

# CMSC 430 Programming Exercise

## Code Generator and Optimizer

Due Date: Tue, May 15th, 11:59pm.

In this project you will add some simple optimizations to your C- code generator. Your tasks are to implement the following optimizations:

- evaluate constant arithmetic expressions (e.g.,  $1+2 \rightarrow 3$ )
- fold constant relational expressions (e.g.,  $1 == 1 \rightarrow \text{true}$ )
- simplify boolean expressions (e.g.,  $\text{true} \ \&\& \ x \rightarrow x$ )
- apply algebraic simplification (e.g.,  $0+x \rightarrow x$ )
- simplify IF statements (e.g.,  $\text{IF}(\text{true}) \text{ stmt1} \ \text{ELSE} \ \text{stmt2} \rightarrow \text{stmt1}$ )
- simplify WHILE loops (e.g.,  $\text{WHILE}(\text{true}) \ \text{stmts} \rightarrow \text{L} \ \text{stmts} \ \text{GOTO} \ \text{L}$ )

## Getting Started

You should be able to directly modify your code generator from project 3. You can start off with a new copy by typing

```
cp -r ~ctseng/proj4 ~/proj4
```

## Submission Instructions

You can turn in your assignment using the `submit` program. To use `submit`, add the following line to your `.login` file.

```
alias submit ~ctseng/bin/submit
```

To submit, go to your directory containing the code and type:

```
submit 4 mycc.lex mycc.cup *.java
```

The `submit` program will accept multiple submissions up to the submission deadline, overwriting previous submissions. Feel free to submit your project as many times as you desire before the deadline.

The late submission policy is: 20% penalty for first 24 hours, 10% each additional day. Maximum 5 days late.