Pandas

import
import pandas as pd

New df

#Blank Dataframe:
df = pd.DataFrame(columns=["col1","col2"])
#This is an empty Dataframe with 2 columns

#From a 2D list - with predefined column names:
data = [[1,2],
[3,4]]
df = pd.DataFrame(data,columns=["col1","col2"])

#From a dictionary - dictionary keys are columns:
list1 = [1,2] #list of col1 data
list2 = [3,4] #list of col2 data
data = {"col1":list1, "col2":list2}
df = pd.DataFrame(data)

#Read CSV into Dataframe (df)
df = pd.read_csv("data.csv", usecols=np.arange(cols))
#cols = number of columns in your data

View the df

#View the full df
df

#View the first or last data points
df.head() or df.tail()

#store number of rows and cols
row,col = df.shape

#See all the columns
list(df)

#Show certain rows:
df.iloc[10:20,0:2]#row,col

Clean the df

#Drop rows:
df = df.drop(row_list)

#Drop rows based on a condition
dfnew = df[df["col"] != "test"]
# Selects rows that are *condition"

 # Drop column
del df["col1"]
# Or this:
df = df.drop(["col1"], axis=1)

 # Add new empty column
df["col_name"] = ""

#Re-arrange the columns
df = df["col1","col2"]

#Export full column into a list:
col_list = df["col1"].values.tolist()

Add data to df

#Insert a row
df = df.append({}, ignore_index="false")

#Ignore index: TRUE will follow the index pattern. inside the { }
#you need a dictionary to define the data in your new row:

{"col1":list1, "col2":list2}
#list1 = [list of col1 data] etc..

#Insert column with list of data:
df["NewCol"] = [1,2,3]

#Insert data to a particular cell:
df.loc[rownum,colnum] = "data"

Accessing the Data

Access all elements in a column
colData = df["col_name"]
#colData is type series
#Use for loop to access elements
for element in colData: print (element)

loc/iloc
Preferred way to select data:

 # Show a certain range of rows:
df.iloc[30:80,0:2]
Shows all data between
rows:30 to 80 and columns 0 to 2

iloc
df.iloc[row,col]

Select by position:
meaning you give it an integer value.

df.iloc[0,:]
: means all

df.iloc[[0,2,3,5,6]:]
#locate data in given list and all col

df.iloc[[0:3],5]
#locate data from given slice and col 5

loc
df.loc[row,col]

Select by label:
meaning you give it actual column names "col1"

df.loc[0,"col1"]
#row 0 and column "col1"

df.loc[2,["col1","col2"]]
#row 2 and columns "col1" and "col2"

Filtering Data - like excel column filters

 # Sorting values (by a column. Exclude na position if not needed):
df.sort_values(by='col1', ascending=False, na_position='first')

 # Filter rows based on a condition:
dfnew = df[df.col1 != "x"]

 # Filter rows based on multiple conditions:
dfnew = df[(df.col1 != "x") & (df.col2 >= 100)]

Index Manipulation

#Set an already defined col as new index:
df= df.set_index('col')

#Create a MultiIndex using columns 'year' and 'month':
df = df.set_index(['year', 'month'])

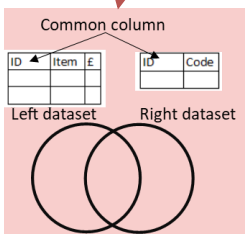
#Reset Index
#Sometimes if we delete rows, the index will have jumps.
#When we reset the index, the old index is added as a column
#(we can drop this), and a new sequential index is used:

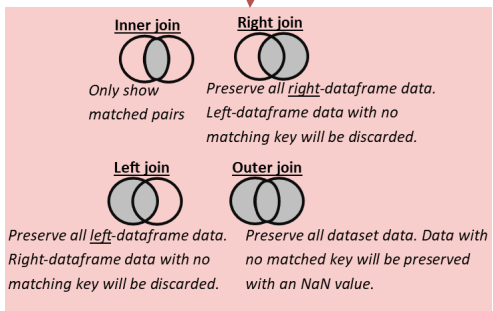
df = df.reset_index(drop=True)

Merging Datasets

Joining Dataframe:
pd.merge(left_df,right_df, on="col_name", how="***", suffixes("_left", "_right"))

Important to note which dataframe is left and right.
"on=" tells pandas which col is the key col. key col being the unique col between the two datasets. use the key col to join the dataframes.
"how=" can take values: "outer", "inner", "right" and "left" telling pandas what type of join it is. Remember the preserved datasets will keep all data. If you are preserving a dataset with no values, it will be NaN. More about joins below:





Append Dataframe:
df=pd.concat([df_a,df_b])