

CS323 with Instructor Anthony Le

Assignment 2 Production Rules

1. For the first iteration use the Production rules on page 116 of the book, problem 3.6
- 2a. For the 2nd iteration use the production rules on page 117 of the book, problem 3.13 with the assignment operator.
- 2b. For the final iteration the if then else could be added using the production rules on page 113 of the book.
- 2c. For extra credit (TBA) the production rules for the WHILE and FUNCTIONS.
3. The parser should print to an output file the tokens, lexemes and the production rules used:
That is, first, write the token and lexeme found
Then, print out all productions rules used for analyzing this token
Note: - a simple way to do it is to have a “print statement” at the beginning of each function that will print the production rule.
- It would be a good idea to have a “switch” with the “print statement” so that you can turn it on or off.
4. **Error handling:** if a syntax error occurs, your parser should generate a meaningful error message, such as token, lexeme, line number, and error type etc.
Then, your program may exit or you may continue for further analysis.
The bottom line is that your program must be able to parse the entire program if it is syntactically correct.
5. Turn in your assignment according to the specifications given in the project outline

Example

Assume we have the following statement

```
....more ....  
a = b + c;  
.... more ....
```

One possible output would be as follows:

.... more....

Token: Identifier Lexeme: a

<Statement> -> <Assign>

<Assign> -> <Identifier> = <Expression> ;

Token: Operator Lexeme: =

Token: Identifier Lexeme: b

<Expression> -> <Term> <Expression Prime>

<Term> -> <Factor> <Term Prime>

<Factor> -> <Identifier>

Token: Operator Lexeme: +

<Term Prime> -> ε

<Expression Prime> -> + <Term> <Expression Prime>

Token: Identifier Lexeme: c

<Term> -> <Factor> <Term Prime>

<Factor> -> <Identifier>

Token: Separator Lexeme: ;

<Term Prime> -> ε

<Expression Prime> -> ε

.... more.....