Brief History of Programming Languages


1. First high-level languages
   - Computers powerful enough to compile programs

2. Prototypes for each of the language paradigms (imperative, functional, logic)
   - ALGOL (ALGOirthmic Language)
   - BASIC
   - Fortran (FORmula TRANslator)
   - Lisp (LISt Processor)
   - Prolog
   - Smalltalk

3. Focus on programming large-scale systems
   - Pascal
   - Ada
   - C
   - C++

4. Internet Era
   - Matlab
   - R
   - Python
   - PHP
   - Javascript
   - Ada 95
   - Visual Basic
   - Java
   - Javascript

5. Parallel (e.g. taking advantage of multi-cores)
   - Matlab
   - R
   - Python
   - PHP
   - Javascript
   - Ada 95
   - Visual Basic
   - Java
   - Swift
   - Julia

6. Integrating languages, e.g. Jupiter

First high-level languages
Computers powerful enough to compile programs

1960’s

1950’s

1970’s

1980’s

1990’s

2000’s

2010’s

2020’s

First high-level languages
Computers powerful enough to compile programs

Prototypes for each of the language paradigms (imperative, functional, logic)

Focus on programming large-scale systems

Internet Era

IDE’s, garbage collection, scripting languages

Parallel (e.g. taking advantage of multi-cores)

Integrating languages, e.g. Jupiter

Fortran (FORmula TRANslator)

ALGOL (ALGOrithmic Language)

BASIC

C

C++

Smalltalk

Lisp (LISt Processor)

Pascal

Ada

C++

Java

Matlab

Javascript

Ada 95

Visual Basic

Java

Python

PHP

Julia

Swift

R

Jupiter

1994

1998

2003

2008

College years
Software Engineer
Grad School

Colby
• New languages are developed to accomplish specific tasks or to take advantage of new computing power or technologies

• Over your career, you will likely need to learn many languages (some old, some new)

• Learning new languages is faster if you understand the principles behind them (what is common, what the technical terms are, how they can be formally defined)

• C is here to stay, is close to the hardware (which means it can be super efficient), so it is important to learn it
What do we do in CS333?

✦ Generally speaking, we do two things in CS333

• Learn C language

• Inspect the fundamentals of programming languages

  ‣ Use C Lite (a lite version of C) to study the theoretical problems

  ‣ Use C/Java/Python for the practical problems

✦ Ultimate goal: know how to learn a new programming language easily and write more efficient programs
Coursework & Evaluation

- **Weekly Projects: 45%**

  - **Eight projects**: five of them are bi-weekly projects, and the rest three are weekly projects.
  
  - The usual deadline is the *Wednesday midnight*.
  
  - Every project has **two parts**: C language part (individual work) and the selected language part (can collaborate with a partner, beginning with Project 2).
  
  - *Late submission* will receive a **maximum score of 26/30**.
  
  - *One four-day extension* for you to use at your discretion over the semester (except the final project).
  
  - We will be using Google Sites for your reports.
Coursework & Evaluation (cont.)

🔹 A handful of homework assignments: 10%

• Assigned some Wednesdays, and the deadline is the following *Friday at the beginning of the class*.

• *Hard deadline*. We discuss the solution in Friday's class, so late submission will not be accepted.

• *Graded in a binary fashion*: hand in a reasonable attempt before deadline, you get a 1, otherwise a 0.

• Email your homework to me with the subject in the format “*CS333 HW#*” (e.g., CS333 HW1).
A handful of quizzes: 15%

- 10-15 minute in class quiz, on some Fridays
- Each quiz may be made up when a prior request is made or there is a documented health issue. Please contact me immediately in the event of illness and other unforeseen circumstances, we will work out accommodations.
- The lowest quiz grade will be dropped.
Coursework & Evaluation (cont.)

✧ Final Presentation: 20%

- Group or individual presentations about the language you teach yourself this semester
- In person during the last week of class or during the final exam period
- Video recording

✧ Participation: 10%

- You are expected to attend every lecture and actively join the class discussions
- If you have to miss one or more lectures for any reason, please let me know in advance. I'm happy to work with you and direct you to the lecture notes and coursework.
- Lecture notes will be posted in the Notes section of the course webpage few hours after the class.
- Don’t hesitate to come to my office hours or email me. I'm happy to help if you let me know your questions.
- Participation also includes asking for help from the TAs.
How to Succeed

✦ **Projects:** Start working on the projects as early as possible. Ask the TA and me for help if you need. Talk with your peers about the course concepts.

✦ **Homework:** Homework assignments help you self-check your understanding of the course contents and prepare you better for the quizzes. You are strongly encouraged to try out the homework questions before reading my homework solutions.

✦ **Quizzes:** Study for the quizzes by doing the homework assignments. The lowest quiz grade will be dropped. So, your grade won't be affected by that single underperformed quiz.

✦ **Participation:** Be active in class, asking questions and joining discussions. Come to office hours. Ask Stephanie or TAs for help.

✦ **Final Presentation:** Learn your selected language and C language well enough during the semester to feel comfortable talking about these languages. Start working on the exam early after it's assigned.
Help Outside of Class

✧ Stephanie’s Office Hours

- Monday noon - 1pm (Davis 112 or Davis 122)
- Wednesday 1-4pm (most likely Davis 122)
- Thursday 1-3pm (Davis 112)

✧ TA Session in Davis 122

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<thead>
<tr>
<th>Date, Time</th>
<th>TA (Email)</th>
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<tbody>
<tr>
<td>Tuesday 7:00 - 10:00 pm</td>
<td>Carly Levinsohn</td>
</tr>
<tr>
<td>Wednesday 7:00-10:00 pm</td>
<td>Ian Delahauntly</td>
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The entryway to the course webpage: Go to: cs.colby.edu; Click: CS333 link

You can find all the course information, lecture notes, assignments, and more on the course webpage.