

CS3101

Lecture 4: Python & Jupyter

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Intro

Goal: To get you comfortable with basic functionality of Python to help make your life easier.

Python



- ▶ Python, a high-level programming language, has established itself as one of the most popular and versatile languages.
- ▶ Python's design philosophy revolves around **easy-to-read code**.
- ▶ This readability makes Python particularly appealing for beginners and professionals alike

Key features of Python

1. **Easy to learn and use:** Its straightforward syntax mimics natural language, allowing you to focus on learning programming concepts rather than complex syntax.
2. **Versatile:** Used in web development, data analysis, AI, scientific computing, and more.
3. **Interpreted language:** Execute code line by line in the Python interpreter, simplifying debugging and making it ideal for quick prototyping.
4. **Extensive libraries and communities:** Rich set of libraries and frameworks that simplify tasks in various domains. Large and active communities to help address needs and fix problems.

Vast Ecosystem of Third-Party Packages (Modules)

- ▶ Python's ecosystem includes a variety of powerful tools for different tasks.
 - ▶ **Web development:** Modules like Django and Flask.
 - ▶ **Scientific computing and data analysis:** Tools like NumPy, SciPy, pandas, and Matplotlib.
 - ▶ **Machine learning and AI:** Libraries such as TensorFlow and Scikit-learn.
- ▶ Each of these modules has a community behind it—often found on GitHub or Slack.

Working with Python via Jupyter



- ▶ Offers an interactive environment for various programming languages, especially Python, as well as R, Julia, etc.