

创建 Pandas Series

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pandas: powerful Python data analysis toolkit

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Binary Installers: <http://pypi.python.org/pypi/pandas>

Source Repository: <http://github.com/pandas-dev/pandas>

Issues & Ideas: <https://github.com/pandas-dev/pandas/issues>

Q&A Support: <http://stackoverflow.com/questions/tagged/pandas>

Developer Mailing List: <http://groups.google.com/group/pydata>

pandas is a Python package providing fast, flexible, and expressive data structures designed to make working with "relational" or "labeled" data both easy and intuitive. It aims to be the fundamental high-level building block for doing practical, **real world** data analysis in Python. Additionally, it has the broader goal of becoming **the most powerful and flexible open source data analysis / manipulation tool available in any language**. It is already well on its way toward this goal.

pandas is well suited for many different kinds of data:

- Tabular data with heterogeneously-typed columns, as in an SQL table or Excel spreadsheet
- Ordered and unordered (not necessarily fixed-frequency) time series data.
- Arbitrary row and column labels
- Any other form of observational / statistical data sets. The data actually need not be labeled at all

Pandas series 是一个像数组一样的一维对象，可以存储很多类型的数据，例如数字或字符串。Pandas Series 和 NumPy ndarray 之间的主要区别之一是你可以为 Pandas Series 中的每个元素分配索引标签。换句话说，你可以为 Pandas Series 索引指定任何名称。Pandas Series 和 NumPy ndarrays 之间的另一个明显区别是 Pandas Series 可以存储不同类型的数据。

我们先在 Python 中导入 Pandas。通常，我们使用 `pd` 导入 Pandas。因此，你可以在 Jupyter Notebook 中输入以下命令，导入 Pandas：

```
import pandas as pd
```

我们先创建一个 Pandas Series。你可以使用 `pd.Series(data, index)` 命令创建 Pandas Series，其中 `index` 是一个索引标签列表。我们使用 Pandas Series 存储一个购物清单。我们将使用食品条目作为索引标签，使用购买数量作为数据。



```
import pandas as pd

# We create a Pandas Series that stores a grocery list
groceries = pd.Series(data = [30, 6, 'Yes', 'No'], index = ['eggs', 'apples', 'milk', 'bread'])

# We display the Groceries Pandas Series
groceries
```

```
eggs      30
apples     6
milk      Yes
bread     No
dtype: object
```

可以看出 Pandas Series 的显示方式为：第一列是索引，第二列是数据。注意，数据的索引不是从 0 到 3，而是采用我们设置的食物名称，即鸡蛋、苹果、等...此外注意，我们的 Pandas Series 中的数据既包括整数，又包括字符串。

和 NumPy ndarray 一样，通过 Pandas Series 的一些属性，我们可以轻松地获取 series 中的信息。我们来看一些属性：

```
# We print some information about Groceries
print('Groceries has shape:', groceries.shape)
print('Groceries has dimension:', groceries.ndim)
print('Groceries has a total of', groceries.size, 'elements')
```

```
Groceries has shape: (4,)
Groceries has dimension: 1
Groceries has a total of 4 elements
```

我们还可以单独输出 Pandas Series 的索引标签和数据。如果你不知道 Pandas Series 的索引标签是什么，这种方法就很有用。



```
print('The data in Groceries is:', groceries.values)
print('The index of Groceries is:', groceries.index)
```

The data in Groceries is: [30 6 'Yes' 'No']

The index of Groceries is: Index(['eggs', 'apples', 'milk', 'bread'], dtype='object')

如果你处理的是非常庞大的 Pandas Series，并且不清楚是否存在某个索引标签，可以使用

`in` 命令检查是否存在该标签：

```
# We check whether bananas is a food item (an index) in Groceries
x = 'bananas' in groceries

# We check whether bread is a food item (an index) in Groceries
y = 'bread' in groceries

# We print the results
print('Is bananas an index label in Groceries:', x)
print('Is bread an index label in Groceries:', y)
```

Is bananas an index label in Groceries: False

Is bread an index label in Groceries: True

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