Warmup Questions for the Final

1. (a) True/False: MATLAB is case-sensitive
   (b) How are comments added in MATLAB code?
   (c) True/False: every if must have an else
   (d) What does \texttt{length(2021:2020)} evaluate to?
   (e) If I have vectors A and B, how do I produce a vector that is their concatenation?
   (f) True/False: A function does not have to return a value.
   (g) True/False: random numbers can be generated by both the \texttt{rand} and \texttt{irand} commands.
   (h) I have a number stored in variable \texttt{X}. Give code to print it out to 2 decimal places.

2. Consider a simultaneous game with two players, Matcher and Avoider. They both pick a letter from A upto Z. If their letters are different, nothing happens. If they match, then the Avoider pays the Matcher one dollar. Determine the optimal strategy for the Matcher and the Avoider, and the value of the game. Justify your answer.

3. In a quiz-show, the object is to determine a 5-letter word. A contestant repeatedly guesses a 5-letter word and receives an integer equivalent to the Black score in Mastermind (that is, how many of the letters are correct and in the correct position). Suppose the entire dictionary contains the eight words \{ catch, cater, catty, conic, mates, mater, mince, major \}

   (a) Calculate the entropy for catch as the first guess.
   (b) Draw an optimal decision tree, assuming the first word is catch and we are trying to minimize the average number of guesses needed.

4. Code reading: See several of the CanvasQuizzes.