MATH1510 Discrete Mathematics
Semester 2, 2017

Assignment 7

Due Date: This assignment is due in your workshop in week 8. You are also required submit it electronically through Blackboard.

1. Suppose we have 3 A's, 5 B's, 7 C's, 9 D's, and one E, F, G, and H.

(a) How many different arrangements of these letters are possible if I write them as a string?

(b) If I write my 'string' as a loop, either around in a circle or around the outside of a cylinder (so there is not just one beginning or end), how many different arrangements are possible?

2. There are 22 students in my tutorial.

(a) In how many ways can I choose 4 people to work together?

(b) In the same tutorial people leave the room as they finish their quiz, I take note of the first four people to leave and the order in which they leave. How many possibilities are there?

(c) There are 10 red markers, 8 green markers, 11 blue markers and 14 black markers in my bag. If the only difference between the markers is colour, in how many different ways can I get 8 markers out of my bag (I don't care about the order).

3. Convert the prefix expression

$$+ \div 2 + a1 \times 3y$$

into an equivalent infix expression, and an equivalent postfix expression.

4. Convert the following infix expression into postfix notation, and into prefix notation:

$$((2 + x) \div 4) + (((y \times 2) - 5) \div z)$$

5. Convert the following postfix expression into equivalent prefix and infix expressions.

$$AB + CD \times EF/ - -A\times$$

6. Sort the sequence

6, 5, 4, 3, 2, 1

in increasing order using selection sort. List all the intermediate steps, i.e., the partially ordered sequences resulting from the swaps in the algorithm.

END OF PAPER