

Description on Labs

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Task

Lab1: Lexical Analyzer Programming

Lab2: Syntax Parser Programming

Notices: 1)The programming language is not limited (better C or Java).

2)You can finish the labs in any method in the suggested optional methods.

3)The complexity of lexical and syntactic definitions is decided by yourself.

Requirements on Lab1

1)Input

Stream of characters

REs(The number of REs is decided by
yourself)

2)Output

Sequence of tokens

3)Classes of words are defined by yourself

4)Error handling may be included

Optional Implementing Methods on Lab1

- 1) Simulating programs in Section 2.6.5
- 2) Programming based on FA (3.4.4)
 - a) Define some REs by yourself
 - b) Convert REs into NFAs
 - c) Merge these NFAs into a single NFA
 - d) Convert the NFA into a DFA^o with minimum states
 - e) Programming based on the DFA^o
- 3) Generating programs based on your own Lex(3.5)
 - a) Design your own Lex
 - (i) Define .l file
 - (ii) Programming your own Lex
 - b) Generating programs based on your own Lex

Requirements on Lab2

1)Input

Stream of characters

CFG(Combination of CFGs of some classes of sentences)

2)Output(Syntax tree)

Sequence of derivations if top-down syntax analyzing methods are used.

Sequence of reductions if bottom-up syntax analyzing methods are used.

3)Classes of sentences are defined by yourself

4>Error handling may be included

Optional Implementing Methods on Lab2

1) Recursive descent parsing

A non-terminal is related to a function/ sub-routine 4.4.1P 219

2) LL(1)

a) Construct LL(1) parsing table based on the CFG

b) Design the program using LL(1) parsing table

3) LR(1)

a) Construct LR(1) parsing table based on the CFG

b) Design the program using LR(1) parsing table

Lab Document Requirements

1) Reports on labs

- a) Motivation/Aim
- b) Content description
- c) Ideas/Methods
- d) Assumptions
- e) Related FA descriptions
- f) Description of important Data Structures
- g) Description of core Algorithms
- h) Use cases on running
- i) Problems occurred and related solutions
- j) Your feelings and comments

2) CD on labs

- a) A CD is needed by a class for each lab
- b) Each person is related to a directory in the CD
- c) In the directory of a person, the following files are needed:
Input file, Output file, Source program files, Report file, Other related files

Q/A?