AST in python

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1 Problem

I want to analyze a python script to extract something from it. How do I do that?

2 Solution

Python has an abstract syntax tree like most programming language.

You can use the ast module to parse a string that contains the code you want to analyze.

A simple example is as follow. It will read a file defined in the `file` variable, use `ast` to parse it, returning a `tree` that can then be traversed using the visitor pattern. Defining visitors lets you separate the responsibility of each of them, making the code that analyzes code easier to understand.

```
import ast

class ClassVisitor(ast.NodeVisitor):
    def visit_ClassDef(self, node):
        # Do some logic specific to classes
        self.generic_visit(node)

class FunctionVisitor(ast.NodeVisitor):
    def visit_FunctionDef(self, node):
        # Do some logic specific to functions
        self.generic_visit(node)

visitors = [
    ClassVisitor(),
    FunctionVisitor()
]

with open(file, "r") as f:
    code = f.read()

    tree = ast.parse(code)

    for visitor in visitors:
        visitor.visit(tree)
```

3 Reference

- https://greentreesnakes.readthedocs.io/en/latest/index.html