ECS 315: Quiz 1 Solution

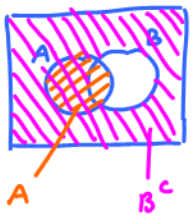
Instructions

1. Separate into groups of no more than three persons.
2. Only one submission is needed for each group. Late submission will not be accepted.
3. ***Write down all the steps*** that you have done to obtain your answers. You may not get full credit even when your answer is correct without showing how you get your answer.
4. **Do not panic.**

Name	ID
Prapun	

1. Suppose you know that events A and B are independent with $P(A)=P(B)=0.4$.

   Find $P(A\cup B^c)$.



$P(A\cap B) = P(A)P(B) = 0.4\times 0.4 = 0.16$

$P(A\cup B^c) = 1 - P(B\setminus A) = 1 - (P(B) - P(A\cap B))$

$= 1 - (0.4 - 0.16) = 0.6 + 0.16 = 0.76$

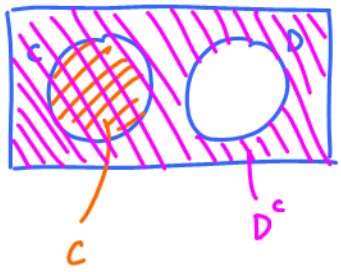
Alternatively, $A \perp B \Leftrightarrow A \perp B^c$, so $P(A\cap B^c) = P(A)P(B^c)$

$P(A\cup B^c) = P(A) + P(B^c) - P(A\cap B^c) = 0.4 + (1-0.4) - 0.4(1-0.4)$

$= 1 - 0.24 = 0.76$

2. Suppose you know that events C and D are disjoint with $P(C)=P(D)=0.4$.

   Find $P(C\cup D^c)$.



$P(C\cup D^c) = P(D^c) = 1 - P(D) = 0.6.$