

```

function iirtable(filterstring,filename)
%
% iirtable(filterstring,filename)
% --BUG FIXED 4 February,2004
% Produce a table of coefficients
% for a scaled cascade of second order section.
% It is Assumed that the filter has EVEN ORDER.
% The input arguments are string variables:
% 'filterstring' is consistent with MATLAB filter
% design tools. Examples are:
% 'butter(10,3*2/48)'
% 'cheby1(10,.5,4*2/48)'
% 'filename' is the name of the file to be created
%
fn=[filename, '.asm'];
fid=fopen(fn,'wt')
[z,p,b0]=eval(filterstring);
b=b0*real(poly(z));
a=real(poly(p));
colordef none
scope(b,a,48000)
n=length(a)-1;
a=[];b=[];
while length(p) >0
    q=p(1);
    p(1)=[];
    [y,k]=min(abs(p-conj(q)));
    a=[a;real(conv([1,-q],[1,-p(k)]))];
    p(k)=[];
    q=z(1);
    z(1)=[];
    [y,k]=min(abs(z-conj(q)));
    if y > 1e-12
        [y,k]=min(abs(imag(z)));
    end
    b=[b;real(conv([1,-q],[1,-z(k)]))];
    z(k)=[];
end
fprintf(fid,'; file %s\n',fn);
fprintf(fid,'; coefficients for the IIR filter\n');
fprintf(fid,'; H(z) = %s\n',filterstring);
fprintf(fid,' dc %d ; the number of second order sections\n',n/2);
fprintf(fid,' dc %d ; filter order + 2\n',n+2);
fprintf(fid,'; %d sets of coefficients b0/2,b1/2,b2/2,-a1/2,-a2/2\n',n/2);
b=0.5*(b0^(2/n))*b;a=-0.5*a;
for k=[1:n/2]

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fprintf(fid,' dc %1.12g,%1.12g,%1.12g\n',b(k,1),b(k,2),b(k,3));  
fprintf(fid,' dc %1.12g,%1.12g\n',a(k,2),a(k,3));  
end  
fclose(fid)
```