TODAY (MAT)LAB

1. Given 2 vectors in R^2, *y1* and *y2* find the dual basis (*dy1* and *dy2*).
   - [*dy1 dy2*]=biorb(*y1*,*y2*)
2. Do the same for N=3 or higher N
3. Analysis function [*c1 c2* ...]=analysis(*x*,*dy1*,*dy2*,...)
4. Synthesis funct *x*=synth(*c*,*y1*,*y2*,...)
5. Build a uniform quantizer quantizer *qc*=quant(*c*,levels, range)
6. Take 100 possible x with randomly chosen components (e.g. from normal or uniform distributions with mean 0 and variance 10).
7. Take 100 possible basis *y1*,*y2* with randomly chosen components components (e.g. from normal or uniform distributions with mean 0 and variance 1).
8. For each *x* obtain the analysis (transformed coeffs) from all the 100 dual basis *dyi* and then quantize them with a quantizer working with say 16 levels and a range from -abs(max(min(C),max(C)) to abs(max(min(C),max(C)) with C the matrix collecting all vector *c* for a given vector *x* varying the bases.
9. From the approximate (quantized) coefficients obtain a reconstructed vector *rx* using the basis vectors yi (synthesis) and compute the reconstruction error (length(*x*-*rx*))^2 for each basis.
10. Repeat 9. for each *x* and put all results in a 100x100 matrix E.
11. Analyze error statistics by raw and by column on the matrix E. Produce "nice" plots :-)