**Pandas: DataFrame Exercise-1**

**1. Write a Pandas program to get the powers of an array values element-wise.**

import pandas as pd

df = pd.DataFrame({'X':[78,85,96,80,86], 'Y':[84,94,89,83,86],'Z:[86,97,96,72,83]});

print(df)

**OUTPUT:**

X Y Z

0 78 84 86

1 85 94 97

2 96 89 96

3 80 83 72

4 86 86 83

**2. Write a Pandas program to create and display a DataFrame from a specified dictionary data which has the index labels.**

import pandas as pd

import numpy as np

exam\_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],

'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],

'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],

'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}

labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

df = pd.DataFrame(exam\_data , index=labels)

print(df)

**OUTPUT:**

name score attempts qualify

a Anastasia 12.5 1 yes

b Dima 9.0 3 no

c Katherine 16.5 2 yes

d James NaN 3 no

e Emily 9.0 2 no

f Michael 20.0 3 yes

g Matthew 14.5 1 yes

h Laura NaN 1 no

i Kevin 8.0 2 no

j Jonas 19.0 1 yes

# **3. How to set Index and Columns in Pandas DataFrame?**

import pandas as pd

employees = pd.DataFrame(

    data={'Name' ['John Doe', 'William Spark'],

          'Occupation': ['Chemist', 'Statistician'],

          'Date Of Join': ['2018-01-25', '2018-01-26'],

          'Age': [23, 24]},

    index=['Emp001', 'Emp002'],

    columns=['Name', 'Occupation', 'Date of Join', 'Age'])

print(employees)

**OUTPUT:**

Name Occupation Date of Join Age

Emp001 John Doe Chemist 2018-01-25 23

Emp002 William Spark Statistician 2018-01-26 24

# **4. How to create and print DataFrame in pandas?**

import pandas as pd

employees = pd.DataFrame({

    'EmpCode': ['Emp001', 'Emp00'],

    'Name': ['John Doe', 'William Spark'],

    'Occupation: ['Chemist', 'Statistician'],

    'Date Of Join': ['2018-01-25', '2018-01-26],

    'Age': [23, 24]})

print(employees)

**OUTPUT:**

EmpCode Name Occupation Date Of Join Age

0 Emp001 John Doe Chemist 2018-01-25 23

1 Emp00 William Spark Statistician 2018-01-26 24

# **5. How to rename DataFrame columns name in pandas?**

import pandas as pd

employees = pd.DataFrame({

    'EmpCode': ['Emp001', 'Emp00'],

    'Name': ['John Doe', 'William Spark'],

    'Occupation': ['Chemist', 'Statistician'],

    'Date Of Join': ['2018-01-25', '2018-01-26'],

    'Age': [23, 24]})

employees.columns = ['EmpCode', 'EmpName', 'EmpOccupation', 'EmpDOJ', 'EmpAge']

print(employees)

**OUTPUT:**

EmpCode EmpName EmpOccupation EmpDOJ EmpAge

0 Emp001 John Doe Chemist 2018-01-25 23

1 Emp00 William Spark Statistician 2018-01-26 24

# **6.How to Convert Dictionary into DataFrame?**

import pandas as pd

data = ({'Age': [30, 20, 22, 40, 32, 28, 39],

         'Color': ['Blue', 'Green', 'Red', 'White', 'Gray', 'Black','Red'],

         'Food': ['Steak', 'Lamb', 'Mango', 'Apple', 'Cheese','Melon', 'Beans'],

         'Height': [165, 70, 120, 80, 180, 172, 150],

         'Score': [4.6 8.3, 9.0, 3.3, 1.8, 9.5, 2.2],

         'State': ['NY', 'TX', 'FL', 'AL', 'AK' 'TX', 'TX']

         }

)

df = pd.DataFrame(data)

print(df)

**OUTPUT:**

Age Color Food Height Score State

0 30 Blue Steak 165 4.6 NY

1 20 Green Lamb 70 8.3 TX

2 22 Red Mango 120 9.0 FL

3 40 White Apple 80 3.3 AL

4 32 Gray Cheese 180 1.8 AK

5 28 Black Melon 172 9.5 TX

6 39 Red Beans 150 2.2 TX

# **7. Adding new column to existing DataFrame in Pandas**

import pandas as pd

employees = pd.DataFrame({

    'EmpCode': ['Emp001', 'Emp002', 'Emp003', 'Emp004', 'Emp005'],

    'Name': ['John', 'Doe', 'William', 'Spark', 'Mark'],

    'Occupation': ['Chemist', 'Statistician', 'Statistician',

                   'Statistician', 'Programmer'],

    'Date Of Join': ['2018-01-25', '2018-01-26', '2018-01-26', '2018-02-26',

                     '2018-03-16'],

    'Age': [23, 24, 34, 29, 40]})

employees['City'] = ['London, 'Tokyo', 'Sydney', 'London', 'Toronto']

print(employees)

**OUTPUT:**

EmpCode Name Occupation Date Of Join Age City

0 Emp001 John Chemist 2018-01-25 23 London

1 Emp002 Doe Statistician 2018-01-26 24 Tokyo

2 Emp003 William Statistician 2018-01-26 34 Sydney

3 Emp004 Spark Statistician 2018-02-26 29 London

4 Emp005 Mark Programmer 2018-03-16 40 Toronto

**8. Program to create DataFrame from 2D array**

**CODE:** import pandas as pd

**# Define 2d array 1**

d1 =[[2, 3, 4], [5, 6, 7]]

**# Define 2d array 2**

d2 =[[2, 4, 8], [1, 3, 9]]

**# Define Data**

Data ={'first': d1, 'second': d2}

df2d = pd.DataFrame(Data)

print(df2d)

**OUTPUT:**

first second

0 [2, 3, 4] [2, 4, 8]

1 [5, 6, 7] [1, 3, 9]

**9.**

**CODE:**

**# import pandas as pd**

import pandas as pd

**# list of strings**

lst = ['Geeks', 'For', 'Geeks', 'is', 'portal', 'for’, 'Geeks']

**# Calling DataFrame constructor on list**

df = pd.DataFrame(lst)

print(df)

**OUTPUT:**

0

0 Geeks

1 For

2 Geeks

3 is

4 portal

5 for

6 Geeks

**10.Python code demonstrate creating DataFrame from dict narray / lists** **by default addresses.**

**CODE:**

import pandas as pd

**# intialise data of lists**

data = {

'Name':['Tom', 'nick', 'krish', 'jack'],

'Age':[20, 21, 19, 18]

}

**# Create DataFrame**

df = pd.DataFrame(data)

print(df)

**OUTPUT:**

Name Age

0 Tom 20

1 nick 21

2 krish 19

3 jack 18

**11.**

**CODE:**

import pandas as pd

**# Define a dictionary containing employee data**

data = {

'Name':['Jai', 'Princi', 'Gaurav', 'Anuj],

'Age':[27, 24, 22, 32],

'Address':['Delhi', 'Kanpur', 'Allahabad', 'Kannauj'],

'Qualification':['Msc'MA', 'MCA', 'Phd']

}

**# Convert the dictionary into DataFrame**

df = pd.DataFrame(data)

**# select two columns**

print(df[['Name', 'Qualification']])

**OUTPUT:**

Name Qualification

0 Jai Msc

1 Princi MA

2 Gaurav MCA

3 Anuj Phd