CS1512
Foundations of Computing Science 2

Tutorial: Week 4

Note: In the lecture, I didn't manage to cover the probability of either of two mutually exclusive events occurring. However the material is there in the slides and your tutors will go over it with you.

1.
If someone tells you that the probability of event X happening is y (i.e. $P(X) = y$), what are the possible sources of y?

2.
A fair coin is tossed 4 times. How many possible outcomes are there for this experiment? List them, writing 'H' for heads and 'T' for tails. What is the probability of getting:

(a) 4 heads?
(b) no heads?
(c) exactly 3 heads?
(d) at least 3 heads?
(e) a run of 3 or more heads (that is, 3 or more in a row)?
(f) at least 2 tails?

Let X be the number of heads minus the number of tails. For each value k of the random variable X write down the probability $P(X = k)$.

3.
A bag contains 2 red balls, 3 white balls and 5 blue balls. A ball is withdrawn, its colour noted, replaced, and a second ball is drawn. What is the probability of a red ball being drawn followed by a blue ball? What is the probability of getting a red ball and a blue ball if the order in which they are drawn is not taken into account? What are the two probabilities if the first ball is **not** replaced?

4.
What is the probability of getting a total score of 3 from throwing two dice? Of getting 5? Of getting 7? 9? 11? What is the probability of getting a total score which is odd.

5.
Three cards are drawn at random without replacement from a well=shuffled pack of 52 cards. What is the probability that they are:

- all spades?
- all Aces?