

NLP Ex2 – Answers

part1:

for this part we recommend you to **look at our grammar with the comments** and try to parse each sentence yourself and **compare it to the trees** we added, also notice we defined what each term means.

More details about the modifications :

*Ex=Extended(shortcut we will use)

we will discuss the problem later....

example a:

as you can see in the tree we added $NP \rightarrow \text{NounExtended}$, and NounEx can be a NNP(name) or det Noun (e.g “the/ dog”)

we also added $VP \rightarrow \text{VPExtended}$, VPExtended can be VP or VP conj VP(we will use the second one later) , and then $VP \rightarrow \text{VerbPt NP}$ (“ate/ a sandwich “) where VerbPt is verb in past tense(“ate”).

example b:

for “sally and the president” we added a rule $NP \rightarrow \text{NounEx conj(and,or) NounEx}$
for “wanted and ate a sandwich” we added $\text{VPExtended} \rightarrow VP \text{ conj } VP$

notice the second VP goes to VerbPt and NP(the rule we added in example a)
and then $NP \rightarrow \text{NounExtended}$ (it also happens in the first part)
also notice that sally, the president are developed from NounExtended(NNP,Det Noun)

example c:

In this Part we added $VP \rightarrow \text{VerbPTTerminal}$ which means we can develop it to verb in the past that no NP will come after it, usually ends the sentence like example c.(in the tree we skipped the $NP \rightarrow \text{NounExtended}$)

example d:

Aviv Shisman 206558157 Itay Hassid 209127596

in this part we added $VP \rightarrow VerbPTSbar\ SBAR$ (there is mistake in the tree it not $VPExtended$) , $VerbPTSbar$ is a verb("thought") that usually have complementary($SBAR$) after it.

we also added $SBAR \rightarrow that\ S$ (that is complementary) , and then we can do "thought that a sandwich sighed"

example e:

for "it perplexed the president that a ..." we added the rule:

$S \rightarrow it\ VerbPTE\ NP\ SBAR$ ($VerbPTE$ = emotion, NP = the president, $SBAR$ =that+cont)

example f:

we didn't add much , only the option to recursively add JJ (adj) to a noun

example g:

we added $VP \rightarrow VerbPTTerminal\ PP\ PP$ ("worked/ on every proposal /on the desk")

example h:

for this we added $S \rightarrow NP\ IS\ JJ$ ("Sally/ is /lazy")

example i:

we added $VP \rightarrow is\ VerbPS\ NP$ ("is/eating/a sandwich")

$VerbPS$ is verb in present tense.(present progressive)

example j:

for the last part of the sentence we added $S \rightarrow NNP\ is\ Noun$ ("sally/is/ a sandwich")

because we didn't have any rule that let us do this transition.

problems:

we solved the interaction problem with additions we made in sections H and I, that way we go straight to the wanted solution and skipped $S \rightarrow NP\ VP$.

Aviv Shisman 206558157 Itay Hassid 209127596

If we didn't add these solutions we were able to go to $S \rightarrow NP \ VP$, and then from NP develop "sally and the president"(example B)

and from $VP \rightarrow$ is lazy (we assume most of the people add the "is lazy" part here)

then we can get sentences like: "sally and the president is lazy" and that is a big mistake!