Objectives

Formal description of algorithmic languages, compilation techniques, syntactic analysis, code generation, storage allocation, syntax-directed compilers, compiler-building systems.

Prerequisites

CS 2336, 3304

Reference Texts


Grading

Your course grade will be based on the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>7.5%</td>
</tr>
<tr>
<td>Compiler Project: Stage 0</td>
<td>7.5%</td>
</tr>
<tr>
<td>Compiler Project: Stage 1</td>
<td>15.0%</td>
</tr>
<tr>
<td>Compiler Project: Stage 2</td>
<td>10.0%</td>
</tr>
<tr>
<td>Exams</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

Overall final average 90%+ = A, 80%+ = B, 70%+ = C, 60%+ = D, <60% = F.

Assignments

The following guidelines are to be observed concerning the programming assignments (labs):

- Labs are due by the end of the day on the designated due date.
- Late assignments will be penalized 15% for each calendar day past the due date.
- The labs will be developed on the department's Unix environment.
- All assignments will be submitted electronically, as discussed in class.
- You are responsible for doing your own work. You may be asked to defend/explain your work at any time.

Exams

Five exams will be given as scheduled. The lowest exam grade will be dropped. There are no provisions for make-up exams.

Attendance

Attendance is expected, but it will not be used in calculating your final grade.
### Academic Honor Code
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is available on the web at

http://www.angelo.edu/forms/pdf/honorcode5.pdf

### Academic Accommodations
Persons with disabilities which may warrant academic accommodations must contact the Student Services Office, Suite 112, Houston Harte University Center, in order to request such accommodations prior to any accommodations being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made.

### Student Absence for Observance of Religious Holy Day
1) “Religious holy day” means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20.
2) A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.
3) A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

### Student Learning Outcomes
By completing this course, students will be able to:
1) demonstrate knowledge and understanding of the basic theory of computer languages,
2) evaluate the issues involved in implementing a compiler, and
3) implement several stages of a compiler for a small imperative language.

### Assessment of Student Learning Outcomes
Methods of assessment:
1) Programming assignments
2) Exams
3) Course exit survey

### Course Topics
The following list of course topics is tentative and subject to change and adaptation.

1) Introduction to Language Theory
2) Canonical Derivations
3) Derivation Trees
4) Classes of Grammars
5) Grammar Classifications
6) Finite State Automata (FSA)
7) Machine Equivalence and Isomorphism
8) Non-Deterministic FSA
9) Regular Expressions
10) Conversion of an NFA to a DFA
11) State Minimization of a DFA
12) Parsers and CFG
13) A Deterministic Top-Down Parser
14) LL(k) Grammars
15) Push-Down Automata (PDA)
16) Bottom-Up Parsers: The Operator-Precedence Parser
17) A Deterministic Bottom-Up Parser
18) Construction of LR Parsing Tables
19) Compiler Project Stage 0: Skeleton
20) Compiler Project Stage 1: Assignment
21) Compiler Project Stage 2: Control Structures