

## Abstract

There has been extensive research about the CS 1 course. Much less has been written about the CS 2 course, which is often a gateway course for CS majors. CS 2 classes often reflect a second semester course in programming, yet when studying this course many universities have different purposes for this course. This poster shows the programming languages used in CS 2 courses by the CS programs on the 28<sup>th</sup> Reid List of First Programming Languages. The languages used in CS 1 and CS 2 courses are discussed and the transitions between languages as students progress from their first course to their second. The analysis will then be discussed.

## Richard Reid's List

Richard Reid tracked programming languages used in computing programs in the 1990s until his retirement in 1999. Frances Van Scoy continued compiling the list until 2006. Siegfried et al. updated the list in 2011, 2015 and 2019. Using the Reid List as a model, we surveyed Reid List members and discovered the languages they are using in CS 2.

## Methodology – Which Colleges and Universities?

Various colleges and universities were added to the Reid List and removed from before Reid's retirement in 1999. Frances Van Scoy compiled 21<sup>st</sup> through 25<sup>th</sup> Lists. The colleges and universities on the 24<sup>th</sup> List were surveyed on subsequent lists.

## Methodology – Which Language?

After ascertaining the CS1 and CS2 courses, the programming languages were determined by:

- Examining the syllabus
- Checking the bookstore's website for a textbook adoption
- Calling the bookstore
- Members of the department were contacted to obtain this information.

## Trends

Faculty replies to e-mail provided additional information. A few trends appeared:

- In CS2:**
- Not all CS2 courses are the same; some are OOP courses, some are data structures courses
  - There was a strong preference for teaching CS2 in an object-oriented language
  - Programs that had switched CS1 to Python usually hadn't changed their CS2

- In CS1:**
- Many Programs Used Different Programming Languages after the Introductory Course
  - Movement Away From Java
  - Movement To Java
  - Different Themes and Languages in the Introductory Course
  - Language Should Not Matter
  - There were various reasons for Choosing a Particular Language

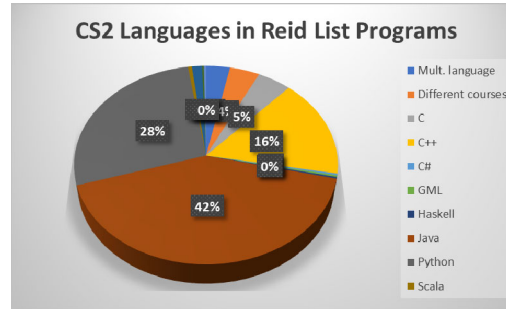


Figure 1 - Languages used in CS2 Courses at Reid List Schools

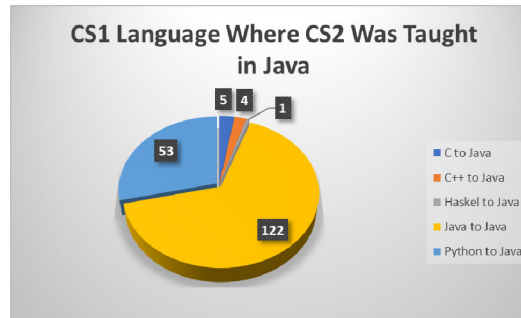


Figure 2 - Languages used in CS1 Courses Where CS2 Is Taught using the Java Programming Language

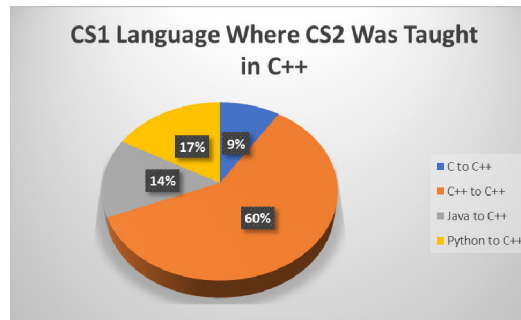


Figure 3 - Languages used in CS1 Courses Where CS2 Is Taught using the C++ Programming Language

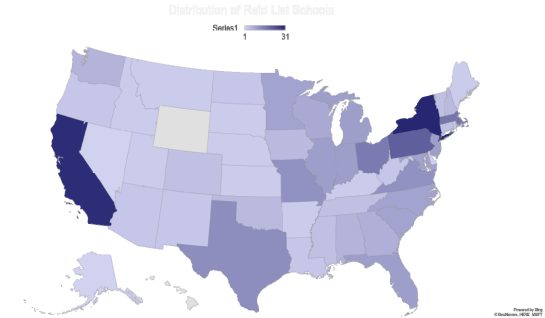


Figure 4 - Geographic Distribution of Reid List Schools. Darker colors Indicate More Reid List Schools In That State

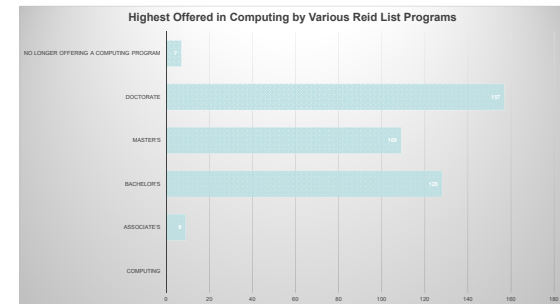


Figure 5 - Reid List Schools by Highest Degree Offered in Computing

## Conclusions

- 72% of Reid List schools use Java in their CS2 course
- Python was the second most common CS2 language with only 8% of the Reid List schools using it
- Python's popularity in CS1 has grown at the expense of Java.
- 88% of the Reid List schools use one of only 4 languages: Java, Python, C++, C in CS1.
- Other languages may be used later in the curriculum in most schools.

## Plans For Further Study

The survey for the 29<sup>th</sup> Reid List took place during Spring and Summer 2019. The following information is being collected:

- Paradigm used in CS1
- Language previously used in CS 1 and CS2 and reason for changing

## Reference

[1] Reid Lists 6 - 24, <https://home.adelphi.edu/~siegfried/csReidList>

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