

Homework 3

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jk2mf

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1. Extracting Parsing Actions

(a) algorithm

```
Put all words in buffer
while buffer is not empty or there are more than 2
  ↳ items in stack:
    if there are more than 2 items in stack:
      perform LEFTARC or RIGHTARC accordingly if one
        ↳ of them is the parent of the other
    else:
      perform SHIFT, moving an item to stack
```

(b) See jk2mf-parsing-actions.txt

Constituent Parsing

(a) **Actions**

SHIFT action:

1. Dequeue one token from the input buffer
2. Push it to the top of the stack

REPLACE action:

1. Pop a token from the stack
2. Replace the token with a higher level token as per the rules
3. Push the token back into the stack

e.g. Replace sleeps with vi, saw with vt, Vi with VP, etc

COMBINE action:

1. Pop 2 tokens from the stack
2. Combine them into 1 token as per the rules
3. Push the token back into the stack

e,g, Combine NP and VP into S, Vt NP into VP, etc

(b) **Reconstructing Parsing Tree**

stack	buffer	action
	the man sleeps	SHIFT
the	man sleeps	REPLACE
DT	man sleeps	SHIFT
DT man	sleeps	REPLACE
DT NN	sleeps	COMBINE
NP	sleeps	SHIFT
NP sleeps		REPLACE
NP Vi		REPLACE
NP VP		COMBINE
S		