COMPUTER SCIENCE E-20, SPRING 2014
In-class Problems - Rachna Sha
11.4

1. Let Single(X) denote the set of students single concentrating in X, and likewise for Doublei(X), for i = 1, 2

   (a) Describe the set Double1(ES) Double2(CS) (in natural language).: Represents set of all students with two Double Concentration taking ES as first concentration.

   (b) In terms of the sets $Double_i(X)$, for i = 1, 2 and X a SEAS concentration, give an expression for the set D of undergraduates double concentrating in two SEAS concentrations
   D = {
   $(D_2(BE) \cup D_2(CS)) \cap (D_1(BE) \cup D_1(CS) \cup D_1(ES))$ }

   (c) Calculate the cardinality of D.

   Total Number of students doing double concentrations= Total undergraduates - total students with single concentrations = 678 - 653 = 25

   Totals students doing $Double_1 = 24$

   Totals students doing $Double_2 = 8$

   we know that $|X \cap Y| = |X| + |Y| - |X \cup Y|$

   $25 = 24 + 8 - |D|$

   $|D| = 7$

   (d) What can you say about the number of students double concentrating in ES and some field outside of SEAS?

   We do not have enough information to say anything about the students concentrating in field outside of SEAS.