

# Assignment 1

L445 / L545

Due Monday, January 30

1. (a) For each regular expression in (i)-(iii), indicate which ones of the following strings it matches:

a	ab	bd	acd
b	ac	cd	bcd
c	ad	abc	abcd
d	bc	abd	

- i.  $/(a|bc)?d/$
- ii.  $/b.+c\b/$
- iii.  $/\b[ab]*[\^d]\b/$

- (b) For each description, write a regular expression to match it (and no other elements):

- i. ab, aab, abb
- ii. ab, aab, abb, aanb, abnb
- iii. ab, aab, abb, aanb, abnb, aaab, aaanb, ..., abbb, abbnb, ...

2. For the regular expression you wrote in (1biii),

- (a) give a formal definition of a deterministic finite-state automaton (DFSA) (cf. slides 19-22).
- (b) draw the corresponding finite-state transition network (FSTN).

- 3. Do question #2.3 from Jurafsky & Martin (p. 43), regarding English money expressions.
- 4. Do question #2.6 from Jurafsky & Martin (p. 43), regarding English time-of-day expressions.
- 5. Do question #2.8 from Jurafsky & Martin (p. 44), regarding writing a regular expression for an NFSA.