Ceng 272 - Quiz 1

Solve all questions.

For Monday section

1. A rigged dice is known to have probability $1/2$ for the outcome 6 and all other outcomes are known to be equally likely. What is the probability for outcome 2?

2. You are building a computer from components. You can buy the mainboard from 2 companies (A,B), RAM from 4 companies (A,C,D,E), hard drive from 3 companies (B,D,F) and graphics card from 2 companies (G,H). For each component, you are equally likely to buy from any one of the companies manufacturing that component.

   (i) Draw the tree diagram. What is the number of points in sample space?

   (ii) What is the probability of the event X, P(X), that you build a computer that has at least one part from company D?

   (iii) What is the probability of the event Y, P(Y), that RAM chip from company D?

   (iv) What is the probability of the event Z, P(Z), that HD from company D?

   (v) Notice that $X = Y \cup Z$. Then
   $P(Y \cup Z) = P(Y) + P(Z) - P(Y \cap Z) =$?

For Thursday section

1. What is the total number of different ways of wearing 5 blouses, 3 pants, and 2 pairs of socks?

2. You are building a computer from components. You can buy the mainboard from 2 companies (A,B), RAM from 4 companies (A,C,D,E), hard drive from 3 companies (B,D,F) and graphics card from 2 companies (G,H). For each component, you are equally likely to buy from any one of the companies manufacturing that component.

   (i) Draw the tree diagram. What is the number of points in sample space?

   (ii) What is the probability of the event X, P(X), that you build a computer that has at least one part from company D?

(iii) What is the probability of the event Y, P(Y), that RAM chip from company D?

(iv) What is the probability of the event Z, P(Z), that HD from company D?

(v) Notice that $X = Y \cup Z$. Then
$$P(Y \cup Z) = P(Y) + P(Z) - P(Y \cap Z) = ?$$