

COEN 175

Week 1 - Phase 1

TAs

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 - Office Hours: Thursday 11 - 1 pm

Introduction

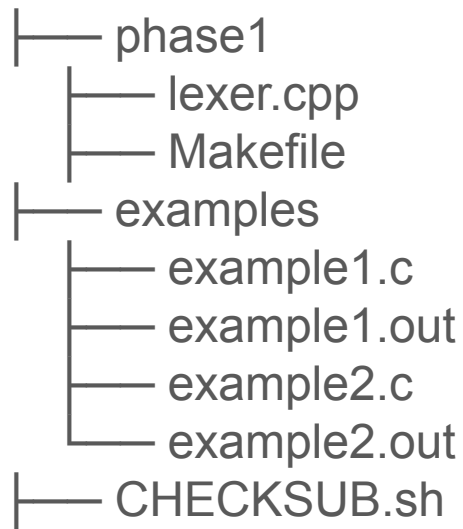
- Building a Simple C Compiler in 6 phases!
- Zoom
 - All lab sections and TA office hours will use the same Zoom link
 - Feel free to stop by other lab sections for extra help
- Submissions
 - Tar file uploaded to Camino
 - Due typically on Sundays at 11:59 pm (**-1pt for every minute late!**)
- Advice
 - Keep up with lecture material
 - Read the entire assignment very carefully (most questions can be answered there)
 - Start early
 - Write your own test cases
- Must run and compile on linux servers

How our Compiler Works

- **Read** in from standard input
- **Write** to standard output

- Running
 - `./scc < input.c > output.out` OR `./scc` use **ctrl+d** for eof
- Testing
 - `diff output.out test.out`
 - Program is correct if there is no output

Recommended Directory Structure



Submitting

1. Create tar file (**phase1.tar**) containing your source code
2. Run CHECKSUB to make sure tar file works
 - a. `./CHECKSUB.sh phase1.tar examples.tar`
3. Submit tar file to camino
4. Recommended to redownload submission and run CHECKSUB a second time to confirm that the submission was successful

Phase 1 - Lexical Analysis

- Write a lexical analyzer
 - Print out all lexical constructs (tokens) recognized from standard in
 - All whitespace, comments, illegal characters to be ignored
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- Example
 - Standard in: **123**
 - Standard out: **int:123**

Useful Libraries

- **istream**
 - `cin.get()`, `cin.peek()`, `cin.putback()`, `cin.eof()`
 - <https://www.cplusplus.com/reference/istream/istream/>
- **cctype**
 - `isdigit()`, `isalpha()`, `isalphanum()`

Examples

```
[agigliot@linux11105 phase1]$ make
g++ -std=c++11 -g -Wall -c -o lexer.o lexer.cpp
g++ -std=c++11 -o scc lexer.o
[agigliot@linux11105 phase1]$ ./scc
1
int:1
123
int:123
break
keyword:break
testing123
identifier:testing123
[agigliot@linux11105 phase1]$
```

```
[agigliot@linux11105 1]$ ./CHECKSUB.sh phase1.tar examples.tar
Checking environment ...
Checking submission ...
Extracting submission ...
Extracting examples ...
Compiling project ...
g++ -std=c++11 -g -Wall -c -o lexer.o lexer.cpp
g++ -std=c++11 -o scc lexer.o
Running examples ...
fib.c ... ok
hello.c ... ok
list.c ... ok
malloc.c ... ok
sum.c ... ok
tricky.c ... ok
[agigliot@linux11105 1]$
```

```
[agigliot@linux11105 phase1]$
[agigliot@linux11105 phase1]$ ./scc < fib.c > test.out
[agigliot@linux11105 phase1]$ diff test.out fib.out
[agigliot@linux11105 phase1]$
```