

CSC236 tutorial exercises #7

(Best before 6 pm, Thursday November 22nd)

Danny Heap

Here are your tutorial sections:

Surname	Section	Room	TA
A–F	Day 1 (11:00 am)	LM162	Yuval
G–Li	Day 2 (11:00 am)	BA2139	Lila
Lo–Si	Day 3 (11:00 am)	BA2145	Oles
So–Z	Day 4 (11:00 am)	BA2155	Lalla
A–H	Evening 1 (8:00 pm)	BA1190	Colin
I–M	Evening 2 (8:00 pm)	BA2135	Norman
N–Z	Evening 3 (8:00 pm)	BA2139	Feyyaz

These exercises are meant to give you practice with regular expressions, see Section 7.2 of [Course Notes](#).

1. Equivalence of regular expressions is discussed in Section 7.2.4 of the Course Notes, and direct proof of equivalence in Section 7.2.5. Prove or find a counterexample:

$$SR \equiv RS \Rightarrow S \equiv R$$

Does it make any difference if we insist that neither S nor R are ε or $\{\}$?

2. Let L be the set of strings over $\{0, 1\}^*$ that begin and end with the same bit. Devise a regular expression, R that denotes L , and prove that your regular expression is correct (see Course Notes page 194–195 for a related example).