

## 23CS60R01\_DesLab\_A1.py - Readme

### Sentence Parser

This Python program is a simple sentence parser implemented using the PLY (Python Lex-Yacc) library. It takes a sentence as input, tokenizes it, and parses it based on defined grammar rules.

#### How to Run

1. Run the program and enter a sentence when prompted.
2. Type "exit" to terminate the program.

#### Token Rules

The program recognizes the following token types:

- ARTICLE
- VERBCA
- Verb
- Noun
- VERBCB
- PREPOSITION
- Adjective
- Adverb
- CONJUNCTION

The token rules are defined based on parts of speech obtained from the Brown Corpus in NLTK.

#### Token Regular Expressions

- t\_ARTICLE: \b(the|an|no|a|an|the)\b
- t\_VERBCA: \b(is|am|was|were|are)\b
- t\_CONJUNCTION: \b(and|or|but)\b
- t\_PREPOSITION: \b(on|in|by|with|between|at|over|inside|under)\b
- t\_Adverb:  
 \b(together|earlier|near|only|also|further|generally|back|likely|upon|newly|then|meanwhile|heavily|nevertheless|no|often|shortly|
- t\_VERBCB: \b(sleeping|talking|crying|laughing|feeding|eating|bathing|grumbling|loitering|watching)\b
- t\_Adjective: \b(best|effective|greater|grand|hard\|-fought|inadequate|such|recent|possible|over\|-all|executive|orderly|widespread|clerical|outgoing|relative|outmoded|ambiguous|superior|highly|good)\b
- t\_Noun: \b(primary|place|investigation|atlanta's|legislators|jr\.|allen|jury|durwood|september\|-october|ivan|reports|pye|thanks|atlanta|election|term\|-end|laws|county|republicans|texans|voters|presentments|americans|irregularities|evidence|fulton|cat|beauty|ship|boy|girl)\b
- t\_Verb:  
 \b(revised|produced|act|charged|recommended|won|received|studied|modernizing|said|took|investigate|find|conducted|commented|impr

#### Grammar Rules (CFG)

The context-free grammar (CFG) rules for parsing sentences are defined as follows:

1. ssentence -> sentence
2. sentence -> NOUN VERB
3. sentence -> sentence CONJUNCTION sentence
4. NOUN -> Noun
5. NOUN -> ARTICLE NOUN
6. NOUN -> ADJECTIVE NOUN
7. VERB -> Verb ADVERB
8. VERB -> VERBCA ADVERB VERBCB
9. VERB -> Noun VERB
10. VERB -> VERB PREPOSITION NOUN
11. ADVERB -> Adverb
12. ADVERB -> epsilon
13. ADJECTIVE -> ADVERB Adjective ADJECTIVE
14. ADJECTIVE -> epsilon
15. epsilon ->

#### Examples

1. the cat is often sleeping
2. the boy won at the newly grand election
3. ship sails and girl is watching

#### Error Handling

The program provides basic error handling for illegal characters and syntax errors in the input sentence.