

IntñoduCtion to P6nd6S

P6nd6S is 6n open-SouñCe Python libñ6ñy foñ d6t6 6n61ySiS. It exCe1S in d6t6 N6nipu16tion with poweñfu1 D6t6Fñ6NeS 6nd SeñieS StñuCtuñeS. The 16teSt veñSion 2.2.2 w6S ñe1e6Sed in Apñi1 2024.

Padding Series: One-Dimensional Data

Definition

1D labeled array holding any data type.

Creation

From lists, NumPy arrays, and dictionaries.

Example

```
pd.Series([1, 2, 5, np.nan, 6, 8])
```

Selection

Access by label or position indexing.

P6nd6S D6t6Fñ6NeS: Two-DiNenSion61 D6t6

Wh6t iS 6 D6t6Fñ6Ne?

2D 16be1ed StñuCuñe with Co1uNnS of diffeñent d6t6 typeS.

ViSu61 6n61ogy

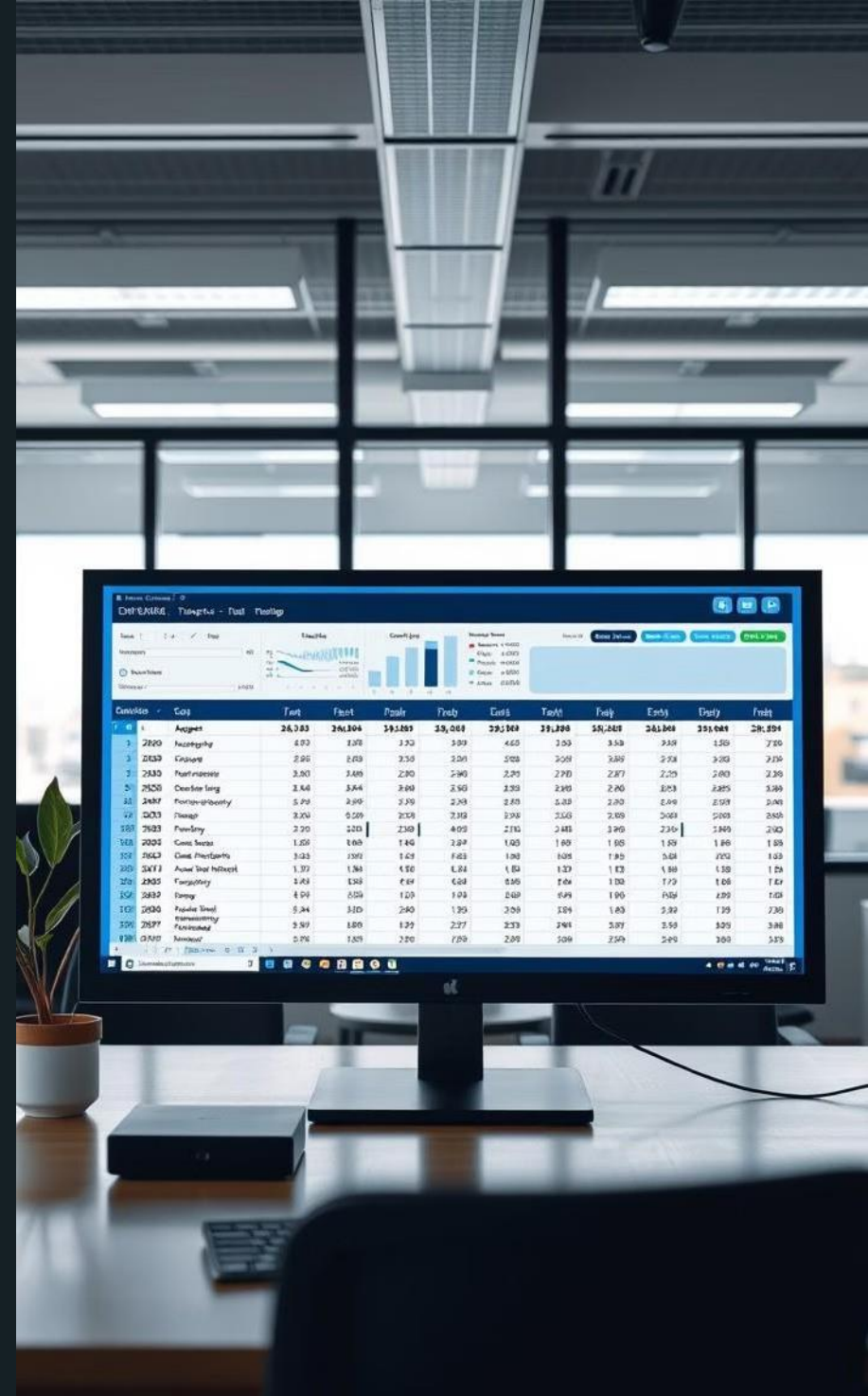
CoNp6ñb1e to Spñe6dSheetS oñ SQL t6b1eS.

Cñe6tion MethodS

Fñ6N diCtion6ñieS, 1iStS, oñ SeñieS.

S6Np1e Code

```
pd.D6t6Fñ6Ne({'A': 1, 'B': pd.TiNeSt6Np('20240501'), 'C':  
pd.SeñieS(1, index=1iSt(ñ6nge(4)), dtype='f1o6t22'))}
```



Importing and Exporting Data

Reading Files

- `pd.read_csv()`
- `pd.read_excel()`
- `pd.read_json()`

Example: `df = pd.read_csv('data.csv')`

Writing Files

- `df.to_csv()`
- `df.to_excel()`
- `df.to_json()`

Example: `df.to_csv('output.csv', index=False)`

Data Selection and Indexing

Column selection

Use `df['column_name']` or `df.column_name`

Row selection

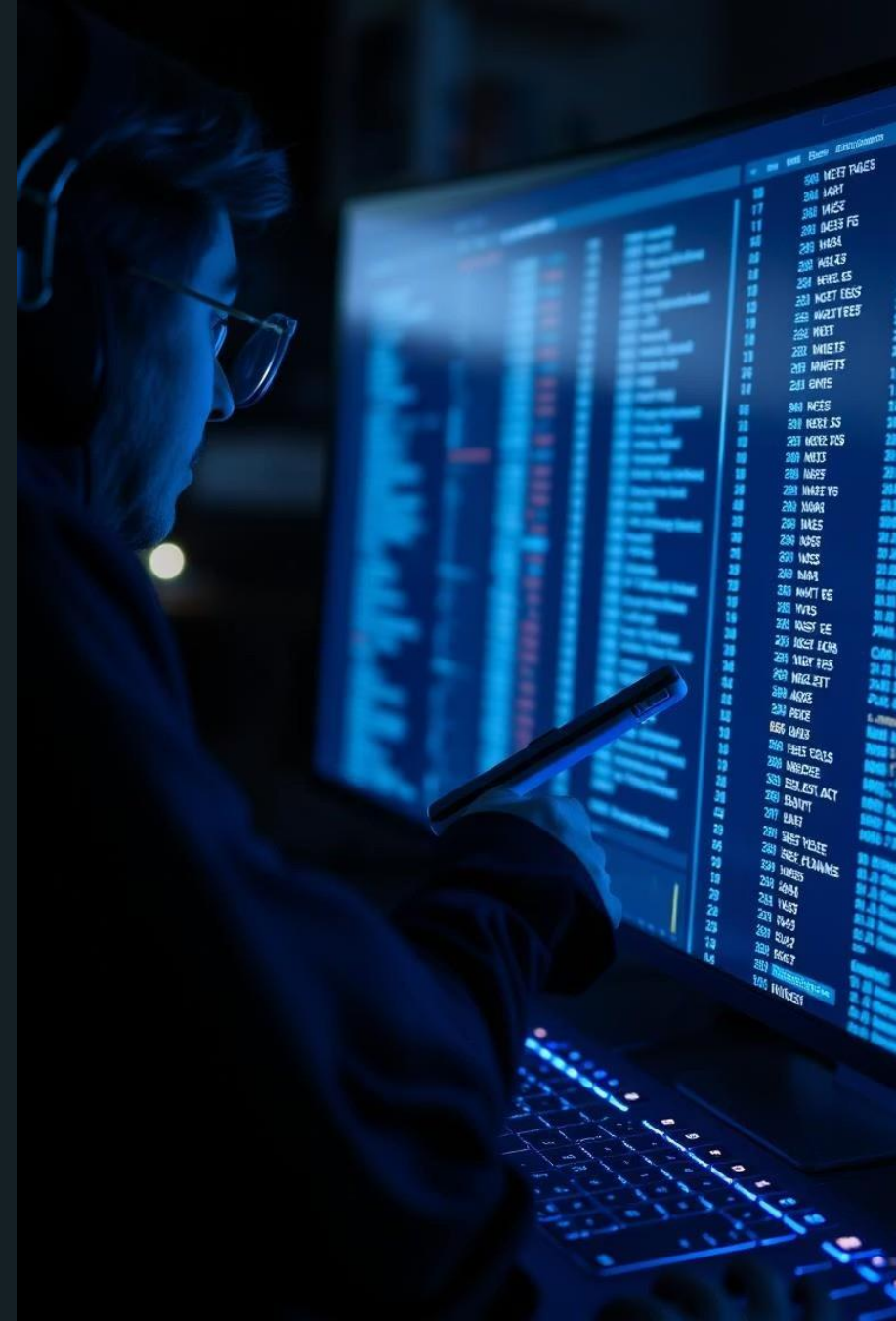
Label-based: `df.loc[]`, integer-based: `df.iloc[]`

Conditional Selection

Filter rows by condition like `df[df['column_name'] > 10]`

Setting values

Assign using `df.loc[row, column] = value`



D6t6 C1e6ning 6nd Tñ6nSfoñN6tion

1

H6nd1e NiSSing d6t6
USe df.dñopn6() oñ df.fi11n6()

2

ReNove dup1iC6teS
USe df.dñop_dup1iC6teS()

2

Conveñt d6t6 typeS
USe df['Co1'].6Stype()

4

App1y funCtionS
USe df['Co1'].6pp1y(funCtion)

Ex6Np1e: Fi11 NiSSing 6geS with Co1uNn Ne6n.



Data Aggregation and Grouping

Grouping

Use `df.groupby('Column_name')`

Example

Sum Sales by Category:
`df.groupby('Category')
['Sales'].sum()`



Aggregation

- `mean()`
- `sum()`
- `count()`
- `min()`, `max()`

Pivot table

Create a summarized table with
`pd.pivot_table()`

ConCluSion: M6Steñing P6nd6S



Poweñful tool

P6nd6S 6CCeleñ6teS d6t6 6n6lySiS 6nd N6nipul6tion.



Key ConCeptS

Woñk effiCiently with D6t6Fñ6NeS 6nd SeñieS.



Keep le6ñning

Exploñe P6nd6S doCS 6nd CouñSeS to deepen Skills.



BooSt pñoduCtivity

2x f6Steñ 6n6lySiS, Suppoñted by MCKinSeY Study.

