



CORE PYTHON



LIST – [int / float / str] → A = [1 , 2 , 3.4 , 3.4 , 'a' , 'bcd']

→ Collection of data-types, Mutable : Values can be changed , Ordered : Values order will be as it is , Changeable , Homogeneous Data, Allows duplicate values.

TUPLE – (int / float / str) → B = (1 , 2 , 3.4 , 3.4 , 'a' , 'bcd')

→ Immutable : Values can't be changed , Ordered : Values order will be as it is , Unchangeable, Heterogeneous Data, Allows duplicate values.

SET – { int / float / str } → C = { 1 , 2 , 3.4 , 5.6 , 'a' , 'bcd' }

→ Values can't be changed but new values can be added , Unordered : Values order may change , Arrange the items in ascending order, Doesn't allow duplicate values, Un-indexed.

DICTIONARY – { Key : Value } → D = { K1 : 1 , K2 : 2 , K3 : 3.4 , K4 : 5.6 , K5 : 'ab' , K6 : 'bcd' }

→ Mutable , Unordered , Doesn't allow duplicate keys , Indexed.

LIST FUNCTIONS

A.append(55) - To add a new value at the end of the list.

A.clear() – To clear/delete/blank a list.

DICTIONARY FUNCTIONS

D.clear() – To delete the dictionary.

E = D.copy() – To copy a dictionary.

LAMBDA – fun_name = lambda parameters : single line statement ,

Ex : sum = lambda a , b : a + b

ENUMERATE FUNCTION

It is used to display output with index. We can enumerate as list, tuple, set, dictionary.

Syntax : enumerate(list)

Ex : list (enumerate ['apple' , 'mango' , 'orange'])



NUMPY

1. Import numpy as np

2. 1-D Array - A = np.array([1,2,3,4,5])

To create a One-dimensional array.

3. **2-D Array** - `A = np.array([[1,2,3],[4,5,6]])` # To create a Two-dimensional array.
4. **3-D Array** - `A = np.array([[[1,2,3],[4,5,6],[7,8,9]]])` # To create a Three-dimensional array.
5. **np.random()** - `A = np.random.random()` # Create an array with random values.
`A = np.random.random((2,3))`
6. **np.linspace ()** - `A = np.linspace (1,100,12)` # It returns evenly spaced values within a given interval.
`np.linspace(start, stop , num=50, endpoint=True, retstep=True, dtype=None)`
7. **Array Indexing** - `a[1:2,1:2,1:2]`
Since arrays may be multidimensional, we must specify a slice for each dimension of the array.
8. **random()** -

`np.random.random(5)` # It takes only one number x(5 here) & displays values equal to number quantity.

`np.random.randint(5,20,4)` # It displays given no. of values(4 here) between given input numbers 5 & 20.

`np.random.randn(2,3,4)` # It displays values (+/-) in the form of arrays.

`np.random.uniform(1,5,50)` # It displays given no. of unique values between given input numbers.



PANDAS



For Importing The Data

1. `pd.read_csv("filename")` # From a CSV file
2. `pd.read_table("filename")` # From a delimited text file (like TSV)

For Exploring The Data

1. **s.value_counts ()** - `s.value_counts()` # It shows all unique values with their counts in the series.
If `s.value_counts()['value']` – It will show counts of a value only.
If `s.value_counts(normalize=True)` – It will show the unique values in percentage.
If `s.value_counts(dropna = False)` – It will show the Null Values also.
2. **df.nunique ()** - `df.nunique()` # It shows the total no. of unique values in each column.
3. **df.describe()** - # It shows all summary of the dataframe.
For a categorical dataframe, it will show a simple summary of unique values & most frequently occurring values.

For Selecting The Data

1. `df[['Col1', 'Col2', 'Col3']]` # Selecting multiple Columns from the DF.
2. `df.loc[:, 'Col1' : 'Col2']` # Selecting columns with object slicing.
3. `df.iloc[:, 1:4]` # Selecting columns with integer slicing.

Adding / Removing

1. **DataFrame** - # To create a dataframe.
`pd.DataFrame(data=, index=, columns=)`,
`pd.DataFrame(np.arange(1,10).reshape(3,3), index=['a','b','c'], columns = list('XYZ'))`
2. **Adding New Row/Index** # To add a new row in the series
`s.loc['new index']`,
3. **Adding New Column** - # To add new column in the DF.
`df['New_col']`,
4. **Adding New Row** - # To add new row in the DF.
`df.loc['R', 2:5] = 78`
5. **Removing Columns** -
`df.drop('Col_name', axis=1)`,
6. `df1.join(df2, how = 'inner/outer/left/right')`, `df1.join([df2,df3])`
Join () - Indexes may or may not be same. Column names must be different. Default - Left join.
7. `pd.concat([df1,df2] , axis=0/1 , join= 'inner/outer')`



For Cleaning The Data

1. `.astype()` - `s.astype(int)`, `s.astype(float)`, `s.astype(str)`
Converting the data type of the series to a new data type.
2. `s.replace()` - `s.replace({1:'one', 'b':'bombay'})`
To replace any data of the series with a new value using dictionary format.
8. `df.isnull()` - `df.isnull()`, `df.isnull().sum()`
It detects the missing values from the dataframe.
9. `df.notnull()` - `df.notnull()`, `df.notnull.sum()`

It detects the existing (non-missing) values from the dataframe.

10. **df.duplicated()** - `df.duplicated()` , `df[df.duplicated()]`
It checks row wise and detects the duplicate rows.

For Analyzing The Data

1. **df.pivot_table(values= 'Col1' , index= 'Col2' , columns= 'Col3') ,**
It creates a spreadsheet style pivot table as a DF.
2. **df.groupby('Col_1')['Col_2'].value_counts() , df.groupby('Col_1')['Col_2'].sum()['value'] ,**
GroupBy – Two Keys – Apply on Col_2 grouped by Col_1.
3. **df[df.Col1 == 'Element1'].Col2.value_counts() , df[df.Col1 == 'Element1'].Col2.max() / sum ()**
From Col1 selecting rows with element1 & show result of Col2.
4. **len()** - To check the length of object like list, string etc.

For Saving/Writing The Data

1. **df.to_csv(filename)** # Writes to a CSV file
2. **df.to_excel(filename)** # Writes to an Excel file



Date-Time

1. **to_datetime ()** - `pd.to_datetime(DF.Date_Time_Col)`
Converts the data-type of Date-Time Column into datetime[ns] datatype.
2. **timestamp ()** - `x = pd.to_datetime('2020-12-25 04:00:00') , df.loc[DF.Time <=x , :].`
Setting the given date-time as a fix value.
3. **From the Date-Time column, showing only hour, minute, month, weekdays** -
`df['Time_Col'].dt.hour ,`

OTHERS

1. **Dummies** - `df['Col_name ']= 'a'` # Creates dummy for level 'a' in True & False format.
2. **df.set_index('Col_Name') , df.index = df.Col_name**
Set index - To set any column of a DF as an index. `df.set_index(['Col1', 'Col2'])`
3. **Partial Matches** - `df["New_Col"] = df.Col_name.str.contains('Value_to_match') ,`
`df.Col_name.str.lower().str.contains('Value').`
4. **Query** – `df.query('condition')` # To show the records for a particular query.
5. **Convert Numeric Data into Categorical Data of a column:**
`pd.cut(df.Col_name , bins = [1,3,6,9,12] , labels = ['A' , 'B' , 'C' , 'D'])`
6. **DataFrame Profiling** –
`conda install -c anaconda pandas-profiling`
`import pandas_profiling`
`pandas_profiling.ProfileReport(df)`



MATPLOTLIB

1. **from matplotlib import style , style.use("ggplot")** # For style purpose.
2. **plt.xlabel('Year') , plt.ylabel('Sales')** # To show the labels on x-axis and y-axis.
3. **plt.title('Year Sales Diagram', fontsize=24)** # To show the title on the graph.
4. **plt.figure(figsize=(10, 20))** # To adjust the figure size.
5. **Bar Plot** - `plt.bar(x-elements, y-elements)`
6. **Scatter Plot** - `plt.scatter(x-elements, y-elements , color = 'r' , s = 20 , edgecolor= 'red' . style='*-')`
7. **Stack Plot** - `plt.stackplot(list1, list2, list3, list4 , color = 'mcb')`
8. **Graph from Pandas directly :**
`df.plot(x = 'Year', y = 'Sales' , kind = " line/scatter/box/area/stack/pie/bar", figsize = (25,4)).`
9. **To check the relationship between two columns :**
`sns.relplot(x = 'Col_1' , y = 'Col_2' , data = df_name)`

SQL



Types of Database:

1) Distributed Database.....2) Object Oriented Database.....3) Centralized Database.....

Remove Database

Syntax: DROP DATABASE database_name;

CREATE DATABASE

Syntax: CREATE DATABASE database_name;

CREATE TABLE

A Table is a collection of data in a tabular form.

Syntax 1 : CREATE TABLE table-name

Delete Table

Syntax: DROP TABLE table-name;

ADD Column - To add a new column in the existing table.

ALTER TABLE table-name

Describe Table

Syntax: DESC table-name;

DATE

It displays Date values in yyyy-mm-dd format.

VIEW

A view is a virtual table, which contains rows and columns just like a real table.

Syntax:

CREATE VIEW *view_name* AS

SELECT

Syntax: SELECT * FROM table-name;

These operators are used during WHERE query.



=, !=, >, <, >=, <=, BETWEEN, LIKE, IN



OPERATORS

AND OPERATOR

Syntax: SELECT * FROM table-name

MAX – This function returns the largest value of the selected column.

Syntax: SELECT MAX (Col_name)

GROUPBY

It is used in SQL to arrange the identical data into groups with the help of some functions.

Syntax: SELECT Col_name(s)

INNER JOIN

This type of join returns those records which have matching values in both tables.

Syntax:

SELECT Table1.Col1, Table1.Col2, Table2.Col1....

RIGHT JOIN (Right Outer Join)

Syntax:

SELECT Table1.Col1, Table1.Col2, Table2.Col1....

LIKE OPERATOR

% - The percent sign represents zero, one, or multiple characters.



Data Science Lovers

For More

TIPS & TRICKS