HOMEWORK 1
DISCRETE MATHEMATICS II
DUE 01-21

(1) Consider Example 6.1.6, where we are trying to select a 6- to 8-character password satisfying an extra condition. As in class, we'll start by just counting the 6- to 8-character passwords, without the extra condition.

   (a) Your friend realises that a 6-character password can be thought of as an 8-character password with 2 'blank' characters. Counting the 'blank' character, there are 37 possible characters, so your friend thinks that the total number of 6- to 8-character passwords is 37^8. Without multiplying, explain to your friend whether this is an over- or under-count, and why.

   (b) After your explanation, your friend comes up with the re-count $36^6 \times 37^2$. Without multiplying, explain to your friend whether this is an over- or under-count, and why.

• **Four** book problems: #6.1.11, 29, 31, 32(a–e). A 'string' is a finite sequence of characters (p. 186). There is one string of length 0, called the 'empty string' (p. 186). A 'bit string' is a string where the only allowable characters are '0' and '1' (p. 110).