

 免費電子書

學習

compiler-construction

Free unaffiliated eBook created from
Stack Overflow contributors.

#compiler-
construction

.....	1
1:	2
Examples.....	2
.....	2
.....	2
.....	2
.....	2
2:	3
.....	3
.....	3
Examples.....	3
.....	3
.....	3
.....	4
.....	4
.....	4
.....	5
.....	6

You can share this PDF with anyone you feel could benefit from it, downloaded the latest version from: [compiler-construction](#)

It is an unofficial and free compiler-construction ebook created for educational purposes. All the content is extracted from [Stack Overflow Documentation](#), which is written by many hardworking individuals at Stack Overflow. It is neither affiliated with Stack Overflow nor official compiler-construction.

The content is released under Creative Commons BY-SA, and the list of contributors to each chapter are provided in the credits section at the end of this book. Images may be copyright of their respective owners unless otherwise specified. All trademarks and registered trademarks are the property of their respective company owners.

Use the content presented in this book at your own risk; it is not guaranteed to be correct nor accurate, please send your feedback and corrections to info@zzzprojects.com

1:

Examples

- PythonCC ++Ruby◦
- IDE [VSCode](#)
- ◦ ;◦

-
- - ◦ Whitespace LolcodeBrainfuck ◦
 - ◦ Swift C++Python◦

-
- - ◦ +
 - +
 - ◦ †CoffeescriptRubby
 -
 - ◦

<https://riptutorial.com/zh-TW/compiler-construction/topic/6845/>

2:

- 42 4◦
 - ◦
 - AST◦

Examples

```
python◦
```

- ['INTEGER', '178']◦
-

```
int result = 100;
```

```
python
```

```
import re # for performing regex expressions

tokens = [] # for string tokens
source_code = 'int result = 100;'.split() # turning source code into list of words

# Loop through each source code word
for word in source_code:

    # This will check if a token has datatype decleration
    if word in ['str', 'int', 'bool']:
        tokens.append(['DATATYPE', word])

    # This will look for an identifier which would be just a word
    elif re.match("[a-z]", word) or re.match("[A-Z]", word):
        tokens.append(['IDENTIFIER', word])

    # This will look for an operator
    elif word in '*-/+=':
        tokens.append(['OPERATOR', word])

    # This will look for integer items and cast them as a number
    elif re.match("[0-9]", word):
        if word[len(word) - 1] == ';':
            tokens.append(["INTEGER", word[:-1]])
            tokens.append(['END_STATEMENT', ';'])
        else:
            tokens.append(["INTEGER", word])

print(tokens) # Outputs the token array
```

```
[['DATATYPE', 'int'], ['IDENTIFIER', 'result'], ['OPERATOR', '='], ['INTEGER', '100'], ['END_STATEMENT', ';']]
```

◦

1. ◦

2. tokens ◦

3. ◦ source_code◦

4. source_code◦

```
5. if word in ['str', 'int', 'bool']:  
    tokens.append(['DATATYPE', word])
```

◦

6. ◦ AST◦

<https://repl.it/J9Hj/latest>

Simple Lexical Analyzer◦ python◦

AST◦ ◦

```
[['DATATYPE', 'int'], ['IDENTIFIER', 'result'], ['OPERATOR', '='], ['INTEGER', '100'], ['END_STATEMENT', ';']]
```

'python3'

```
ast = { 'VariableDeclaration': [] }  
  
tokens = [ ['DATATYPE', 'int'], ['IDENTIFIER', 'result'], ['OPERATOR', '='],  
           ['INTEGER', '100'], ['END_STATEMENT', ';'] ]  
  
# Loop through the tokens and form ast  
for x in range(0, len(tokens)):  
  
    # Create variable for type and value for readability  
    token_type = tokens[x][0]  
    token_value = tokens[x][1]  
  
    # This will check for the end statement which means the end of var decl  
    if token_type == 'END_STATEMENT': break  
  
    # This will check for the datatype which should be at the first token  
    if x == 0 and token_type == 'DATATYPE':
```

```

    ast['VariableDeclaraton'].append( {'type': token_value} )

# This will check for the name which should be at the second token
if x == 1 and token_type == 'IDENTIFIER':
    ast['VariableDeclaraton'].append( {'name': token_value} )

# This will check to make sure the equals operator is there
if x == 2 and token_value == '=': pass

# This will check for the value which should be at the third token
if x == 3 and token_type == 'INTEGER' or token_type == 'STRING':
    ast['VariableDeclaraton'].append( {'value': token_value} )

print(ast)

```

```
{'VariableDeclaraton': [{'type': 'int'}, {'name': 'result'}, {'value': '100'}]}
```

type namevalue°

1. astAST°

2. token°

3. AST°

4.

5. if x == 0 and token_type == 'DATATYPE':
 ast['VariableDeclaraton'].append({'type': token_value})

AST° VariableDeclaraton AST°

<https://repl.it/J9IT/latest>

<https://riptutorial.com/zh-TW/compiler-construction/topic/10816/>

S. No		Contributors
1		Community , RyanM , TriskaJm
2		RyanM