⟨*program*⟩ ::= ‘INPUT’ ⟨*ref-list*⟩ ‘OUTPUT’ ⟨*ref-list*⟩ ‘VAR’ ⟨*decl-list*⟩ ‘IN’ ⟨*eqs*⟩ #

⟨*ref-list*⟩ ::= ⟨*ref-list-non-empty*⟩ | ε

⟨*decl-list*⟩ ::= ⟨*decl-list-non-empty*⟩ | ε

⟨*ref-list-non-empty*⟩ ::= ⟨*ident*⟩ ‘,’ ⟨*ref-list-non-empty*⟩ | ⟨*ident*⟩

⟨*decl-list-non-empty*⟩ ::= ⟨*ident*⟩ ⟨*size-spec*⟩ ‘,’ ⟨*decl-list-non-empty*⟩ | ⟨*ident*⟩ ⟨*size-spec*⟩

⟨*eqs*⟩ ::= ⟨*ident*⟩ ‘=’ ⟨*expr*⟩ ⟨*eqs*⟩ | ε

⟨*expr*⟩ ::= ⟨*arg*⟩
| ‘NOT’ ⟨*arg*⟩
| ‘AND’ ⟨*arg*⟩ ⟨*arg*⟩
| ‘NAND’ ⟨*arg*⟩ ⟨*arg*⟩
| ‘OR’ ⟨*arg*⟩ ⟨*arg*⟩
| ‘XOR’ ⟨*arg*⟩ ⟨*arg*⟩
| ‘MUX’ ⟨*arg*⟩ ⟨*arg*⟩ ⟨*arg*⟩
| ‘REG’ ⟨*ident*⟩
| ‘CONCAT’ ⟨*arg*⟩ ⟨*arg*⟩
| ‘SELECT’ ⟨*bus-size*⟩ ⟨*arg*⟩
| ‘SLICE’ ⟨*bus-size*⟩ ⟨*bus-size*⟩ ⟨*arg*⟩
| ‘ROM’ ⟨*bus-size*⟩ ⟨*bus-size*⟩ ⟨*arg*⟩
| ‘RAM’ ⟨*bus-size*⟩ ⟨*bus-size*⟩ ⟨*arg*⟩ ⟨*arg*⟩ ⟨*arg*⟩ ⟨*arg*⟩

⟨*arg*⟩ ::= ⟨*ident*⟩ | ⟨*bin-digits*⟩ | ⟨*bin-const*⟩ | ⟨*dec-const*⟩ | ⟨*hex-const*⟩

⟨*ident*⟩ ::= [‘a’-‘z’‘A’-‘Z’‘_’][‘a’-‘z’‘A’-‘Z’‘0’-‘9’‘_’]*

⟨*bin-digits*⟩ ::= [‘0’‘1’][‘0’‘1’]*

⟨*bin-const*⟩ ::= ‘0b’[‘0’‘1’][‘0’‘1’]* ⟨*size-spec*⟩

⟨*dec-const*⟩ ::= ‘0d’[‘0’-‘9’][‘0’-‘9’]* ‘:’ ⟨*bus-size*⟩

⟨*hex-const*⟩ ::= ‘0x’[‘0’-‘9’‘a’-‘f’][‘0’-‘9’‘a’-‘f’]* ⟨*size-spec*⟩

⟨*size-spec*⟩ ::= ‘:’ ⟨*bus-size*⟩ | ε

⟨*bus-size*⟩ ::= [‘1’-‘9’][‘0’-‘9’]*