0.4','0.3',
'0.2','0.1'});
        end
    case 2 %---ripple 0.1 ---%
        switch get(handles.n,'value')
            case 1 %--n=2--%

set(handles.RsRl,'string',{'1.355','1.429','1.667','2.000','2.500','3.333
','5.000','10.000'});
            case 2 %--n=3--%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
            case 3 %--n=4--%

set(handles.RsRl,'string',{'1.355','1.429','1.667','2.000','2.500','3.333
','5.000','10.000'});
            case 4 %--n=5--%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','1.100'});
            case 5 %--n=6--%

set(handles.RsRl,'string',{'1.355','1.429','1.667','2.000','2.500','3.333
','5.000','10.000'});
            case 6 %--n=7--%
```

```
set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
        end
    case 3 %---ripple 0.5 ---%
        switch get(handles.n,'value')
            case 1 %--n=2--%

set(handles.RsRl,'string',{'1.984','2.000','2.500','3.333','5.000','10.00
0'});
            case 2 %--n=3--%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.500','0.400
','0.300','0.200','0.100'});
            case 3 %--n=4--%

set(handles.RsRl,'string',{'1.984','2.000','2500','3.333','5.000','10.000
'});
            case 4 %--n=5--%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
            case 5 %--n=6--%

set(handles.RsRl,'string',{'1.984','2.000','2500','3.333','5.000','10.000
'});
            case 6 %--n=7--%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
        end
    case 4 %---ripple 1 ---%
        switch get(handles.n,'value')
            case 1 %--n=2--%
                set(handles.RsRl,'string',{'3.000','4.000','8.000'});
            case 2 %--n=3--%

set(handles.RsRl,'string',{'1.000','0.500','0.333','0.250','1.125'});
            case 3 %--n=4--%
                set(handles.RsR1,'string',{'3.000','4.000','8.000'});
            case 4 %--n=5--%

set(handles.RsRl,'string',{'1.000','0.500','0.333','0.250','1.125'});
            case 5 %--n=6--%
                set(handles.RsR1,'string',{'3.000','4.000','8.000'});
            case 6 %--n=7--%

set(handles.RsRl,'string',{'1.000','0.500','0.333','0.250','1.125',});
        end
end


function n_Callback(hObject, eventdata, handles)
% hObject    handle to n (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
switch get(hObject,'value')
    case 1 %--- n=2 ---%
        a= imread('orde2 lpf.JPG')
        axes(handles.axes1);
        imshow(a);
        switch get(handles.ripple,'value')
            %----isi nilai case sesuai ripple----%
```

```
            case 1 %----ripple 0.01 ----%

set(handles.RsRl,'string',{'1.101','1.111','1.25','1.429','1.667','2','2.
5','3.333','5','10'});
            case 2 %----ripple 0.1 ----%

set(handles.RsRl,'string',{'1.355','1.429','1.667','2.000','2.500','3.333
','5.000','10.000'});
            case 3 %----ripple 0.5 ----%

set(handles.RsRl,'string',{'1.984','2.000','2.500','3.333','5.000','10.00
0'});
            case 4 %----ripple 1 ----%
                set(handles.RsRl,'string',{'3.000','4.000','8.000'});

        end
    case 2 %--- n=3 ---%
        a= imread('orde3 lpf.JPG')
        axes(handles.axes1);
        imshow(a);
        switch get(handles.ripple,'value')
            %----isi nilai case sesuai ripple----%
            case 1 %----ripple 0.01 ----%

set(handles.RsRl,'string',{'1','0.9','0.8','0.7','0.6','0.5','0.4','0.3',
'0.2','0.1'});
            case 2 %----ripple 0.1 ----%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','1.100'});
            case 3 %----ripple 0.5 ----%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.500','0.400
','0.300','0.200','0.100'});
            case 4 %----ripple 1 ----%

set(handles.RsRl,'string',{'1.000','0.500','0.333','0.250','1.125'});
        end
    case 3 %--- n=4 ---%
         a= imread('orde4 lpf.JPG')
        axes(handles.axes1);
        imshow(a);
        switch get(handles.ripple,'value')
            %----isi nilai case sesuai ripple----%
            case 1 %----ripple 0.01 ----%

set(handles.RsRl,'string',{'1','1.111','1.25','1.429','1.667','2','2.5','
3.333','5','10'});
            case 2 %----ripple 0.1 ----%

set(handles.RsRl,'string',{'1.355','1.429','1.667','2.000','2.500','3.333
','5.000','10.000'});
            case 3 %----ripple 0.5 ----%

set(handles.RsRl,'string',{'1.984','2.000','2500','3.333','5.000','10.000
'});
            case 4 %----ripple 1 ----%
                set(handles.RsRl,'string',{'3.000','4.000','8.000'});
        end
    case 4 %--- n=5 ---%
         a= imread('orde5 lpf.JPG')
        axes(handles.axes1);
        imshow(a);
```

```
        switch get(handles.ripple,'value')
            %----isi nilai case sesuai ripple----%
            case 1 %----ripple 0.01 ----%

set(handles.RsRl,'string',{'1','0.9','0.8','0.7','0.6','0.5','0.4','0.3',
'0.2','0.1'});
            case 2 %----ripple 0.1 ----%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
            case 3 %----ripple 0.5 ----%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
            case 4 %----ripple 1 ----%

set(handles.RsRl,'string',{'1.000','0.500','0.333','0.250','1.125'});
        end
    case 5 %--- n=6 ---%
         a= imread('orde6 lpf.JPG')
        axes(handles.axes1);
        imshow(a);
        switch get(handles.ripple,'value')
            %----isi nilai case sesuai ripple----%
            case 1 %----ripple 0.01 ----%

set(handles.RsRl,'string',{'1.101','1.111','1.25','1.429','1.667','2','2.
5','3.333','5','10'});
            case 2 %----ripple 0.1 ----%

set(handles.RsRl,'string',{'1.355','1.429','1.667','2.000','2.500','3.333
','5.000','10.000'});
            case 3 %----ripple 0.5 ----%

set(handles.RsRl,'string',{'1.984','2.000','2500','3.333','5.000','10.000
'});
            case 4 %----ripple 1 ----%
                set(handles.RsRl,'string',{'3.000','4.000','8.000'});
        end
    case 6 %--- n=7 ---%
         a= imread('orde7 lpf.JPG')
        axes(handles.axes1);
        imshow(a);
        switch get(handles.ripple,'value')
            %----isi nilai case sesuai ripple----%
            case 1 %----ripple 0.01 ----%

set(handles.RsRl,'string',{'1','0.9','0.8','0.7','0.6','0.5','0.4','0.3',
'0.2','0.1'});
            case 2 %----ripple 0.1 ----%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
            case 3 %----ripple 0.5 ----%

set(handles.RsRl,'string',{'1.000','0.900','0.800','0.700','0.600','0.500
','0.400','0.300','0.200','0.100'});
            case 4 %----ripple 1 ----%

set(handles.RsRl,'string',{'1.000','0.500','0.333','0.250','1.125'});
        end
end
```

```
function n_CreateFcn(hObject, eventdata, handles)
% hObject    handle to n (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns
called

% Hint: popupmenu controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end


% --- Executes on button press in pushbutton2.
function pushbutton2_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

contents=get(handles.ripple,'value');
switch contents
    case 1
        rp=0.01;
        contents=get(handles.n,'value');
        switch contents
            case 1
                n=2;

                contents=get(handles.RsRl,'value');
                switch contents
                    case 1
                        rs=0.101;
                        C1=1.347;
                        L2=1.483;
                        C3=0;
                        L4=0;
                        C5=0;
                        L6=0;
                        C7=0;
                    case 2
                        rs=0.111;
                        C1=1.247;
                        L2=1.595;
                        C3=0;
                        L4=0;
                        C5=0;
                        L6=0;
                        C7=0;
                    case 3
                        rs=1.25;
                        C1=0.943;
                        L2=1.997;
                        C3=0;
                        L4=0;
                        C5=0;
                        L6=0;
                        C7=0;
                    case 4
                        rs=1.429;
                        C1=0.759;
                        L2=2.344;
                        C3=0;
```

```
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 5
            rs=1.667;
            C1=0.609;
            L2=2.75;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 6
            rs=2;
            C1=0.479;
            L2=3.277;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 7
            rs=2.5;
            C1=0.383;
            L2=4.033;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 8
            rs=3.333;
            C1=0.259;
            L2=5.255;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 9
            rs=5;
            C1=0.164;
            L2=7.65;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 10
            rs=10;
            C1=0.078;
            L2=14.749;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 2
    n=3;
```

```
contents=get(handles.RsRl,'value');
switch contents
    case 1
        rs=1;
        C1=1.181;
        L2=1.821;
        C3=1.181;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 2
        rs=0.9;
        C1=1.092;
        L2=1.66;
        C3=1.48;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 3
        rs=0.8;
        C1=1.097;
        L2=1.443;
        C3=1.806;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 4
        rs=0.7;
        C1=1.16;
        L2=1.228;
        C3=2.165;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 5
        rs=0.6;
        C1=1.274;
        L2=1.024;
        C3=2.598;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 6
        rs=0.5;
        C1=1.452;
        L2=0.829;
        C3=3.164;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 7
        rs=0.4;
        C1=1.734;
        L2=0.645;
        C3=3.974;
        L4=0;
        C5=0;
```

```
                L6=0;
                C7=0;
            case 8
                rs=0.3;
                C1=2.216;
                L2=0.47;
                C3=5.28;
                L4=0;
                C5=0;
                L6=0;
                C7=0;
            case 9
                rs=0.2;
                C1=3.193;
                L2=0.305;
                C3=7.834;
                L4=0;
                C5=0;
                L6=0;
                C7=0;
            case 10
                rs=0.1;
                C1=6.141;
                L2=0.305;
                C3=15.39;
                L4=0;
                C5=0;
                L6=0;
                C7=0;
            otherwise
        end
    case 3
        n=4;

        contents=get(handles.RsRl,'value');
        switch contents
            case 1
                rs=1;
                C1=0.95;
                L2=1.938;
                C3=1.761;
                L4=1.046;
                C5=0;
                L6=0;
                C7=0;
            case 2
                rs=1.111;
                C1=0.854;
                L2=1.946;
                C3=1.744;
                L4=1.165;
                C5=0;
                L6=0;
                C7=0;
            case 3
                rs=1.25;
                C1=0.618;
                L2=2.075;
                C3=1.542;
                L4=1.617;
                C5=0;
                L6=0;
                C7=0;
```

```
case 4
    rs=1.429;
    C1=0.495;
    L2=0.495;
    C3=1.334;
    L4=2.008;
    C5=0;
    L6=0;
    C7=0;
case 5
    rs=1.667;
    C1=0.398;
    L2=1.024;
    C3=1.128;
    L4=2.461;
    C5=0;
    L6=0;
    C7=0;
case 6
    rs=2;
    C1=0.316;
    L2=2.994;
    C3=0.926;
    L4=3.045;
    C5=0;
    L6=0;
    C7=0;
case 7
    rs=2.5;
    C1=0.242;
    L2=3.641;
    C3=0.729;
    L4=3.875;
    C5=0;
    L6=0;
    C7=0;
case 8
    rs=3.333;
    C1=0.174;
    L2=4.727;
    C3=0.538;
    L4=5.209;
    C5=0;
    L6=0;
    C7=0;
case 9
    rs=5;
    C1=0.112;
    L2=6.91;
    C3=0.352;
    L4=7.813;
    C5=0;
    L6=0;
    C7=0;
case 10
    rs=10;
    C1=0.054;
    L2=13.469;
    C3=0.173;
    L4=15.51;
    C5=0;
    L6=0;
    C7=0;
```

```
        otherwise
    end
case 4
    n=5;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1;
            C1=0.977;
            L2=1.685;
            C3=2.037;
            L4=1.685;
            C5=0.977;
            L6=0;
            C7=0;
        case 2
            rs=0.9;
            C1=0.88;
            L2=1.456;
            C3=2.174;
            L4=1.641;
            C5=1.274;
            L6=0;
            C7=0;
        case 3
            rs=0.8;
            C1=0.877;
            L2=1.235;
            C3=2.379;
            L4=1.499;
            C5=1.607;
            L6=0;
            C7=0;
        case 4
            rs=0.7;
            C1=0.926;
            L2=1.04;
            C3=2.658;
            L4=1.323;
            C5=1.977;
            L6=0;
            C7=0;
        case 5
            rs=0.6;
            C1=1.019;
            L2=0.883;
            C3=3.041;
            L4=1.135;
            C5=2.424;
            L6=0;
            C7=0;
        case 6
            rs=0.5;
            C1=1.166;
            L2=0.699;
            C3=3.584;
            L4=0.942;
            C5=3.009;
            L6=0;
            C7=0;
        case 7
            rs=0.4;
```

```
            C1=1.398;
            L2=0.544;
            C3=4.403;
            L4=0.749;
            C5=3.845;
            L6=0;
            C7=0;
        case 8
            rs=0.3;
            C1=1.797;
            L2=0.398;
            C3=5.772;
            L4=0.557;
            C5=5.193;
            L6=0;
            C7=0;
        case 9
            rs=0.2;
            C1=2.604;
            L2=0.259;
            C3=8.514;
            L4=0.368;
            C5=7.826;
            L6=0;
            C7=0;
        case 10
            rs=0.1;
            C1=5.041;
            L2=0.127;
            C3=16.741;
            L4=0.182;
            C5=15.613;
            L6=0;
            C7=0;
        otherwise
    end
case 5
    n=6;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.101;
            C1=0.851;
            L2=1.796;
            C3=1.841;
            L4=2.027;
            C5=1.631;
            L6=0.937;
            C7=0;
        case 2
            rs=1.111;
            C1=0.76;
            L2=1.782;
            C3=1.775;
            L4=2.094;
            C5=1.638;
            L6=1.053;
            C7=0;
        case 3
            rs=1.25;
            C1=0.545;
            L2=1.864;
```

```
    C3=1.489;
    L4=2.403;
    C5=1.507;
    L6=1.504;
    C7=0;
case 4
    rs=1.429;
    C1=0.436;
    L2=2.038;
    C3=1.266;
    L4=2.735;
    C5=1.332;
    L6=1.899;
    C7=0;
case 5
    rs=1.667;
    C1=0.351;
    L2=2.298;
    C3=1.061;
    L4=3.167;
    C5=1.145;
    L6=2.357;
    C7=0;
case 6
    rs=2;
    C1=0.279;
    L2=2.678;
    C3=0.867;
    L4=3.768;
    C5=0.954;
    L6=2.948;
    C7=0;
case 7
    rs=2.5;
    C1=0.214;
    L2=3.261;
    C3=0.682;
    L4=4.667;
    C5=0.761;
    L6=3.79;
    C7=0;
case 8
    rs=3.333;
    C1=0.155;
    L2=4.245;
    C3=0.503;
    L4=6.163;
    C5=0.568;
    L6=5.143;
    C7=0;
case 9
    rs=5;
    C1=0.1;
    L2=6.223;
    C3=0.33;
    L4=9.151;
    C5=0.376;
    L6=7.785;
    C7=0;
case 10
    rs=10;
    C1=0.048;
    L2=12.171;
```

```
            C3=0.162;
            L4=18.105;
            C5=0.187;
            L6=15.595;
            C7=0;
        otherwise
    end
case 6
    n=7;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1;
            C1=0.913;
            L2=1.595;
            C3=2.002;
            L4=1.87;
            C5=2.002;
            L6=1.595;
            C7=0.913;
        case 2
            rs=0.9;
            C1=0.816;
            L2=1.362;
            C3=2.089;
            L4=1.722;
            C5=2.202;
            L6=1.581;
            C7=1.206;
        case 3
            rs=0.8;
            C1=0.811;
            L2=1.15;
            C3=2.262;
            L4=1.525;
            C5=2.465;
            L6=1.464;
            C7=1.538;
        case 4
            rs=0.7;
            C1=0.857;
            L2=0.967;
            C3=2.516;
            L4=1.323;
            C5=2.802;
            L6=1.307;
            C7=1.91;
        case 5
            rs=0.6;
            C1=0.943;
            L2=0.803;
            C3=2.872;
            L4=1.124;
            C5=3.25;
            L6=1.131;
            C7=2.359;
        case 6
            rs=0.5;
            C1=1.08;
            L2=0.65;
            C3=3.382;
            L4=0.928;
```

```
                    C5=3.875;
                    L6=0.947;
                    C7=2.948;
                case 7
                    rs=0.4;
                    C1=1.297;
                    L2=0.507;
                    C3=4.156;
                    L4=0.735;
                    C5=4.812;
                    L6=0.758;
                    C7=3.79;
                case 8
                    rs=0.3;
                    C1=1.669;
                    L2=0.372;
                    C3=5.454;
                    L4=0.546;
                    C5=6.37;
                    L6=0.568;
                    C7=5.148;
                case 9
                    rs=0.2;
                    C1=2.242;
                    L2=0.242;
                    C3=8.057;
                    L4=0.36;
                    C5=9.484;
                    L6=0.378;
                    C7=7.802;
                case 10
                    rs=0.1;
                    C1=4.701;
                    L2=0.119;
                    C3=15.872;
                    L4=0.178;
                    C5=18.818;
                    L6=0.188;
                    C7=15.652;
                otherwise
            end
    end

case 2
    rp=0.1;
    contents=get(handles.n,'value');
    switch contents
        case 1
            n=2;

            contents=get(handles.RsRl,'value');
            switch contents
                case 1
                    rs=1.355;
                    C1=1.209;
                    L2=1.638;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
                    C7=0;
                case 2
                    rs=1.429;
```

```
        C1=0.977;
        L2=1.982;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 3
        rs=1.667;
        C1=0.733;
        L2=2.489;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 4
        rs=2.000;
        C1=0.560;
        L2=3.054;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 5
        rs=2.500;
        C1=0.560;
        L2=3.827;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 6
        rs=3.333;
        C1=0.293;
        L2=5.050;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 7
        rs=5.000;
        C1=0.184;
        L2=7.426;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    case 8
        rs=10.000;
        C1=0.087;
        L2=14.233;
        C3=0;
        L4=0;
        C5=0;
        L6=0;
        C7=0;
    otherwise
end
```

```
case 2
    n=3;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=1.433;
            L2=1.594;
            C3=1.433;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 2
            rs=0.900;
            C1=1.426;
            L2=1.494;
            C3=1.622;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=0.800;
            C1=1.451;
            L2=1.356;
            C3=1.871;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 4
            rs=0.700;
            C1=1.521;
            L2=1.193;
            C3=2.190;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 5
            rs=0.600;
            C1=1.648;
            L2=1.017;
            C3=2.603;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 6
            rs=0.500;
            C1=1.853;
            L2=0.838;
            C3=3.159;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 7
            rs=0.400;
            C1=2.186;
            L2=0.660;
```

```
            C3=3.968;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 8
            rs=0.300;
            C1=2.763;
            L2=0.486;
            C3=5.279;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 9
            rs=0.200;
            C1=3.942;
            L2=0.317;
            C3=7.850;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 10
            rs=0.100;
            C1=7.51;
            L2=0.155;
            C3=15.466;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 3
    n=4;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.355;
            C1=0.992;
            L2=2.148;
            C3=1.585;
            L4=1.341;
            C5=0;
            L6=0;
            C7=0;
        case 2
            rs=1.429;
            C1=0.779;
            L2=2.348;
            C3=1.429;
            L4=1.700;
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=1.667;
            C1=0.576;
            L2=2.348;
            C3=1.185;
            L4=2.243;
```

```
            C5=0;
            L6=0;
            C7=0;
        case 4
            rs=2.000;
            C1=0.440;
            L2=3.227;
            C3=0.967;
            L4=2.856;
            C5=0;
            L6=0;
            C7=0;
        case 5
            rs=2.500;
            C1=0.329;
            L2=3.961;
            C3=0.760;
            L4=2.698;
            C5=0;
            L6=0;
            C7=0;
        case 6
            rs=3.333;
            C1=0.233;
            L2=5.178;
            C3=0.560;
            L4=5.030;
            C5=0;
            L6=0;
            C7=0;
        case 7
            rs=5.000;
            C1=0.148;
            L2=7.607;
            C3=0.367;
            L4=7.614;
            C5=0;
            L6=0;
            C7=0;
        case 8
            rs=10.000;
            C1=0.070;
            L2=14.887;
            C3=0.180;
            L4=15.230;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 4
    n=5;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=1.301;
            L2=1.556;
            C3=2.241;
            L4=1.556;
            C5=1.301;
            L6=0;
```

```
    C7=0;
case 2
    rs=0.900;
    C1=1.285;
    L2=1.433;
    C3=2.380;
    L4=1.488;
    C5=1.488;
    L6=0;
    C7=0;
case 3
    rs=0.800;
    C1=1.300;
    L2=1.282;
    C3=2.380;
    L4=1.382;
    C5=1.738;
    L6=0;
    C7=0;
case 4
    rs=0.700;
    C1=1.358;
    L2=1.117;
    C3=2.868;
    L4=1.244;
    C5=2.062;
    L6=0;
    C7=0;
case 5
    rs=0.600;
    C1=1.470;
    L2=0.947;
    C3=3.269;
    L4=1.085;
    C5=2.484;
    L6=0;
    C7=0;
case 6
    rs=0.500;
    C1=1.654;
    L2=0.778;
    C3=3.845;
    L4=0.913;
    C5=3.055;
    L6=0;
    C7=0;
case 7
    rs=0.400;
    C1=1.954;
    L2=0.612;
    C3=4.720;
    L4=0.733;
    C5=3.886;
    L6=0;
    C7=0;
case 8
    rs=0.300;
    C1=2.477;
    L2=0.451;
    C3=6.196;
    L4=0.550;
    C5=5.237;
    L6=0;
```

```
            C7=0;
        case 9
            rs=0.200;
            C1=3.546;
            L2=0.295;
            C3=9.127;
            L4=0.366;
            C5=7.889;
            L6=0;
            C7=0;
        case 10
            rs=0.100;
            C1=6.787;
            L2=0.115;
            C3=17.957;
            L4=0.182;
            C5=15.745;
            L6=0;
            C7=0;
        otherwise
    end
case 5
    n=6;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.355;
            C1=0.942;
            L2=2.080;
            C3=1.659;
            L4=2.247;
            C5=1.534;
            L6=1.277;
            C7=0;
        case 2
            rs=1.429;
            C1=0.735;
            L2=2.249;
            C3=1.454;
            L4=2.544;
            C5=1.405;
            L6=1.629;
            C7=0;
        case 3
            rs=1.667;
            C1=0.542;
            L2=2.600;
            C3=1.183;
            L4=3.064;
            C5=1.185;
            L6=2.174;
            C7=0;
        case 4
            rs=2.000;
            C1=0.414;
            L2=3.068;
            C3=0.958;
            L4=3.712;
            C5=0.979;
            L6=2.794;
            C7=0;
        case 5
```

```
            rs=2.500;
            C1=0.310;
            L2=3.765;
            C3=0.749;
            L4=4.651;
            C5=0.778;
            L6=3.645;
            C7=0;
        case 6
            rs=3.333;
            C1=0.220;
            L2=4.927;
            C3=0.551;
            L4=6.195;
            C5=0.580;
            L6=7.618;
            C7=0;
        case 7
            rs=5.000;
            C1=0.139;
            L2=7.250;
            C3=0.361;
            L4=9.261;
            C5=0.384;
            L6=7.618;
            C7=0;
        case 8
            rs=10.000;
            C1=0.067;
            L2=14.220;
            C3=0.178;
            L4=18.427;
            C5=0.190;
            L6=15.350;
            C7=0;
        otherwise
    end
case 6
    n=7;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=1.262;
            L2=1.520;
            C3=2.239;
            L4=1.680;
            C5=2.239;
            L6=1.520;
            C7=1.262;
        case 2
            rs=0.900;
            C1=1.242;
            L2=1.395;
            C3=2.361;
            L4=1.578;
            C5=2.397;
            L6=1.459;
            C7=1.447;
        case 3
            rs=0.800;
            C1=1.255;
```

```
    L2=1.245;
    C3=2.548;
    L4=1.443;
    C5=2.624;
    L6=1.362;
    C7=1.697;
case 4
    rs=0.700;
    C1=1.310;
    L2=1.083;
    C3=2.819;
    L4=1.283;
    C5=2.942;
    L6=1.233;
    C7=2.021;
case 5
    rs=0.600;
    C1=1.417;
    L2=0.917;
    C3=3.205;
    L4=1.209;
    C5=3.384;
    L6=1.081;
    C7=2.444;
case 6
    rs=0.500;
    C1=1.595;
    L2=0.753;
    C3=3.764;
    L4=0.928;
    C5=4.015;
    L6=0.914;
    C7=3.018;
case 7
    rs=0.400;
    C1=1.885;
    L2=0.593;
    C3=4.618;
    L4=4.970;
    C5=0.738;
    L6=3.855;
    C7=3.855;
case 8
    rs=0.300;
    C1=2.392;
    L2=0.437;
    C3=6.054;
    L4=0.556;
    C5=6.569;
    L6=0.557;
    C7=5.217;
case 9
    rs=0.200;
    C1=3.428;
    L2=0.286;
    C3=8.937;
    L4=0.369;
    C5=9.770;
    L6=0.372;
    C7=7.890;
case 10
    rs=0.100;
    C1=6.570;
```

```
                    L2=0.141;
                    C3=17.603;
                    L4=0.184;
                    C5=19.376;
                    L6=0.186;
                    C7=15.813;
                otherwise
            end
    end

case 3
    rp=0.5;
    contents=get(handles.n,'value');
    switch contents
        case 1
            n=2;

            contents=get(handles.RsRl,'value');
            switch contents
                case 1
                    rs=1.984;
                    C1=0.983;
                    L2=1.950;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
                    C7=0;
                case 2
                    rs=2.000;
                    C1=0.909;
                    L2=2.103;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
                    C7=0;
                case 3
                    rs=2.500;
                    C1=0.564;
                    L2=3.165;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
                    C7=0;
                case 4
                    rs=3.333;
                    C1=0.375;
                    L2=4.211;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
                    C7=0;
                case 5
                    rs=5.000;
                    C1=0.228;
                    L2=6.700;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
```

```
            C7=0;
        case 6
            rs=10.000;
            C1=0.105;
            L2=13.322;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 2
    n=3;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=1.864;
            L2=1.280;
            C3=1.834;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 2
            rs=0.900;
            C1=1.918;
            L2=1.209;
            C3=2.026;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=0.800;
            C1=1.997;
            L2=1.120;
            C3=1.237;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 4
            rs=0.700;
            C1=2.114;
            L2=1.015;
            C3=2.517;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 5
            rs=0.500;
            C1=2.557;
            L2=0.759;
            C3=3.436;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 6
```

```
            rs=0.400;
            C1=2.985;
            L2=0.615;
            C3=4.242;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 7
            rs=0.300;
            C1=3.729;
            L2=0.463;
            C3=5.575;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 8
            rs=0.200;
            C1=5.254;
            L2=0.309;
            C3=8.225;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 9
            rs=0.100;
            C1=9.890;
            L2=0.153;
            C3=15.118;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 3
    n=4;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.984;
            C1=0.920;
            L2=2.586;
            C3=1.304;
            L4=1.826;
            C5=0;
            L6=0;
            C7=0;
        case 2
            rs=2.000;
            C1=0.845;
            L2=2.720;
            C3=1.238;
            L4=1.985;
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=2.500;
            C1=0.516;
```

```
            L2=3.766;
            C3=0.869;
            L4=3.121;
            C5=0;
            L6=0;
            C7=0;
        case 4
            rs=3.333;
            C1=0.344;
            L2=5.120;
            C3=0.621;
            L4=4.480;
            C5=0;
            L6=0;
            C7=0;
        case 5
            rs=5.000;
            C1=0.210;
            L2=7.708;
            C3=0.400;
            L4=6.987;
            C5=0;
            L6=0;
            C7=0;
        case 6
            rs=10.000;
            C1=0.098;
            L2=15.352;
            C3=0.194;
            L4=14.262;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 4
    n=5;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=1.807;
            L2=1.303;
            C3=2.691;
            L4=1.303;
            C5=1.807;
            L6=0;
            C7=0;
        case 2
            rs=0.900;
            C1=1.854;
            L2=1.222;
            C3=2.849;
            L4=1.238;
            C5=1.970;
            L6=0;
            C7=0;
        case 3
            rs=0.800;
            C1=1.926;
            L2=1.126;
            C3=3.060;
```

```
    L4=1.157;
    C5=2.185;
    L6=0;
    C7=0;
case 4
    rs=0.700;
    C1=2.035;
    L2=1.015;
    C3=3.353;
    L4=1.058;
    C5=2.470;
    L6=0;
    C7=0;
case 5
    rs=0.600;
    C1=2.200;
    L2=0.890;
    C3=3.765;
    L4=0.942;
    C5=2.861;
    L6=0;
    C7=0;
case 6
    rs=0.500;
    C1=2.457;
    L2=0.754;
    C3=4.367;
    L4=0.810;
    C5=3.414;
    L6=0;
    C7=0;
case 7
    rs=0.400;
    C1=2.870;
    L2=0.609;
    C3=5.396;
    L4=0.664;
    C5=4.245;
    L6=0;
    C7=0;
case 8
    rs=0.300;
    C1=3.588;
    L2=0.459;
    C3=6.871;
    L4=0.508;
    C5=5.625;
    L6=0;
    C7=0;
case 9
    rs=0.200;
    C1=5.064;
    L2=0.306;
    C3=10.054;
    L4=0.343;
    C5=8.367;
    L6=0;
    C7=0;
case 10
    rs=0.100;
    C1=9.556;
    L2=0.153;
    C3=19.647;
```

```
            L4=0.173;
            C5=16.574;
            L6=0;
            C7=0;
        otherwise
    end
case 5
    n=6;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.984;
            C1=0.905;
            L2=2.577;
            C3=1.368;
            L4=2.713;
            C5=1.299;
            L6=1.796;
            C7=0;
        case 2
            rs=2.000;
            C1=0.830;
            L2=2.704;
            C3=1.291;
            L4=2.872;
            C5=1.237;
            L6=1.956;
            C7=0;
        case 3
            rs=2.500;
            C1=0.506;
            L2=3.722;
            C3=0.890;
            L4=4.109;
            C5=0.881;
            L6=3.103;
            C7=0;
        case 4
            rs=3.333;
            C1=0.337;
            L2=5.055;
            C3=0.632;
            L4=5.699;
            C5=0.635;
            L6=4.481;
            C7=0;
        case 5
            rs=5.000;
            C1=0.206;
            L2=7.615;
            C3=0.406;
            L4=8.732;
            C5=0.412;
            L6=7.031;
            C7=0;
        case 6
            rs=10.000;
            C1=0.096;
            L2=15.186;
            C3=0.197;
            L4=17.681;
            C5=0.202;
```

```
            L6=14.433;
            C7=0;
        otherwise
    end
case 6
    n=7;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=1.790;
            L2=1.296;
            C3=2.718;
            L4=1.385;
            C5=2.718;
            L6=1.296;
            C7=1.790;
        case 2
            rs=0.900;
            C1=1.835;
            L2=1.215;
            C3=2.869;
            L4=1.308;
            C5=2.883;
            L6=1.234;
            C7=1.953;
        case 3
            rs=0.800;
            C1=1.905;
            L2=1.118;
            C3=3.076;
            L4=1.215;
            C5=3.107;
            L6=1.155;
            C7=2.168;
        case 4
            rs=0.700;
            C1=2.011;
            L2=1.007;
            C3=3.364;
            L4=1.105;
            C5=3.416;
            L6=1.058;
            C7=2.455;
        case 5
            rs=0.600;
            C1=2.174;
            L2=0.882;
            C3=3.772;
            L4=0.979;
            C5=3.852;
            L6=0.944;
            C7=2.848;
        case 6
            rs=0.500;
            C1=2.428;
            L2=0.747;
            C3=4.370;
            L4=0.838;
            C5=2.289;
            L6=0.814;
            C7=3.405;
```

```
                case 7
                    rs=0.400;
                    C1=2.835;
                    L2=0.604;
                    C3=5.295;
                    L4=0.685;
                    C5=5.470;
                    L6=0.669;
                    C7=4.243;
                case 8
                    rs=0.300;
                    C1=3.546;
                    L2=0.455;
                    C3=6.867;
                    L4=0.522;
                    C5=7.134;
                    L6=0.513;
                    C7=5.635;
                case 9
                    rs=0.200;
                    C1=5.007;
                    L2=0.303;
                    C3=10.049;
                    L4=0.352;
                    C5=10.496;
                    L6=0.348;
                    C7=8.404;
                case 10
                    rs=0.100;
                    C1=9.456;
                    L2=0.151;
                    C3=19.649;
                    L4=0.178;
                    C5=20.631;
                    L6=0.176;
                    C7=16.665;
                otherwise
            end
    end
case 4
    rp=1;
    contents=get(handles.n,'value');
    switch contents
        case 1
            n=2;

            contents=get(handles.RsRl,'value');
            switch contents
                case 1
                    rs=3.000;
                    C1=0.572;
                    L2=3.132;
                    C3=0;
                    L4=0;
                    C5=0;
                    L6=0;
                    C7=0;
                case 2
                    rs=4.000;
                    C1=0.365;
                    L2=4.600;
                    C3=0;
                    L4=0;
```

```
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=8.000;
            C1=0.157;
            L2=9.658;
            C3=0;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 2
    n=3;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=2.216;
            L2=1.088;
            C3=2.216;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 2
            rs=0.500;
            C1=4.431;
            L2=0.817;
            C3=2.216;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=0.333;
            C1=6.647;
            L2=0.726;
            C3=2.216;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 4
            rs=0.250;
            C1=8.862;
            L2=0.680;
            C3=2.216;
            L4=0;
            C5=0;
            L6=0;
            C7=0;
        case 5
            rs=0.125;
            C1=17.725;
            L2=0.612;
            C3=2.216;
            L4=0;
            C5=0;
            L6=0;
```

```
            C7=0;
        otherwise
    end
case 3
    n=4;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=3.000;
            C1=0.653;
            L2=4.411;
            C3=0.814;
            L4=2.535;
            C5=0;
            L6=0;
            C7=0;
        case 2
            rs=4.000;
            C1=0.452;
            L2=7.083;
            C3=0.612;
            L4=2.848;
            C5=0;
            L6=0;
            C7=0;
        case 3
            rs=8.000;
            C1=0.209;
            L2=17.164;
            C3=0.428;
            L4=3.281;
            C5=0;
            L6=0;
            C7=0;
        otherwise
    end
case 4
    n=5;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=1.000;
            C1=2.207;
            L2=1.128;
            C3=3.103;
            L4=1.128;
            C5=2.207;
            L6=0;
            C7=0;
        case 2
            rs=0.500;
            C1=4.414;
            L2=0.565;
            C3=4.653;
            L4=1.128;
            C5=2.207;
            L6=0;
            C7=0;
        case 3
            rs=0.333;
            C1=6.622;
```

```
            L2=0.376;
            C3=6.205;
            L4=1.128;
            C5=2.207;
            L6=0;
            C7=0;
        case 4
            rs=0.250;
            C1=8.829;
            L2=0.282;
            C3=7.756;
            L4=1.128;
            C5=2.207;
            L6=0;
            C7=0;
        case 5
            rs=0.125;
            C1=17.657;
            L2=0.141;
            C3=13.961;
            L4=1.128;
            C5=2.207;
            L6=0;
            C7=0;
        otherwise
    end
case 5
    n=6;

    contents=get(handles.RsRl,'value');
    switch contents
        case 1
            rs=3.000;
            C1=0.679;
            L2=3.873;
            C3=0.771;
            L4=4.711;
            C5=0.969;
            L6=2.406;
            C7=0;
        case 2
            rs=4.000;
            C1=0.481;
            L2=5.644;
            C3=0.476;
            L4=7.351;
            C5=0.849;
            L6=2.582;
            C7=0;
        case 3
            rs=8.000;
            C1=0.227;
            L2=12.310;
            C3=0.198;
            L4=16.740;
            C5=0.726;
            L6=2.800;
            C7=0;
        otherwise
    end
case 6
    n=7;
```

```
                    contents=get(handles.RsRl,'value');
                    switch contents
                        case 1
                            rs=1.000;
                            C1=2.204;
                            L2=1.131;
                            C3=3.147;
                            L4=1.194;
                            C5=3.147;
                            L6=1.131;
                            C7=2.204;
                        case 2
                            rs=0.500;
                            C1=4.408;
                            L2=0.566;
                            C3=6.293;
                            L4=0.895;
                            C5=3.147;
                            L6=1.131;
                            C7=2.204;
                        case 3
                            rs=0.333;
                            C1=6.612;
                            L2=0.377;
                            C3=9.441;
                            L4=0.796;
                            C5=3.147;
                            L6=1.131;
                            C7=2.204;
                        case 4
                            rs=0.250;
                            C1=8.815;
                            L2=0.283;
                            C3=12.588;
                            L4=0.747;
                            C5=3.147;
                            L6=1.131;
                            C7=2.204;
                        case 5
                            rs=0.125;
                            C1=17.631;
                            L2=0.141;
                            C3=25.175;
                            L4=0.671;
                            C5=3.147;
                            L6=1.131;
                            C7=2.204;
                        otherwise
                    end
            end
end

phi=3.14;
Fc=str2double(get(handles.fc,'string'));
r=str2double(get(handles.R,'string'));
c1=(C1/(2*phi*Fc*r));
l2=(r*L2/(2*phi*Fc));
c3=(C3/(2*phi*Fc*r));
l4=(r*L4/(2*phi*Fc));
c5=(C5/(2*phi*Fc*r));
l6=(r*L6/(2*phi*Fc));
c7=(C7/(2*phi*Fc*r));
set(handles.txtc1,'String',c1);
```

```
set(handles.txtl2,'String',l2);
set(handles.txtc3,'String',c3);
set(handles.txtl4,'String',l4);
set(handles.txtc5,'String',c5);
set(handles.txtl6,'String',l6);
set(handles.txtc7,'String',c7);
guidata(hObject,handles);
% --- Executes on button press in pushbutton3.
function pushbutton3_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
close rangkaianlpf;
fig=openfig('LPF.fig');
handles=guihandles(fig);
guidata(fig,handles);
```

High Pass Filter

```
function cheby1_Callback(hObject, eventdata, handles)
% hObject    handle to cheby1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
contents=get(handles.n,'value');
switch contents
    case 1
         n=2;

    case 2
         n=3;

    case 3
         n=4;

    case 4
         n=5;

    case 5
         n=6;

    case 6
         n=7;
    otherwise
end
Rp=str2double(get(handles.rp,'string'));
Wn=str2double(get(handles.wp,'string'));
[a,b]=cheby1(n,Rp,(2*pi*Wn),'high','s');
[h,w]=freqs(a,b);
m=20*log10(abs(h));
plot(w/(2*pi),m);
y=str2num(get(handles.Ymin,'string'));
z=str2num(get(handles.Ymax,'string'));
X=str2num(get(handles.X,'string'));
xo=0;
axis([xo X z y])
ylabel('Magnitude(dB)')
xlabel('Frekuensi(Hz)')


close HPF;
fig=openfig('menuutama.fig');
```

```
handles=guihandles(fig);
guidata(fig,handles);


A=2;
B=3;
C=4;
D=5;
E=6;
F=7;
Rp=str2double(get(handles.rp,'string'));
Wn=str2double(get(handles.wp,'string'));

[g,a]=cheby1(A,Rp,(2*pi*Wn),'high','s');
[z n]=freqs(g,a);

[h,b]=cheby1(B,Rp,(2*pi*Wn),'high','s');
[o p]=freqs(h,b);

[i,c]=cheby1(C,Rp,(2*pi*Wn),'high','s');
[q r]=freqs(i,c);

[j,d]=cheby1(D,Rp,(2*pi*Wn),'high','s');
[s t]=freqs(j,d);

[k,e]=cheby1(E,Rp,(2*pi*Wn),'high','s');
[v w]=freqs(k,e);

[l,f]=cheby1(F,Rp,(2*pi*Wn),'high','s');
[x y]=freqs(l,f);

hold on
m=20*log10(abs(z));
plot(n/(2*pi),m,'y');

m=20*log10(abs(o));
plot(p/(2*pi),m,'m');

m=20*log10(abs(q));
plot(r/(2*pi),m,'c');

m=20*log10(abs(s));
plot(t/(2*pi),m,'r');

m=20*log10(abs(v));
plot(w/(2*pi),m,'g');

m=20*log10(abs(x));
plot(y/(2*pi),m,'b');

axis([0 10 -50 2])
ylabel('Magnitude(dB)')
xlabel('Frekuensi(Hz)')
hold off
legend('','orde 2','orde 3','orde 4','orde 5','orde 6','orde 7')


close HPF;
fig=openfig('rangkaianhpf.fig');
handles=guihandles(fig);
guidata(fig,handles);
function pushbutton2_Callback(hObject, eventdata, handles)
```

```
% hObject    handle to pushbutton2 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
phi=3.14;
Fc=str2double(get(handles.fc,'string'));
r=str2double(get(handles.R,'string'));
l1=(r*(1/C1)/(2*phi*Fc));
c2=((1/L2)/(2*phi*(Fc*r)));
l3=(r*(1/C3)/(2*phi*Fc));
c4=((1/L4)/(2*phi*(Fc*r)));
l5=(r*(1/C5)/(2*phi*Fc));
c6=((1/L6)/(2*phi*(Fc*r)));
l7=(r*(1/C7)/(2*phi*Fc));
set(handles.txtl1,'String',l1);
set(handles.txtc2,'String',c2);
set(handles.txtl3,'String',l3);
set(handles.txtc4,'String',c4);
set(handles.txtl5,'String',l5);
set(handles.txtc6,'String',c6);
set(handles.txtl7,'String',l7);
guidata(hObject,handles);
```

Band Pass Filter

```
function cheby1_Callback(hObject, eventdata, handles)
% hObject    handle to cheby1 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
contents=get(handles.n,'value');
switch contents
    case 1
         n=2;

    case 2
         n=3;

    case 3
         n=4;

    case 4
         n=5;

    case 5
         n=6;

    case 6
         n=7;
    otherwise
end
Rp=str2double(get(handles.rp,'string'));
Wp1=str2double(get(handles.wp1,'string'));
Wp2=str2double(get(handles.wp2,'string'));
```

```
Wn=[Wp1,Wp2];
[a,b]=cheby1(n,Rp,(2*pi*Wn),'s');
[h,w]=freqs(a,b);
m=20*log10(abs(h));
plot(w/(2*pi),m);
y=str2num(get(handles.Ymin,'string'));
z=str2num(get(handles.Ymax,'string'));
X=str2num(get(handles.X,'string'));
xo=0;
axis([xo X z y])
ylabel('Magnitude(dB)')
xlabel('Frekuensi(Hz)')


% --- Executes on button press in BACK.
function BACK_Callback(hObject, eventdata, handles)
% hObject    handle to BACK (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
close BPF;
fig=openfig('menuutama.fig');
handles=guihandles(fig);
guidata(fig,handles);


function semuaorde_Callback(hObject, eventdata, handles)
% hObject    handle to semuaorde (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
A=2;
B=3;
C=4;
D=5;
E=6;
F=7;
Rp=str2double(get(handles.rp,'string'));
Wp1=str2double(get(handles.wp1,'string'));
Wp2=str2double(get(handles.wp2,'string'));
Wn=[Wp1,Wp2];
[g,a]=cheby1(A,Rp,(2*pi*Wn),'s');
[z n]=freqs(g,a);

[h,b]=cheby1(B,Rp,(2*pi*Wn),'s');
[o p]=freqs(h,b);

[i,c]=cheby1(C,Rp,(2*pi*Wn),'s');
[q r]=freqs(i,c);

[j,d]=cheby1(D,Rp,(2*pi*Wn),'s');
[s t]=freqs(j,d);

[k,e]=cheby1(E,Rp,(2*pi*Wn),'s');
[v w]=freqs(k,e);
```

```
[l,f]=cheby1(F,Rp,(2*pi*Wn),'s');
[x y]=freqs(l,f);

hold on
m=20*log10(abs(z));
plot(n/(2*pi),m);

m=20*log10(abs(o));
plot(p/(2*pi),m);

m=20*log10(abs(q));
plot(r/(2*pi),m);

m=20*log10(abs(s));
plot(t/(2*pi),m);

m=20*log10(abs(v));
plot(w/(2*pi),m);

m=20*log10(abs(x));
plot(y/(2*pi),m);
axis([0 10 -50 2])
ylabel('Magnitude(dB)')
xlabel('Frekuensi(Hz)')
hold off
legend('','orde 2','orde 3','orde 4','orde 5','orde 6','orde 7')



function pushbutton3_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton3 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
phi=3.14;
Fc=str2double(get(handles.fc,'string'));
r=str2double(get(handles.R,'string'));
b=str2double(get(handles.B,'string'));
%--1--%
c1=(C1/(2*phi*r*b));
l1=((r*b)/(2*phi*(Fc^2)*C1));
%--2--%
l2=((r*L2)/(2*phi*b));
c2=(b/(2*phi*(Fc^2)*L2*r));
%--3--%
l3=((r*b)/(2*phi*(Fc^2)*C3));
c3=(C3/(2*phi*r*b));
%--4--%
l4=((r*L4)/(2*phi*b));
c4=(b/(2*phi*(Fc^2)*L4*r));
%--5--%
l5=((r*b)/(2*phi*(Fc^2)*C5));
c5=(C5/(2*phi*r*b));
%--6--%
```

```
l6=((r*L6)/(2*phi*b));
c6=(b/(2*phi*(Fc^2)*L6*r));
%--7--%
l7=((r*b)/(2*phi*(Fc^2)*C7));
c7=(C7/(2*phi*r*b));

set(handles.txtc1,'String',c1);
set(handles.txtl1,'String',l1);
set(handles.txtl2,'String',l2);
set(handles.txtc2,'String',c2);
set(handles.txtl3,'String',l3);
set(handles.txtc3,'String',c3);
set(handles.txtl4,'String',l4);
set(handles.txtc4,'String',c4);
set(handles.txtl5,'String',l5);
set(handles.txtc5,'String',c5);
set(handles.txtl6,'String',l6);
set(handles.txtc6,'String',c6);
set(handles.txtl7,'String',l7);
set(handles.txtc7,'String',c7);
guidata(hObject,handles);
```

Band Stop Filter

```
function cheby1_Callback(hObject, eventdata, handles)
% hObject    handle to cheby1 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
contents=get(handles.n,'value');
switch contents
    case 1
         n=2;

    case 2
         n=3;

    case 3
         n=4;

    case 4
         n=5;

    case 5
         n=6;

    case 6
         n=7;
    otherwise
end
Rp=str2double(get(handles.rp,'string'));
Wp1=str2double(get(handles.wp1,'string'));
Wp2=str2double(get(handles.wp2,'string'));
Wn=[Wp1,Wp2];
```

```
[a,b]=cheby1(n,Rp,(2*pi*Wn),'stop','s');
[h,w]=freqs(a,b);
m=20*log10(abs(h));
plot(w/(2*pi),m);
y=str2num(get(handles.Ymin,'string'));
z=str2num(get(handles.Ymax,'string'));
X=str2num(get(handles.X,'string'));
xo=0;
axis([xo X z y])
ylabel('Magnitude(dB)')
xlabel('Frekuensi(Hz)')


% --- Executes on button press in semuaorde.
function semuaorde_Callback(hObject, eventdata, handles)
% hObject    handle to semuaorde (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
A=2;
B=3;
C=4;
D=5;
E=6;
F=7;
Rp=str2double(get(handles.rp,'string'));
Wp1=str2double(get(handles.wp1,'string'));
Wp2=str2double(get(handles.wp2,'string'));
Wn=[Wp1,Wp2];

[g,a]=cheby1(A,Rp,(2*pi*Wn),'stop','s');
[z n]=freqs(g,a);

[h,b]=cheby1(B,Rp,(2*pi*Wn),'stop','s');
[o p]=freqs(h,b);

[i,c]=cheby1(C,Rp,(2*pi*Wn),'stop','s');
[q r]=freqs(i,c);

[j,d]=cheby1(D,Rp,(2*pi*Wn),'stop','s');
[s t]=freqs(j,d);

[k,e]=cheby1(E,Rp,(2*pi*Wn),'stop','s');
[v w]=freqs(k,e);

[l,f]=cheby1(F,Rp,(2*pi*Wn),'stop','s');
[x y]=freqs(l,f);

hold on
m=20*log10(abs(z));
plot(n/(2*pi),m);

m=20*log10(abs(o));
plot(p/(2*pi),m);
```

```
m=20*log10(abs(q));
plot(r/(2*pi),m);

m=20*log10(abs(s));
plot(t/(2*pi),m);

m=20*log10(abs(v));
plot(w/(2*pi),m);

m=20*log10(abs(x));
plot(y/(2*pi),m);

axis([0 10 -50 2])
ylabel('Magnitude(dB)')
xlabel('Frekuensi(Hz)')
hold off
legend('','orde 2','orde 3','orde 4','orde 5','orde 6','orde 7')


function pushbutton1_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton1 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
phi=3.14;
Fc=str2double(get(handles.fc,'string'));
r=str2double(get(handles.R,'string'));
b=str2double(get(handles.B,'string'));
%--1--%
c1=(C1/(2*phi*r*b));
l1=((r*b)/(2*phi*(Fc^2)*C1));
%--2--%
l2=((r*L2)/(2*phi*b));
c2=(b/(2*phi*(Fc^2)*r*L2));
%--3--%
c3=(C3/(2*phi*r*b));
l3=((r*b)/(2*phi*(Fc^2)*C3));
%--4--%
l4=((r*L4)/(2*phi*b));
c4=(b/(2*phi*(Fc^2)*r*L4));
%--5--%
c5=(C5/(2*phi*r*b));
l5=((r*b)/(2*phi*(Fc^2)*C5));
%--6--%
l6=((r*L6)/(2*phi*b));
c6=(b/(2*phi*(Fc^2)*r*L6));
%--7--%
c7=(C7/(2*phi*r*b));
l7=((r*b)/(2*phi*(Fc^2)*C7));
set(handles.txtc1,'String',c1);
set(handles.txtl1,'String',l1);
set(handles.txtl2,'String',l2);
set(handles.txtc2,'String',c2);
set(handles.txtc3,'String',c3);
```

```
set(handles.txtl3,'String',l3);
set(handles.txtl4,'String',l4);
set(handles.txtc4,'String',c4);
set(handles.txtc5,'String',c5);
set(handles.txtl5,'String',l5);
set(handles.txtl6,'String',l6);
set(handles.txtc6,'String',c6);
set(handles.txtc7,'String',c7);
set(handles.txtl7,'String',l7);
guidata(hObject,handles);
```