Write an *syntax-directed translator* in ANTLR to generate intermediate for a program written in the language described below. The only allowed intermediate operators are: + - * / = [] if ifFalse goto ! < > <= >= != param call ret.

Following are some clarifications on semantic rules:

- 1. Every char value has a corresponding int value, given by its ASCII code.
- 2. The int value 0 is equivalent to the boolean value false.
- 3. All other int values are equivalent to the boolean value true.

We will test your submission in the following way:

| break ;

```
unzip <student ID>.zip
cd <student ID>
./build.sh
grun Cmpt379Compiler program <path to test case>
     > <path to output file>
Grammar:
program>
     -> class Program { <field decl>* <method decl>* }
<field decl>
     -> <type> (<id> | <id> [ int literal ] )
     ( , <id> | <id>[int literal ] )* ;
     | <type> <id> = <literal> ;
<method decl>
     -> ( <type> | void ) <id>
     (( (<type> <id>) ( , <type> <id>) *) ? ) <block>
<block>
     -> { <var decl>* <statement>* }
<var decl>
     -> <type> <id> ( , <id>) * ;
<type>
     -> int
     boolean
<statement>
     -> <location> <assign op> <expr> ;
     | <method call> ;
     | if ( <expr> ) <block> ( else <block> )?
     | switch <expr> {(case <literal> : <statement>*)+}
     | while ( <expr> ) <statement>
     | return ( <expr> ) ? ;
```

```
continue;
     | <block>
<assign op>
     -> =
     | +=
     | -=
<method call>
     -> <method name> ( (<expr> ( , <expr> ) *)? )
     | callout ( <string literal> ( , <callout arg> )* )
<method name>
     -> <id>
<location>
     -> <id>
     | <id> [ <expr> ]
<expr>
     -> <location>
     | <method call>
     | <literal>
     | <expr> <bin op> <expr>
     | - <expr>
     | ! <expr>
     | ( <expr> )
<callout arg>
     -> <expr>
     | <string literal>
<br/>din op>
     -> <arith op>
     | <rel op>
     | <eq op>
     | <cond op>
<arith op>
     -> +
     I -
     | *
     | /
     | 응
<rel op>
     -> <
     | >
     | <=
     | >=
<eq_op>
     -> ==
     | !=
<cond op>
     -> &&
     | | | | |
```

```
<literal>
     -> <int literal>
     | <char literal>
     | <bool literal>
<id>
     -> <alpha> <alpha num>*
<alpha>
     -> [a-zA-Z_]
<alpha num>
     -> <alpha>
     | <digit>
<digit>
     -> [0-9]
<hex digit>
     -> <digit>
     | [a-fA-F]
<int_literal>
     -> <decimal literal>
     | <hex literal>
<decimal literal>
     -> <digit>+
<hex literal>
    -> 0x <hex digit>+
<bool literal>
     -> true
     | false
<char literal>
     -> '<char>'
<string literal>
     -> "<char>*"
```