```
# Creating Series from a dictionary
                                                                                          # DataFrame
                                                                                          # Creating DataFrame from a NumPy array
                                                                                          # Converting between Series, DataFrames, and
                                                                                          NumPy arrays
                                        1. Fundamentals
                                                                                          # 3. Basic Operations on DataFrames and Series
                                                                                          # Indexing and Selecting Data
                                                                                          # Creating a sample DataFrame
                                                                                          # Selecting a column
                                                                                          # Selecting a row by label
                                                                                          # Selecting a row by position
                                                                                          # Selecting multiple columns
                                                                                          # Basic Operations and Functions
                                                                                             - Applying function to column
                                                                                             - Arithmetic operations, and
                                                                                             - Broadcasting
                                                                                          # Adding a new column
                                                                                          # Handling Missing Data
                                                                                            - Identifying,
                                                                                            - removing, and
                                                                                            - filling missing data (NaN values)
                                                                                          # Creating a DataFrame with missing data
                                                                                          Data Loading and Saving
                                                                                          # Reading CSV File
                                                                                          # Reading Excel File
                                                                                          # Reading JSON File
                                                                                          # Reading from SQL File
                                                                                          # Writing data to different files formats
                                                                                          Data Inspection: Viewing and Inspecting Data
                                                                                          # Viewing top and bottom rows of DataFrame
                                                                                          # Getting summary statistics
                                                                                          # Inspecting DataFrame information
                                                                                          # Viewing DataFrame columns
                                                                                          # Viewing DataFrame index
                                        2. Data Wrangling and Clearning
                                                                                          Data Cleaning: Handling Missing Data
                                                                                          # Identifying Missing Data
                                                                                          # Removing missing data
                                                                                          # Filling missing data
                                                                                          # Data transformation and normalization
                                                                                          # Normalizing data using min-max scaling
                                                                                          # Handling duplicates
                                                                                          Data Merging and Concatenation
                                                                                          # Merging DataFrames
                                                                                          # Concatenating DataFrames
                                                                                          # Joining DataFrames
                                                                                          Data Analysis and Aggregation
                                                                                          # groupby operations
                                                                                          # Creating a Sample DataFrame
                                                                                          # Grouping by a single column
                                                                                          # Applying aggregating functions to groups
# Grouping by Multiple Columns
                                                                                          # Applying aggregate functions to groups with
                                                                                          multiple columns
                                                                                          Pivot Table for data summarization
                                        3. Data Manipulation
                                                                                          # Creating a pivot table
                                                                                          # Advanced pivot table operations
                                                                                          Time Series Analysis
                                                                                          Handling and manipulating time series data
                                                                                          # Creating a time series
                                                                                          # Setting date as index
                                                                                          # Resampling time series data
                                                                                          # Handling missing data in time series
  Pandas
                                                                                          Advanced Data Manipulation
                                                                                          Working with MultiIndex
github.com/SagarChhabriya
                                                                                          # Creating a MultiIndex DataFrame
                                                                                          # Accessing elements in a MultiIndex DataFrame
                                                                                          # Advanced reshaping with stack and unstack
                                                                                          Performance Optimization
                                                                                          Vectorization
                                                                                          # Creating a large DataFrame
                                                                                          # Applying a vectorized operation
                                                                                          # Using apply method (non-vectorized)
                                                                                          Performance comparison
                                                                                          # Using numba for performance optimization
                                        4. Advanced Data Analysis
                                                                                          Integration with Other Libraries
                                                                                          # Using NumPy functions with pandas
                                                                                          DataFrames
                                                                                          # Creating a simple plot with pandas and
                                                                                          Matplotlib
                                                                                          # Using pandas DataFrame with Scikit-Learn
                                                                                          # Applying a linear regression model
                                                                                          Handling Missing Data
                                                                                          # Working with masked arrays
                                                                                          # Handling NaNs
                                                                                          # Filling NaNs
                                                                                          # Dropping NaNs
                                                                                          Input/Output Operations
                                                                                          # Reading a CSV file
                                                                                          # Writing a DataFrame to a CSV file
                                                                                          # Loading data from text and CSV files
                                                                                          # Saving and loading NumPy arrays
                                                                                          Performance Optimization
                                                                                          # Creating a DataFrame with large amounts of
                                                                                          data
                                                                                          # Converting data types to reduce memory
                                                                                          # Using `eval()` and `query()` for performance
                                                                                          # Parallel processing with Dask
                                        5. Performance Optimization
                                                                                          # Performing computations with Dask
                                                                                          Working with Large Datasets
                                                                                          # Chunking large files
                                                                                          # Reading the large CSV file in chunks
                                                                                          # Integration with NumPy
                                                                                          # Creating a DataFrame from a NumPy array
                                                                                          # Performing NumPy operations on DataFrame
                                                                                          # Integration with SQL databases
                                                                                          # Creating an SQLite database and table
                                                                                          # Reading data from SQL database into a
                                                                                          DataFrame
                                                                                          # Integration with other data analysis tools
                                                                                          # Integration with Matplotlib
                                                                                          # Integration with Seaborn
                                                                                          # Customizing options and settings
                                                                                          # Display settings
                                                                                          # Custom functions and pipelines
                                                                                          # Creating a custom function to normalize data
                                                                                          # Customizing options and settings
                                                                                          # Display settings
                                        6. Advanced Topics
                                                                                          # Custom functions and pipelines
                                                                                          # Creating a custom function to normalize data
                                                                                          # Creating a custom pipeline
```

1. What is Pandas? # Installation and setup

2. Pandas Data Structures

Series: A one-dimensional labeled array

capable of holding any data type. # Creating Series from a list

Creating a pipeline with standard scaling

Registering the custom data type

Using 'pd.api.extensions' for custom data types

Creating a DataFrame with custom data type # Extending DataFrames with custom methods

Pandas Extensions