



Tutorial 5

AST Generation from ANTLR

Question 1.

Download the Exercise code, unzip it, and copy external/antlr-4.6-complete.jar from initial folder into folder external. Open src/main/mc/utils/AST.scala and src/test/scala/AstSuite.scala and fix the value of "expect" in all tests according to the corresponding "input".

Question 2.

Add 2 more tests into src/test/scala/AstSuite.scala with the following inputs:

```
a. val input = """
  a = 4;
  if b then a = 2; else a = 5;
  """
```

```
b. val input = """
  a = b + 4;
  b = c - (d + 4);
  c = d - 1;
  """
```

Remind that the name of the tests must be meaningful and suitable to the test.

Question 3.

Modify src/main/mc/astgen/AstGeneration.scala to make it generate the AST for the MC?

Question 4.

Change rule of term and add rule of factor as follows:

```
term  → factor (MULOP factor)*
factor → ID | INTLIT | LP exp RP
MULOP : '*' | '/';
```

Rewrite AstGeneration.scala to generate AST?

Question 5.

Add some more classes into AST.scala as follows:

```
case class Decls(decl: List[Decl]) extends Stmt
case class Decl(id: String, typ: Type)
trait Type
```



```
object IntType extends Type
object CharType extends Type
```

Change MC.g4 as follows:

```
stmt  → assign | ifstmt | decl
decl  → mctype idlist
idlist → ID (COMMA ID)*
mctype → INTTYPE | CHARTYPE
```

Modify AstGeneration.scala to generate the corresponding AST?