Programming Assignment 0: Toy Cool Programs

Due **Wednesday, 6th May 2020** at 11:59pm

(Late Submissions are not allowed)

The purpose of this assignment is to acquaint you with features of the Cool language and train you to understand the finer details of languages by reading their specifications. More specifically, you should write short Cool programs to understand the language. This assignment should *not* be done with a partner; you should turn in your own individual work.

Correct Cool programs Begin with a short ($\geq$ 10 line) program in C/C++/Java and modify it so that it is a valid Cool program with the same functionality. Comment your program such that it shortly describes what is its expected behaviour. Submit 5 programs in total. Compile the programs using the `coolc` compiler and study the generated MIPS code. Make a correspondence between the Cool programs and the generated code.

Incorrect Cool programs Read Section#10 "Lexical Structure" of `Cool-manual.pdf` carefully, and write one program per sub-section; each of the programs break one or more rules in that sub-section. For doing this, begin with a short ($<$ 10 line) correct *toy* program in Cool and modify it so that it breaks these rules. Comment your programs such that your comment shortly describes what is the set of rules it breaks from the manual by citing the corresponding line from the manual. Submit 5 programs in total, one for each of sub-sections 10.1–10.5. For each of the incorrect programs, read and understand the error messages that the Cool compiler generates.

Non-trivial Cool programs Write some number ($\geq$ 2) of non-trivial Cool programs to acclimatize yourself with the language. Try to make your submitted programs non-trivial and interesting.

Details Submit $\geq$ 12 programs in total: 5 correct and 5 incorrect ones, along with the additional non-trivial programs. Also write a summary on your studies. For your correct programs, the study should include a study of the generated MIPS code and for the incorrect ones a study of the error messages.

Turning in the assignment

Upload your programs and your writeup (in PDF) to the google- classroom and make sure you turn in. This assignment does **not** have late submissions. Only the programs that have a time-stamp earlier than the due-date will be evaluated. The evaluation of the programs will be done in the lab session that will be announced by the TAs.

Refer Readme file for the instructions to install Cool compiler.