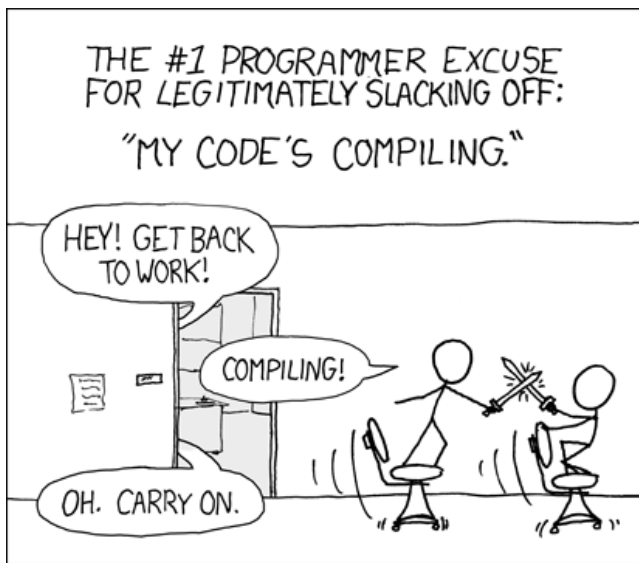




<http://xkcd.com/303/>

CSE 304/504: Compiler Design

<http://www.cs.stonybrook.edu/~cse504/>

Mon., Fri. 1:00pm – 2:20pm

CS 2120

C. R. Ramakrishnan

e-mail: cram@cs.stonybrook.edu

Office: 1420, Computer Science

Office Hours: Mon. Fri., 10 am – 12noon, or by appointment

<http://www.cs.stonybrook.edu/~cram>

Last modified: Mon Jan 25 2016 at 09:29:10 EST
Version: 1.5 18:44:23 2015/03/06
Compiled at 12:58 on 2016/01/25

Prerequisites

- Courses:
 - **CSE 219** or **260**: Advanced Programming in an HLL
 - **CSE 220**: Systems-Level Programming
 - **CSE 303**: Automata Theory
- Programming Experience:
 - Significant programming experience in multiple languages.
 - Ability (and a willingness) to adapt to new languages and tool chains.

Course Outcomes

At the end of the course, students are expected to have:

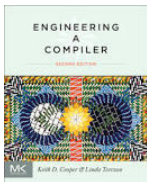
- An ability to use of formal attributed grammars for specifying the syntax and semantics of programming languages.
- Working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation.
- An ability to design and implement a significant portion of a compiler for a language chosen by the instructor.

Informal Statement of Course Objective: To learn the process of translating a modern high-level language to executable code.

- Learn the fundamental techniques from lectures, text book and exercises from the book.
- Apply these techniques in practice to construct *a fully working compiler* for a non-trivial object-oriented language.

Organization

- Concepts and basic ideas in the lectures.



Cooper and Torczan
Engineering a Compiler
(2nd ed., Morgan Kaufman / Elsevier)

- Concrete implementation in a series of programming homework assignments.

Grading

Homework assignments	30%
Informal project presentation	5%
Two mid-term exams	40%
Comprehensive final exam	25%

Letter grades:

- 80% or above: definite A, provided:
 - at least 5 non-trivial homework submissions
 - 70% or better in the exams
- 50% or above: definite C+ or better provided:
 - at least 3 non-trivial homework submissions
 - 35% or better in the exams

The Rules of the Game

Programming assignments:

- May work in pairs.
- Late submissions (submitted up to 3 days late) will be graded normally, but have the following maximum score limit:

Late Days	Max.
On time	100%
1 day late	75%
2 days late	50%
3 days late	25%
≥ 4 days late	0%

- No late penalty (up to 3 days) for **ONE** assignment of your choice!
You should send me mail ahead of the submission deadline if you want to use this penalty-free late days for any assignment.

Your Responsibilities

- Limit discussion of homework assignments to *problems*, not *solutions*.
- Cheating, illegal collaboration and plagiarism will be treated with maximum seriousness.
 - Grad students will be referred to the Graduate Program Director.
 - Undergrad. students will be referred to CASA.

Conviction of academic dishonesty carries substantial penalties, such as receiving an 'F' grade, and/or expulsion from the University. See syllabus on course web page for details.

The Importance of Being Earnest

The Importance of Being Earnest

U.S. NEWS

DISCUSS AS:



Sign in ▾

92 nuclear missile officers implicated in cheating scandal, Air Force says

Thursday Jan 30, 2014 12:25 PM

<http://lmgty.com/?q=nuclear+missile+officers+cheating>

The Importance of Being Earnest



http://commons.wikimedia.org/wiki/File%3ARichard_M._Nixon%2C_ca._1935_-_1982_-_NARA_-_530679.jpg

The Importance of Being Earnest



http://commons.wikimedia.org/wiki/File%3ALance_Armstrong_Aviano.jpg

The Importance of Being Earnest

The screenshot shows a web browser window displaying the Wikipedia article for "Deflategate". The browser's address bar shows the URL "https://en.wikipedia.org/wiki/Deflategate". The page features the Wikipedia logo on the left, a navigation menu with links like "Main page", "Contents", and "Random article", and a search bar at the top right. The article text describes the 2014 AFC Championship Game football tampering scandal involving the New England Patriots and the Indianapolis Colts. A summary box on the right provides a quick overview of the game, including the teams' records, scores (7-45), and head coaches.

W/ Deflategate - Wikipedia, th X C.R.

← → ↺ 🏠 🔒 https://en.wikipedia.org/wiki/Deflategate ☆ 🖨️ * ABP ☰

Not logged in Talk Contributions Create account Log in

Article **Talk** Read Edit View history Search

Deflategate

From Wikipedia, the free encyclopedia

The **2014 AFC Championship Game football tampering scandal**, commonly referred to as **Deflategate**, or **Ballghazi**, is a controversy in the **National Football League** (NFL) involving allegation of tampering with footballs by the **New England Patriots**, related to the accusation that the team tampered with footballs used in the **American Football Conference (AFC) Championship Game** against the **Indianapolis Colts** on January 18, 2015. The league announced on May 11, 2015, that it would suspend Patriots quarterback **Tom Brady** for four games of the 2015 regular season for his alleged part in the scandal. After NFL commissioner **Roger**

Deflategate

Gillette Stadium, the site of the game

Indianapolis Colts (11–5) **New England Patriots** (12–4)

7 **45**

Head coach: Head coach:

Effort Level

The effort required by this course is **High**

Effort Level

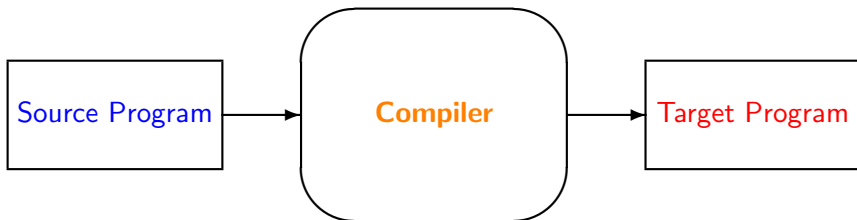
The effort required by this course is **High**

but so are the rewards:

- Hands on experience in large-scale programming (this semester: in Python).
- In-depth knowledge of *how* programs written in high-level languages are translated and executed.

Course Structure

- Compilers in this course will be written in **Python**.
 - Python is one of the easiest languages to pick up. I will assume you have sufficient ability to become effective in Python quickly.
- You will write a series of modules that will finally compose to become a full-fledged compiler for an fairly complex Object-Oriented language.



Course Structure

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Python

Python is deceptively easy-to-learn programming language that has

- Imperative features: local and global variables and functions.
- Data structures: transparent support for lists, dictionaries, etc.
- Objects: with a dynamic class system
- Higher-order functions: support for programming in a functional style
- Automatic memory management
- Tons of useful libraries
- Syntax that is a bit unusual, but one that makes sense as you get used to the language.

Python can be (and has been) used for a wide range of programming tasks from scripting to numerical packages.

Instructional Support

All course material, including homework handouts, notes, etc. will be posted on the course web site.

We will use the **Piazza** for

- **Course Announcements** (check these regularly)
- **Course Discussion Board**

We will use **Blackboard** for

- **Feedback and Grades** on assignments

Assignments will be submitted via **git**.

Course Discussion Board

- Use this to discuss any course-related material: lectures, homework problems, exams, etc.
- If you have any questions on the material, first check to see if any one else had the same question as you have, and whether the question has been answered already; otherwise post the question on the board.
- We'll try to answer all questions on the board asap: within 24 hrs for normal days, and much quicker near exam/homework deadlines.

Questions

How to contact course staff:

- Staff contact information is on the web page/Piazza/Blackboard.
- Post your question on the discussion board.
- Meet me during my office hours (or fix an appointment).
- Send me email. (Post on discussion board unless the question is personal.)
- Contact TA (to be announced) by visiting him/her during office hours or by email.
- Grading related questions: send email to the TA (who grades your homework assignments) first; if unresolved, send me email.

Immediate Action Required

- Install Python on your machine if you don't already have it. We will use Python 2 in this course; **not Python 3**.
- Read HW preparation instructions on course web page (under Homeworks) and send me email to set up your Git repository.