Compiler Theory (CSC 456)

Course Outline – Practical Part

- Teaching Assistants:
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    - Office hours:
      - Sunday: 9.00 a.m. – 11.00 a.m.
      - Wednesday: 9.00 a.m. – 11.00 a.m.

- The Course Objective:

The course is intended to teach the students the basic techniques that underlie the practice of Compiler Construction. The course will introduce the theory and tools that can be employed in order to perform syntax-directed translation of a high-level programming language into an executable code.

- Course Resources:
  - Text book:
    - ✓ Compilers principles techniques and tools 2nd edition
  - Tools:
    - ✓ Flex, Bison, notepad++, dev c++
  - Additional Materials :
    - ✓ Lab handouts will be found in the following github repository
      - https://github.com/SamarShabanCS/compiler-theory
    - ✓ Exercise sheets

- Schedule Plan:

Topics	Week(s) No
➢ Introduction ▪ Course outline ▪ Compiler vs. interpreter ▪ Compiler structure	1
➢ Lexical scanning	2

▪ Regular expression ▪ Hand-written scanners ▪ automatically generated scanners (flex) ▪ Environment Setup ▪ Flex programming problems	
➢ Parser ▪ Context free grammar (CFG) ▪ Grammar ambiguity ▪ LL(1) first and follow functions	1
➢ LL(1) algorithm ▪ Exercises	1
➢ automatically generated parser (bison) ▪ bison programming problems	2
➢ Bottom-up parsing ▪ LR parsers. ▪ Conflicts in LR grammars and how to resolve them. ▪ SLR, LR(k), and LALR parsers. ➢ Exercises	2
➢ Semantic analysis ▪ symbol table	1
➢ Intermediate code generation	1

- Course Policies:

1. Attendance According to faculty policy, attendance will be taken in labs, but it won't be included in your grades.
2. Submissions No late submissions for assignments will be permitted. All students must follow submission dates.
3. Cheating Copy or cheating in any assessment (project, quizzes, or assignment), will lead to lose of grade assigned to it.