IPython 介绍

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简介

- IPython is a command shell for interactive computing in multiple programming languages, originally developed for the Python programming language, that offers introspection, rich media, shell syntax, tab completion, and history.
- IPython provides the following features:
  1. Interactive shells (terminal and Qt-based).
  2. A browser-based notebook with support for code, text, mathematical expressions, inline plots and other media.
  3. Support for interactive data visualization and use of GUI toolkits.
  4. Flexible, embeddable interpreters to load into one's own projects.
  5. Tools for parallel computing.

Magic commands

1. 以非常简洁的方式实现 python 中常见功能
2. 以百分号开始
3. 分为 line magic 和 cell magic

```
# use python function
import os
os.getcwd()

# use ipython magic
%pwd
"""""""
```

常见 magic 命令列表

1. `ls` : 列出文件
2. `lsmagic` : 列出所有 magic 命令
3. `pwd` : 当前文件夹
4. `cd :` 修改当前文件夹
5. `quickref` : 查看 ipthon 帮助
6. `magic :` 查看 magic 帮助

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2 Jupyter Notebook

Introduction

1. The Jupyter Notebook is an interactive computing environment that enables users to author notebook documents that include:
   - Live code
   - Interactive widgets
   - Plots
   - Narrative text
   - Equations
   - Images
   - Video
2. These documents provide a complete and self-contained record of a computation that can be converted to various formats and shared with others using email, Dropbox, version control systems (like git/GitHub) or nbviewer.jupyter.org.

Components

- The Jupyter Notebook combines three components:
  1. The notebook web application: An interactive web application for writing and running code interactively and authoring notebook documents.
  2. Kernels: Separate processes started by the notebook web application that runs users' code in a given language and returns output back to the notebook web application. The kernel also handles things like computations for interactive widgets, tab completion and introspection.
  3. Notebook documents: Self-contained documents that contain a representation of all content visible in the notebook web application, including inputs and outputs of the computations, narrative text, equations, images, and rich media representations of objects. Each notebook document has its own kernel.

Starting the notebook server

- You can start running a notebook server from the command line using the following command:

```
jupyter notebook
```

Notebook documents

- Notebook documents contain the inputs and outputs of an interactive session as well as narrative text that accompanies the code but is not meant for execution. Rich output generated by running code, including HTML, images, video, and plots, is embeddeed in the notebook, which makes it a complete and self-contained record of a computation.
- These documents are internally JSON files and are saved with the .ipynb extension.
- Notebooks can be exported to different static formats including HTML, reStructeredText, LaTeX, PDF, and slide shows (reveal.js) using Jupyter′ s nbconvert utility.

Cells

- Notebooks consist of a linear sequence of cells.
- A cell is a multiline text input field, and its contents can be executed by using `Shift-Enter` .
- There are four basic cell types:
  1. Code cells: Input and output of live code that is run in the kernel
  2. Markdown cells: Narrative text with embedded LaTeX equations
  3. Heading cells: 6 levels of hierarchical organization and formatting
  4. Raw cells: Unformatted text that is included, without modification, when notebooks are converted to different formats using nbconvert
- Every cell starts off being a code cell, but its type can be changed.

Browser Compatibility

- The Jupyter Notebook aims to support the latest versions of these browsers:
  1. Chrome
  2. Safari
  3. Firefox

Docs

https://jupyter-notebook.readthedocs.io/en/stable/