CIS*4650 (Winter 2021) Compilers

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Office Hours: Tuesdays and Fridays, 3:30 – 4:30 pm (virtual meetings)

Teaching Assistants: TBA
Office Hours: TBA (virtual meetings)

Course website: https://courselink.uoguelph.ca/

This course provides an introduction to different programming paradigms followed by a detailed study on the compilation process of a procedural programming language. Students will gain an in-depth understanding of the compiler construction process by considering the fundamental issues such as scanning, parsing, building and checking the intermediate representation of a program, and code generation. The knowledge learned will be put into practice through the construction of a fully functioning compiler for a simple procedural language using the widely adopted tools (JFlex and CUP) and a general purpose programming language (Java). More specifically, the implementation exercises are designed to reinforce various concepts that are typically abstracted by tools during compiler construction in order to provide a complete picture of the compiler design and implementation process.

Students are expected to have a solid background in modular programming, assembly language, and basic computer architecture (e.g., registers, memory organization, etc.). Experience with the development of large software projects such as those practiced in CIS*2750, CIS*3750, and CIS*3760 will be beneficial.

Evaluation

- Warmup assignment: 10%
- Three checkpoints for the project: 45%
- Midterm: 20%
- Final exam: 25%

Lecture attendance is important. The textbook and lecture notes will not necessarily provide adequate coverage for the course materials, especially the discussions and question answering we conduct during the classes. Late submissions for the implementation are not encouraged, and there will be a deduction of marks by 10% for one day late, 25% for two days late, and 50% for three days late. No marks will be given for late submissions that are more than three days late.

References

Alfred Aho, Monica Lam, Ravi Sethi, and Jeffrey Ullman. "*Compilers: Principles, Techniques, and Tools*", Second Edition, Pearson, 2006.

John R. Levine, Tony Mason, and Doug Brown. "*Lex & Yacc*" 2nd Edition. O'Reily & Associates, 1992. (Available on CourseLink)