```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Your code goes here

%   only turn in the code below (no need to turn in the given code above)

%   caculate dnl
dnl = zeros(r,(2^B)-1);
%step_avg = zeros(r,1);
for m=1:r
  d = diff(code(m,:));
  step_avg(m) = mean(d);
  dnl(m,:) = (d - step_avg(m)) ./ step_avg(m);
  %avg_width = (code(m, end)-code(m, 1))/(2^B-1);
  %inl(m, :)=(code(m,:)-avg_width*[0:2^B-1])./avg_width;
end

%   dnl scatter plot

%   dnl rms plot

% dnl scatter plot
figure(3); clf; hold on;
xlabel('Code');
ylabel('DNL [LSB]');
axis([0 2^B-1 -(dnlspec+0.05) (dnlspec+0.05)]);
line([0 2^B-1], [dnlspec dnlspec]);
line([0 2^B-1], [-dnlspec -dnlspec]);

bad_dacs_dnl=0;
for m=1:r
  figure(3);
  plot(0:2^B-2, dnl(m,:));
  if find(abs(dnl(m,:))>dnlspec)
     bad_dacs_dnl=bad_dacs_dnl+1;
  end
end
figure(3); hold off;
title( sprintf('DNL envelope of %d runs. %d bad DAC(s) Bt=%d Au=%0.1fum^2', r, bad_dacs_dnl, Bt, Aunit));

% dnl rms plot
dnl_rms = sqrt(sum( dnl.^2, 1 ) ./r);
[maxdnlrms dmax] = max(dnl_rms);
h = figure();
plot(0:2^B-2, dnl_rms, dmax, maxdnlrms, '*');
xlabel('Code');
ylabel('DNL [LSB]');
title( sprintf('RMS DNL of %d runs. (max=%1.3fLSBrms) Bt=%d Au=%0.1fum^2', r, maxdnlrms, Bt, Aunit));
axis([0 2^B-1 0 maxdnlrms+0.01]);
```