ECE 6354/5354 Fall 2016 HW 11 due 11/22

Problem 1. MPEG-1
(a) What is the smallest number of MBs that can be in a slice?
(b) What is the maximum number of slices that can be in a picture?
What is the maximum number of MBs that can be in a slice?
 (c) How does the encoder specify (to the decoder) how many MBs are in a particular slice?

Problem 2. MPEG-1 Generate the sequence header, picture header, slice header, macroblock header, and bits to encode the 32x16 pel 1-frame digital video below using the MPEG-1 standard. Use quantizer_scale = 1.

Frame 1: I-frame

$$MB1 \quad Y: \begin{bmatrix} [200] & [200] \\ [200] & [200] \end{bmatrix} \quad Cb: [128] \quad Cr: [128] \qquad MB2 \quad Y: \begin{bmatrix} [100] & [16] \\ [16] & [100] \end{bmatrix} \quad Cb: [128] \quad Cr: [128]$$

Problem 3. MPEG-1 Encode the following MVs for the four MBs. The parameter full_pel=1 ; forward_f_code=3
MB1: MVx = +33, MVy = -21
MB2: MVx = -22, MVy = -51
MB3: MVx = +53, MVy = +45
MB4: MVx = +41, MVy = +43