

Câu hỏi **5**

Không hoàn thành

Chấm điểm của 1,00

Given the grammar of MP as follows:

program: exp EOF;

exp: term ASSIGN exp | term;

term: factor COMPARE factor | factor;

factor: factor ANDOR operand | operand;

operand: ID | INTLIT | BOOLIT | '(' exp ')';

INTLIT: [0-9]+ ;

BOOLIT: 'True' | 'False' ;

ANDOR: 'and' | 'or' ;

ASSIGN: '+=' | '-=' | '&=' | '!= ' | ':=' ;

COMPARE: '=' | '<' | '>' | '<=' | '<' | '>' ;

ID: [a-z]+ ;

and AST classes as follows:

```

class AST(ABC):
    def __eq__(self, other):
        return self.__dict__ == other.__dict__

    @abstractmethod
    def accept(self, v, param):
        return v.visit(self, param)

class Expr(AST):
    __metaclass__ = ABCMeta
    pass

class Binary(Expr):
    #op:string:
    #left:Expr
    #right:Expr
    def __init__(self, op, left, right):
        self.op = op
        self.left = left
        self.right = right

    def __str__(self):
        return "Binary(" + self.op + "," + str(self.left) + "," + str(self.right) + ")"

    def accept(self, v, param):
        return v.visitBinaryOp(self, param)

class Id(Expr):
    #value:string
    def __init__(self, value):
        self.value = value

    def __str__(self):
        return "Id(" + self.value + ")"

    def accept(self, v, param):
        return v.visitId(self, param)

class IntLiteral(Expr):
    #value:int
    def __init__(self, value):
        self.value = value

    def __str__(self):
        return "IntLiteral(" + str(self.value) + ")"

    def accept(self, v, param):
        return v.visitIntLiteral(self, param)

class BooleanLiteral(Expr):
    #value:boolean
    def __init__(self, value):
        self.value = value

    def __str__(self):
        return "BooleanLiteral(" + str(self.value) + ")"

    def accept(self, v, param):
        return v.visitBooleanLiteral(self, param)

```

Please copy the following class into your answer and modify the bodies of its methods to generate the AST of a MP input?

class ASTGeneration(MPVisitor):

```

def visitProgram(self,ctx:MPParser.ProgramContext):
    return None

def visitExp(self,ctx:MPParser.ExpContext):
    return None

def visitTerm(self,ctx:MPParser.TermContext):
    return None

def visitFactor(self,ctx:MPParser.FactorContext):
    return None

def visitOperand(self,ctx:MPParser.OperandContext):
    return None

```

For example:

| Test | Result |
|---------------|--|
| "a := b := 4" | Program(Binary(:=,Id(a),Binary(:=,Id(b),IntLiteral(4)))) |

Answer: (penalty regime: 10, 20, ... %)

| | |
|---|--|
| 1 | |
|---|--|

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Phát triển dựa trên hệ thống Moodle



◀ Quiz: AST (6/7/2022, 8g30)

Chuyển tới...



MiniTest: AST Generation ▶