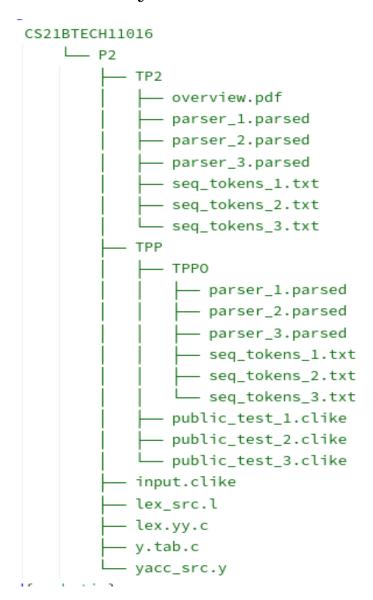
Assignment 2

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0.1 Directory structure:



0.2 Compilation steps:

- 1. Open the CS21BTECH11016.tar.gz file and see the directory structure.
- 2. Steps:

```
lex lex_src.l
yacc -d yacc_src.y
gcc -o yacc_src y.tab.c lex.yy.c -ll
./yacc_src < input.clike</pre>
```

- 3. An input clike file is provided in the directory itself for testing your test cases.
- 4. The tokens file generated by these steps will be "seq_tokens.txt" and parsed file will be "parsed.parser"

- 5. lex_src.l contains lex program responsible for breaking the source code into a sequence of tokens.
- 6. lex will generate a C source code file having function yylex() which returns token.
- 7. Parser generated by yacc will take tokens from lex via yylex() function.
- 8. The tokens are identified in the grammar code using a file "y.tab.h" generated by yacc, which has constants associated with each token, basically declarations of all the tokens in the yacc program. It is a way of telling the lex program that token is valid.
- 9. Grammar rules are written in yacc program which deffines the syntax rules.
- 10. On this command:

```
yacc -v yacc_src.y
```

It will generate an ouptut file of the parsing table

11. error handled by yacc error handling. More information given in section 0.4.

0.3 My implementation

1. I found only one issue (not really issue with my code) was that for example this input:

```
local int bar [1]( int x )
{
```

which dosen't have a closing curly brace at the end, it will terminate but wont give invalid statement as output. It will give output as:

```
local int bar [1]( int x ) : function definition {
```

This is a syntax error not an invalid statement, so its correct.

- 2. I am considering curly braces to be in next line so as get to get better printing format in parsed file.
- 3. Error:
 - I am printing invalid statement in the parsed file after that input line is finished or can say before newline occurs.
 - I have a counter of new lines in lex program and a flag of error in yacc initialised to 0.
 - Whenever error is encountered , flag is assigned 1. And checking in the lex file , whenever newline is encountered and flag is 1, print invlaid statement.
 - Also printing Syntax error in stdout (not in parsed file)
 - For the point(1) (curly barces one), printing syntax error in stdout.

4. Return statement:

- (a) Taking at least one return statement in a function into account.
- (b) Used a int variable initialised to 0 initially.
- (c) Whenever using the return statement rule, incrementing the variable.
- (d) If value of that variable is still 0 , then no return staement. This will give error in the stdout and wil terminate. Example :

```
local int bar [1]( int x )
{
}
```

Will give output in the stdout:-

```
Error at line 3 : syntax error
Error:No return statement
```

- 5. Not taking number of arguments in a function, number of functions inside a class because they come under semantic checks.
- 6. No known problems from my previous assignment lexer except just adding some new keywords.