

HA5
[Written Assignment]

Deadline: 1 Oct 2012
Submission: A4 sheets

1. Draw phrase structure trees for the following sentences.
 - a. Splendid batting from Sachin and Zaheer 's bowling won the match for India
 - b. John promised Mary to help her with the assignment
 - c. John persuaded Mary to help him with the assignment
 - d. He has been doing really well after quitting smoking
 - e. The sacks which were dumped into the bin have been recycled
2. Build a CFG to correctly analyze the sentences in Q1.
3. Given the CFG,

S -> NP VP	Det -> the a that this
S -> VP	Noun -> workers dump sacks bin
NP -> Pronoun	Verb -> dump sacks bin
NP -> Det Noun	Pronoun -> I he she me
NP -> Noun	Prep -> to from near into on
NP -> NP PP	
VP -> Verb	
VP -> Verb NP	
VP -> Verb NP PP	
VP -> Verb PP	
PP -> Prep NP	

find all possible parses using a) CYK and b) Earley algorithm for the sentence
"Workers dump sacks into a bin"

3. Given the PCFG,

S -> NP VP	[0.7]	Det -> the [0.4] a [0.3] that [0.1] this [0.2]
S -> VP	[0.3]	Noun -> workers [0.3] dump [0.25] sacks [0.15] bin [0.3]
NP -> Pronoun	[0.2]	Verb -> dump [0.4] sack [0.4] bin [0.2]
NP -> Det Noun	[0.4]	Pronoun -> I [0.4] he [0.3] she [0.3]
NP -> Noun	[0.2]	Prep -> to [0.3] from [0.2] near [0.2] into [0.1] on [0.2]
NP -> NP PP	[0.2]	
VP -> Verb	[0.2]	
VP -> Verb NP	[0.3]	
VP -> Verb NP PP	[0.2]	
VP -> Verb PP	[0.3]	
PP -> Prep NP	[1.0]	

find the most likely parse using outside algorithm for the sentence
"Workers dump sacks into a bin".