P1 – Draw1D

```matlab
function Draw1D( ER, E, H, dz )

    %Initialize
    za=[0:length(E)-1]*dz;

    % Just inverse our Permitivity to get grayscale value
    Color = 1./ER;

    % Need to do an initial draw so we can start the hold for plotting.
    fill(0,0,'-w');    hold on;
    i = 1;
    count = 0;
    prev = 0;
    while i < length(ER)
     i = i + 1;

      if(prev == 1)
        prev = ER(i);
        continue;
      end

      if(prev == ER(i))
        count = count + 1;

      else
        xstart = (i-count)*dz;
        xend = xstart + count*dz;

        x = [ xstart xend xend xstart xstart ];
        y = [ -1.5 -1.5 1.5 1.5 -1.5 ];
        fill(x,y,[Color(i-1) Color(i-1) Color(i-1)]);

        count = 1;
        prev = ER(i);
      end
    end

    %Plot Fields
    plot(za, E, '-b');
    plot(za, H, '-r');

    hold off;
end
```