



Compiler Design Parser Project

Topic : Python: Defining List of tuple

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Project Overview

This project presents a simple parser to validate list of tuples in Python with limited use cases and tokens supported. It's made for academic purposes and learning purposes.

The source file of yacc is defined in ProjectCompiler.y The source file of lex is defined in ProjectCompiler.l

What does the parser do?

The parser analyses the syntax of a list of tuple expression entered by the user and tells whether the statement is a list of tuple in Python or not.

The parser works perfectly for all the ideal test cases of the following syntax :

1. [(12,5),(6,a),(7,8)]
2. [(a,b)(c,d)]

Strengths of Parser

1. Validates valid list of tuples in Python.
2. Handles all types string, integer data type.

Limitations of Parser

1. Can't handle string value. eg 'abcd'
2. Can't handle arithmetic expressions . eg. 2+4

Commands to run code :

Windows

1. flex ProjectCompiler.l
2. bison -yvd ProjectCompiler.y
3. gcc lex.yy.c y.tab.c
4. a.exe

Linux

1. yacc -d --verbose ProjectCompiler.y
2. lex ProjectCompiler.l
3. gcc lex.yy.c y.tab.c
4. ./a.out

Sample execution:

```
Microsoft Windows [Version 10.0.19044.1586]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hrc>cd Desktop

C:\Users\hrc\Desktop>flex ProjectCompiler.l

C:\Users\hrc\Desktop>bison -yvd ProjectCompiler.y

C:\Users\hrc\Desktop>gcc lex.yy.c y.tab.c

C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
_
```

Examples of Valid Test Cases

1. `[]`, the smallest valid accepted statement

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
[]
List of Tuple is valid
C:\Users\hrc\Desktop>
```

2. `[(1,3,5)(4,56,u)]`

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
[(1,3,5)(4,56,u)]
List of Tuple is valid
C:\Users\hrc\Desktop>
```

3. `list((1,2,(3,3)),(5,6))`

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
list((1,2,(3,3)),(5,6))
List of Tuple is valid
C:\Users\hrc\Desktop>
```

4. `[(.),(5,6),0]`

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
[(.),(5,6),0]
List of Tuple is valid
C:\Users\hrc\Desktop>
```

Examples of Invalid Test Cases

1. [('as',2)(4,5)]

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
[('as',2)(4,5)]
List of tuple is not valid : Syntax Error
C:\Users\hrc\Desktop>_
```

2. [('as',2)(4,5)] (unmatched brackets)

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
[('as',2)(4,5)]
List of tuple is not valid : Syntax Error
C:\Users\hrc\Desktop>_
```

3. list((3,5)(4,5))

```
C:\Users\hrc\Desktop>a.exe
Please Enter List of Tuple:
list((3,5)(4,5))
List of tuple is not valid : Syntax Error
C:\Users\hrc\Desktop>_
```