Project 2 Grammar

- Variable Declaration
  - <var_dec> ::= <var_type><var_name>
  - <var_type> ::= int|str|bool
  - <var_name> ::= <str>
- Variable Assignment
  - <var> ::= <var_dec> = <var_assignment>
  - <var_assignment> ::= <var>|<int_expr>|<str_expr>|<bool_expr>
- Letters, Characters and Strings
  - <str_root> ::= <char>|<char><str_root>
  - <char> ::= <symbol>|<letter>|<digit>
  - <symbol> ::= !|“|#|$|%|&|‘|(|)|*|+|,|-|.|/|:|;|<|>|?|@|[|\|]|^|_|`|{|||}|~
  - <letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|x|y|z|A|B|C|D|E|F|G|H|I|J|K|L|M|N|O|P|Q|R|S|T|U|V|W|X|Y|Z

    String Expressions
    - <str_expr> ::= <str_root> + <str_root>|<str_root> * <int_root>
- Integers
  - <int_root> ::= <int>|-<int>
  - <int> ::= <digit>|<digit><int_root>
  - <digit> ::= 0|1|2|3|4|5|6|7|8|9

    Integer Expressions
    - <int_expr> ::= <int_root> <op> <int_root>|<int_root> <op> (<int_expr>)
    - <op> ::= +|-|*|/|%|<|>|==|<=|>=|!=
- Booleans
  - <boolean_root> ::= <signed_bool>|<bool_expr>
  - <signed_bool> ::= <bool>|!<bool>
  - <bool> ::= true|false

    Boolean Expressions
    - <bool_expr> ::= <signed_bool> <comp> <signed_bool>|<signed_bool> <comp> (<bool_expr>)
    - <comp> ::= &&||||<|>|==|<=|>=|!=

- Conditionals
  - <if_stmt> ::= <if>|<if><elseif>|<if><elseif><else>
  - <if> ::= if (<bool_expr>) { <var_assignment>|<var_update>|<if_stmt> }
  - <elseif> ::= elseif (<bool_expr>) { <var_assignment> | <var_update> | <if_stmt> } | <elseif><elseif>
  - <else> ::= else { <var_assignment>|<var_update>|<if_stmt> }
  - <var_update> ::= <var_name> = <var_name> <update_op> <expr>
  - <expr> ::= <int_expr>|<str_expr>|<bool_expr>
- Loops
  - <while_loop> ::= while (<bool_expr>) { <var_assignment> | <var_update> }
  - <for_loop> ::= for (<var_assignment>; <bool_expr>; <var_update>) { <var_assignment>|<var_update> }
- Command-Line Arguments
  - <cmd_args> ::= cmd[<int_root>]