

# Pandas Basics

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## 1. What is Pandas?

Pandas is a Python library used for data analysis and data manipulation. It helps in handling structured data easily.

**Example:**

```
import pandas as pd
```

## 2. What is a DataFrame?

A DataFrame is a 2-dimensional table-like data structure with rows and columns in Pandas.

**Example:**

```
import pandas as pd
```

```
data = {  
    "Name": ["Anu", "Rahul"],  
    "Age": [20, 22]  
}  
df = pd.DataFrame(data)  
print(df)
```

## 3. Difference between Series and DataFrame.

Series	DataFrame
One-dimensional	Two-dimensional
Single column	Multiple columns
Like a list	Like a table

**Example:**

## **Series (1D)**

```
import pandas as pd
s = pd.Series([10, 20, 30])
print(s)
```

## **DataFrame (2D)**

```
df = pd.DataFrame({
    "Marks": [80, 85, 90],
    "Grade": ["A", "A+", "A"]
})
print(df)
```

### **4. What is CSV?**

CSV stands for Comma Separated Values.  
It is a file format used to store tabular data in plain text.

#### **Example CSV file (data.csv):**

```
Name,Age
Anu,20
Rahul,22
```

### **Reading CSV using Pandas**

```
import pandas as pd
df = pd.read_csv("data.csv")
print(df)
```

### **5. Why is Pandas important for AI?**

Pandas is important for AI because it:

- Handles large datasets
- Cleans and preprocesses data
- Makes data ready for machine learning models

#### **Example: Data Cleaning**

```
import pandas as pd9

df = pd.DataFrame({
    "Age": [20, None, 22]
})

df["Age"].fillna(df["Age"].mean(), inplace=True)
print(df)
```