What Next?
Python, Java, CSE Courses

Ruth Anderson

UW CSE 160

Autumn 2022

We want your feedback!

- Please fill out evaluations for lecture AND for section
  - The link for lecture is here.

There is more to learn!

- You have come a long way from the first day of class!
  - But there is more to learn!
- Data analysis, data science, and data visualization
- Scaling up:
  - Larger and more complex programs
  - Algorithm selection
  - "Big data": out-of-memory data, parallel programming, …
- Ensuring correctness
  - Principled, systematic design, testing, and programming
  - Coding style
- Managing complexity
  - Data structures and algorithms
  - Programming tools: testing, version control, debugging, deployment
  - Graphical User Interfaces (GUIs), user interaction
  - Working in a team

CSE Intro Courses in Java

- Visit this link for more information.
- Old sequence: CSE 142 & CSE 143
- New sequence: CSE 121, CSE 122, CSE 123
- CSE 121 – meant for students with NO prior programming experience
- Students use guided self-placement to decide which course to take.
- Most likely CSE 122 is correct course to take after CSE 160.

More UW Computer Science Courses!!

Most up to date list of pre-requisites are in the Course Catalog: link

You could take any of these now!

- [23wi & 23sp] **CSE 163** Intermediate Data Programming
- [every quarter + summer] **CSE 122** Programming in Java
- [23sp] **CSE 154** Web Programming
- [23wi & 23sp] **CSE/STAT 416** Intro to Machine Learning (requires Stat 311/390)
- [every quarter] **INFO/STAT/CSE 180** Intro to Data Science (some Math pre-req)

Require **CSE 123** or **CSE 143**:

- [every quarter] **CSE 373** Data Structures & Algorithms (all year)
- [23wi & 23sp] **CSE 374** Intermediate Programming Concepts & Tools
- [23sp] **CSE 412** Intro to Data Visualization (requires CSE 143 or CSE 163)
- [23wi & 23sp] **CSE 414** Databases (requires CSE 143 or CSE 163)

Require **CSE 373**:

- **CSE 410** Computer Systems (Operating Systems & Architecture)
- **CSE 413** Programming Languages and their Implementation
- **CSE 415** Artificial Intelligence
- **CSE 417** Algorithms and Complexity

More Info on UW CSE Courses!!

- Which Course should I take:
  - https://courses.cs.washington.edu/courses/cse160/22au/which-class/

- Intro CSE courses:
  - https://www.cs.washington.edu/academics/ugrad/nonmajor-options/intro-courses

More Python Resources

- More Python practice:
  - https://courses.cs.washington.edu/courses/cse160/22au/computing/
- Runestone – free interactive textbooks:
  - How to Think Like a Computer Scientist
    (the "Try" text we used this quarter)
    https://runestone.academy/runestone/books/published/thinkcspy/index.html
  - Problem Solving with Algorithms and Data Structures using Python
    https://runestone.academy/runestone/static/pythonds/index.html

Why the Python language?

	Python	Excel	MATLAB	R	C/C++	Java
Readable syntax	☺	☹	☹	☹	☹	☺
Easy to get started	☺	☺	😐	☹	☹	☹
Powerful libraries	☺	😐	☺	☺	😐	☺

Comparison of Python with Java

- Python is better for learning programming
- Python is better for small programs
- Java is better for large programs

Main difference: dynamic vs. static typing

- Dynamic typing (Python): put anything in any variable
- Static typing (Java):
  - Source code states the type of the variable
  - Cannot run code if any assignment might violate the type