22 Feb Ass

March 26, 2023

```
[ ]: Q1. Create a Pandas Series that contains the following data: 4, 8, 15, 16, 23,␣
     ↪and 42. Then, print the series.
```

```
[ ]: ANS -
```

```
[26]: import pandas as pd
      import numpy as np
```

```
[49]: Series  = [[4,8,15,16,23,42]]
```

```
[51]: print(Series)
```

```
[[4, 8, 15, 16, 23, 42]]
```

```
[ ]:
```

```
[ ]: Q2. Create a variable of list type containing 10 elements in it, and apply␣
     ↪pandas.Series function on the
     variable print it.
```

```
[ ]: ANS -
```

```
[2]: import pandas as pd
```

```
[3]: df = pd.Series(['Datascience' , 'Webapp' , 'Pwskills' , 'Programming' ,␣
     ↪'Coding' , 'Skills' , 'Hardwork' , 'Shadab' , 'Khan' , 'Kmowledge'])
```

```
[4]: print (df)
```

```
0     Datascience
1          Webapp
2        Pwskills
3     Programming
4          Coding
5          Skills
6        Hardwork
7          Shadab
8            Khan
```

```
9        Kmowledge
dtype: object
```

[ ]:

[ ]:

[ ]: Q3. Create a Pandas DataFrame that contains the following data:

[ ]: ANS -

[44]: `import pandas as pd`

[45]: `data = [["Alice",25,"female"] , ["Bob",30,"male"] , ["clarie",27,"female"]]`

[46]: `df = pd.DataFrame(data, columns = ['Name' , 'Age' , 'Gender'])`

[47]: `print(df)`

```
     Name  Age  Gender
0   Alice   25  female
1     Bob   30    male
2  clarie   27  female
```

[ ]:

[ ]:

[ ]: Q4. What is 'DataFrame' in pandas and how is it different from pandas.series?
      ↪Explain with an example.

[ ]: ANS -

[ ]: A Pandas DataFrame is a two- dimensional data structure that can be thought of
      ↪as a spreadsheet. It can also be thought of as a
      collection of two or more series with common indicies.

[ ]: A Pandas Series is a one-dimensional data structured that comprises of
      ↪key-value pair, where keys/labels
      are the values stored on that index. It is similar to a python
      ↪dictionary,except it provides more freedom
      to maniplaute and edit the data.

[ ]:

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```
[ ]: Q5. What are some common functions you can use to manipulate data in a Pandas␣
     ↪DataFrame? Can
     you give an example of when you might use one of these functions?
```

```
[ ]: ANS -
```

```
[ ]: Apply Function in Pandas it is one of the commonly used pandas functions for␣
     ↪manipulating a pandas dataframe and creating new
     variables. Pandas Apply function returns some value after passing each row/
     ↪column of a data frame with some function.
     The function can be both default or user-defined.
```

```
[1]: import pandas as pd
```

```
[3]: df = pd.read_csv("https://raw.githubusercontent.com/datasciencedojo/datasets/
     ↪master/titanic.csv")
```

```
[4]: df.head()
```

```
[4]:    PassengerId  Survived  Pclass  \
     0            1         0       3
     1            2         1       1
     2            3         1       3
     3            4         1       1
     4            5         0       3

                                                      Name     Sex   Age  SibSp  \
     0                              Braund, Mr. Owen Harris    male  22.0      1
     1    Cumings, Mrs. John Bradley (Florence Briggs Th…  female  38.0      1
     2                               Heikkinen, Miss. Laina  female  26.0      0
     3         Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
     4                             Allen, Mr. William Henry    male  35.0      0

        Parch            Ticket     Fare Cabin Embarked
     0      0         A/5 21171   7.2500   NaN        S
     1      0          PC 17599  71.2833   C85        C
     2      0  STON/O2. 3101282   7.9250   NaN        S
     3      0            113803  53.1000  C123        S
     4      0            373450   8.0500   NaN        S
```

```
[5]: df.tail()
```

```
[5]:       PassengerId  Survived  Pclass                                   Name  \
     886           887         0       2                  Montvila, Rev. Juozas
     887           888         1       1            Graham, Miss. Margaret Edith
     888           889         0       3  Johnston, Miss. Catherine Helen "Carrie"
     889           890         1       1                   Behr, Mr. Karl Howell
     890           891         0       3                     Dooley, Mr. Patrick

             Sex   Age  SibSp  Parch      Ticket   Fare Cabin Embarked
     886    male  27.0      0      0      211536  13.00   NaN        S
     887  female  19.0      0      0      112053  30.00   B42        S
     888  female   NaN      1      2  W./C. 6607  23.45   NaN        S
     889    male  26.0      0      0      111369  30.00  C148        C
     890    male  32.0      0      0      370376   7.75   NaN        Q
```

```
[8]: df['shadab'] = 0
```

```
[9]: df.head()
```

```
[9]:    PassengerId  Survived  Pclass  \
     0            1         0       3
     1            2         1       1
     2            3         1       3
     3            4         1       1
     4            5         0       3

                                                     Name     Sex   Age  SibSp  \
     0                            Braund, Mr. Owen Harris    male  22.0      1
     1  Cumings, Mrs. John Bradley (Florence Briggs Th…  female  38.0      1
     2                             Heikkinen, Miss. Laina  female  26.0      0
     3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
     4                           Allen, Mr. William Henry    male  35.0      0

        Parch            Ticket     Fare Cabin Embarked  new_col  shadab
     0      0         A/5 21171   7.2500   NaN        S        0       0
     1      0          PC 17599  71.2833   C85        C        0       0
     2      0  STON/O2. 3101282   7.9250   NaN        S        0       0
     3      0            113803  53.1000  C123        S        0       0
     4      0            373450   8.0500   NaN        S        0       0
```

```
[11]: df['shadab'] = df['PassengerId'] + df['Survived']
```

```
[12]: df.head()
```

```
[12]:    PassengerId  Survived  Pclass  \
     0            1         0       3
     1            2         1       1
     2            3         1       3
```

```
3              4        1       1
4              5        0       3

                                             Name       Sex   Age   SibSp \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th…  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                           Allen, Mr. William Henry    male  35.0      0

   Parch            Ticket     Fare Cabin Embarked  new_col  shadab
0      0         A/5 21171   7.2500   NaN        S        0       1
1      0          PC 17599  71.2833   C85        C        0       3
2      0  STON/O2. 3101282   7.9250   NaN        S        0       4
3      0            113803  53.1000  C123        S        0       5
4      0            373450   8.0500   NaN        S        0       5
```

[13]: `df[df["Age"] > 18]`

[13]:
```
     PassengerId  Survived  Pclass  \
0              1         0       3
1              2         1       1
2              3         1       3
3              4         1       1
4              5         0       3
..           …         …       …
885          886         0       3
886          887         0       2
887          888         1       1
889          890         1       1
890          891         0       3

                                             Name       Sex   Age   SibSp \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th…  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                           Allen, Mr. William Henry    male  35.0      0
..                                               …       …     …       …
885           Rice, Mrs. William (Margaret Norton)  female  39.0      0
886                      Montvila, Rev. Juozas    male  27.0      0
887            Graham, Miss. Margaret Edith  female  19.0      0
889                     Behr, Mr. Karl Howell    male  26.0      0
890                        Dooley, Mr. Patrick    male  32.0      0

   Parch            Ticket     Fare Cabin Embarked  new_col  shadab
0      0         A/5 21171   7.2500   NaN        S        0       1
```

```
1         0         PC 17599  71.2833  C85         C         0         3
2         0  STON/O2. 3101282   7.9250  NaN         S         0         4
3         0          113803  53.1000  C123         S         0         5
4         0          373450   8.0500  NaN         S         0         5
..       ...           ...      ...   ...        ...       ...       ...
885       5          382652  29.1250  NaN         Q         0       886
886       0          211536  13.0000  NaN         S         0       887
887       0          112053  30.0000  B42         S         0       889
889       0          111369  30.0000  C148        C         0       891
890       0          370376   7.7500  NaN         Q         0       891

[575 rows x 14 columns]
```

[14]: `len(df)  - len(df[df["Age"] > 18]))`

[14]: 316

[15]: `df[df['Fare'] < 32.204208]`

[15]:
```
     PassengerId  Survived  Pclass                                    Name  \
0              1         0       3               Braund, Mr. Owen Harris
2              3         1       3                Heikkinen, Miss. Laina
4              5         0       3              Allen, Mr. William Henry
5              6         0       3                      Moran, Mr. James
7              8         0       3        Palsson, Master. Gosta Leonard
..           ...       ...     ...                                    ...
886          887         0       2                Montvila, Rev. Juozas
887          888         1       1         Graham, Miss. Margaret Edith
888          889         0       3  Johnston, Miss. Catherine Helen "Carrie"
889          890         1       1                Behr, Mr. Karl Howell
890          891         0       3                   Dooley, Mr. Patrick

       Sex   Age  SibSp  Parch            Ticket     Fare Cabin Embarked  \
0     male  22.0      1      0         A/5 21171   7.2500   NaN        S
2   female  26.0      0      0  STON/O2. 3101282   7.9250   NaN        S
4     male  35.0      0      0            373450   8.0500   NaN        S
5     male   NaN      0      0            330877   8.4583   NaN        Q
7     male   2.0      3      1            349909  21.0750   NaN        S
..     ...   ...    ...    ...               ...      ...   ...      ...
886   male  27.0      0      0            211536  13.0000   NaN        S
887 female  19.0      0      0            112053  30.0000   B42        S
888 female   NaN      1      2        W./C. 6607  23.4500   NaN        S
889   male  26.0      0      0            111369  30.0000  C148        C
890   male  32.0      0      0            370376   7.7500   NaN        Q

     new_col  shadab
0          0       1
```

```
2         0      4
4         0      5
5         0      6
7         0      8
..        …      …
886       0     887
887       0     889
888       0     889
889       0     891
890       0     891

[680 rows x 14 columns]
```

[16]: `df[df["Fare"] == 0]['Name']`

```
[16]: 179                 Leonard, Mr. Lionel
      263               Harrison, Mr. William
      271         Tornquist, Mr. William Henry
      277           Parkes, Mr. Francis "Frank"
      302     Johnson, Mr. William Cahoone Jr
      413       Cunningham, Mr. Alfred Fleming
      466                Campbell, Mr. William
      481     Frost, Mr. Anthony Wood "Archie"
      597                  Johnson, Mr. Alfred
      633        Parr, Mr. William Henry Marsh
      674          Watson, Mr. Ennis Hastings
      732                 Knight, Mr. Robert J
      806                 Andrews, Mr. Thomas Jr
      815                      Fry, Mr. Richard
      822      Reuchlin, Jonkheer. John George
      Name: Name, dtype: object
```

[17]: `df[df['Sex'] == 'male']`

```
[17]:      PassengerId  Survived  Pclass                            Name   Sex  \
      0              1         0       3        Braund, Mr. Owen Harris  male
      4              5         0       3       Allen, Mr. William Henry  male
      5              6         0       3               Moran, Mr. James  male
      6              7         0       1       McCarthy, Mr. Timothy J  male
      7              8         0       3  Palsson, Master. Gosta Leonard  male
      ..           …         …       …                             …     …
      883          884         0       2  Banfield, Mr. Frederick James  male
      884          885         0       3       Sutehall, Mr. Henry Jr  male
      886          887         0       2        Montvila, Rev. Juozas  male
      889          890         1       1        Behr, Mr. Karl Howell  male
      890          891         0       3           Dooley, Mr. Patrick  male
```

```
       Age  SibSp  Parch            Ticket       Fare Cabin Embarked  new_col  \
0      22.0      1      0         A/5 21171     7.2500   NaN        S        0
4      35.0      0      0            373450     8.0500   NaN        S        0
5       NaN      0      0            330877     8.4583   NaN        Q        0
6      54.0      0      0             17463    51.8625   E46        S        0
7       2.0      3      1            349909    21.0750   NaN        S        0
..      ...    ...    ...               ...        ...   ...      ...      ...
883    28.0      0      0  C.A./SOTON 34068    10.5000   NaN        S        0
884    25.0      0      0   SOTON/OQ 392076     7.0500   NaN        S        0
886    27.0      0      0            211536    13.0000   NaN        S        0
889    26.0      0      0            111369    30.0000  C148        C        0
890    32.0      0      0            370376     7.7500   NaN        Q        0

     shadab
0         1
4         5
5         6
6         7
7         8
..      ...
883     884
884     885
886     887
889     891
890     891

[577 rows x 14 columns]
```

[ ]:

[ ]:

[ ]:

[ ]:

[ ]: Q6. Which of the following is mutable in nature Series, DataFrame, Panel?

[ ]: ANS -

[ ]: All Pandas data structure are value mutable.(can be changed) and except Series␣
     ↪all are size mutable.
     Series all are size mutable.series is size immutable.
     Dataframe is widely used and one of the most important data structures. Pnel is␣
     ↪used much less.

[ ]: Series is a one-dimensional array like structure with homogeneous data.

```
[ ]: DataFrame is a two-dimensional array with heterogeneous data.
```

```
[ ]: Pnel is a three-dimensional data structure with heterogenous data. it is hard␣
     ↪to represent the panel
     in graphical representation. But a panel can be illustrated as a container of␣
     ↪DataFrame.
```

```
[ ]:
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```
[ ]:
```

```
[ ]: Q7. Create a DataFrame using multiple Series. Explain with an example.
```

```
[ ]: ANS -
```

```
[34]: import pandas as pd
```

```
[35]: courses = pd.Series(["data_science" , "web_dev" , "programming"])
      fees = pd.Series([2345 , 34323 , 767656])
      discount = pd.Series([1000 , 1500 , 2000])
```

```
[36]: df = pd.concat([courses , fees] , axis=1)
```

```
[37]: df = pd.concat([courses , fees , discount] , axis=1)
```

```
[38]: print(df)
```

```
              0       1     2
0  data_science    2345  1000
1       web_dev   34323  1500
2   programming  767656  2000
```

```
[ ]:
```

```
[ ]:
```