Indexing and Slicing

Problem 1: Import Titanic dataset and store as the pandas dataframe with name titanic

```
import pandas as pd
```

```
titanic = pd.read_csv("https://github.com/YBI-Foundation/Dataset/raw/main/Titanic.csv")
```

Problem 2: Print the info of titanic dataframe

```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1309 entries, 0 to 1308
Data columns (total 14 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   pclass     1309 non-null   int64  
 1   survived   1309 non-null   int64  
 2   name       1309 non-null   object 
 3   sex        1309 non-null   object 
 4   age        1046 non-null   float64
 5   sibsp      1309 non-null   int64  
 6   parch      1309 non-null   int64  
 7   ticket     1309 non-null   object 
 8   fare       1308 non-null   float64
 9   cabin      295 non-null    object 
 10  embarked   1307 non-null   object 
 11  boat       486 non-null    object 
 12  body       121 non-null    float64
 13  home.dest  745 non-null    object 
dtypes: float64(3), int64(4), object(7)
memory usage: 143.3+ KB
```

Problem 3: Print the column labels

```
titanic.columns
```

```
Index(['pclass', 'survived', 'name', 'sex', 'age', 'sibsp', 'parch',
'ticket',
       'fare', 'cabin', 'embarked', 'boat', 'body', 'home.dest'],
      dtype='object')
```

Problem 4: Select passengers name column

```
titanic.name
```

```
0                          Allen, Miss. Elisabeth Walton
1                         Allison, Master. Hudson Trevor
2                           Allison, Miss. Helen Loraine
```

```
3                  Allison, Mr. Hudson Joshua Creighton
4       Allison, Mrs. Hudson J C (Bessie Waldo Daniels)
                             ...
1304                               Zabour, Miss. Hileni
1305                              Zabour, Miss. Thamine
1306                          Zakarian, Mr. Mapriededer
1307                                Zakarian, Mr. Ortin
1308                                 Zimmerman, Mr. Leo
Name: name, Length: 1309, dtype: object
```

Problem 5: Select passengers name column as pandas series and save as name

```
name = titanic["name"]
```

```
name
```

```
0                         Allen, Miss. Elisabeth Walton
1                        Allison, Master. Hudson Trevor
2                          Allison, Miss. Helen Loraine
3                  Allison, Mr. Hudson Joshua Creighton
4       Allison, Mrs. Hudson J C (Bessie Waldo Daniels)
                             ...
1304                               Zabour, Miss. Hileni
1305                              Zabour, Miss. Thamine
1306                          Zakarian, Mr. Mapriededer
1307                                Zakarian, Mr. Ortin
1308                                 Zimmerman, Mr. Leo
Name: name, Length: 1309, dtype: object
```

```
type(name)
```

```
pandas.core.series.Series
```

```
name.shape
```

```
(1309,)
```

Problem 6: Select passengers name column and save as pandas dataframe

```
name = titanic[["name"]]
```

```
name
```

```
                                                 name
0                       Allen, Miss. Elisabeth Walton
1                      Allison, Master. Hudson Trevor
2                        Allison, Miss. Helen Loraine
3                Allison, Mr. Hudson Joshua Creighton
4     Allison, Mrs. Hudson J C (Bessie Waldo Daniels)
...                                               ...
1304                             Zabour, Miss. Hileni
1305                            Zabour, Miss. Thamine
1306                        Zakarian, Mr. Mapriededer
```

```
1307                              Zakarian, Mr. Ortin
1308                               Zimmerman, Mr. Leo

[1309 rows x 1 columns]
```

Note: The extracted column now has the label 'name'and also the name is now a dataframe.

```
type(name)
```

```
pandas.core.frame.DataFrame
```

Problem 7: Select 100th row and all columns with iloc function

```
titanic.iloc[100,:]
```

```
pclass                                                    1
survived                                                  1
name         Duff Gordon, Sir. Cosmo Edmund ("Mr Morgan")
sex                                                    male
age                                                    49.0
sibsp                                                     1
parch                                                     0
ticket                                             PC 17485
fare                                                56.9292
cabin                                                   A20
embarked                                                  C
boat                                                      1
body                                                    NaN
home.dest                                    London / Paris
Name: 100, dtype: object
```

Problem 8: Select 100th row with loc function

```
titanic.loc[100, :]
```

```
pclass                                                    1
survived                                                  1
name         Duff Gordon, Sir. Cosmo Edmund ("Mr Morgan")
sex                                                    male
age                                                    49.0
sibsp                                                     1
parch                                                     0
ticket                                             PC 17485
fare                                                56.9292
cabin                                                   A20
embarked                                                  C
boat                                                      1
body                                                    NaN
home.dest                                    London / Paris
Name: 100, dtype: object
```

Problem 9: Select all rows with column label name and fare column with iloc function

```
titanic.iloc[:, [2,8]]
```

```
                                                 name      fare
0                       Allen, Miss. Elisabeth Walton  211.3375
1                      Allison, Master. Hudson Trevor  151.5500
2                        Allison, Miss. Helen Loraine  151.5500
3                Allison, Mr. Hudson Joshua Creighton  151.5500
4     Allison, Mrs. Hudson J C (Bessie Waldo Daniels)  151.5500
...                                               ...       ...
1304                             Zabour, Miss. Hileni   14.4542
1305                            Zabour, Miss. Thamine   14.4542
1306                        Zakarian, Mr. Mapriededer    7.2250
1307                              Zakarian, Mr. Ortin    7.2250
1308                               Zimmerman, Mr. Leo    7.8750

[1309 rows x 2 columns]
```

Problem 10: Select all rows with loc function and column label name and fare

```
titanic.loc[:, ["name","fare"]]
```

```
                                                 name      fare
0                       Allen, Miss. Elisabeth Walton  211.3375
1                      Allison, Master. Hudson Trevor  151.5500
2                        Allison, Miss. Helen Loraine  151.5500
3                Allison, Mr. Hudson Joshua Creighton  151.5500
4     Allison, Mrs. Hudson J C (Bessie Waldo Daniels)  151.5500
...                                               ...       ...
1304                             Zabour, Miss. Hileni   14.4542
1305                            Zabour, Miss. Thamine   14.4542
1306                        Zakarian, Mr. Mapriededer    7.2250
1307                              Zakarian, Mr. Ortin    7.2250
1308                               Zimmerman, Mr. Leo    7.8750

[1309 rows x 2 columns]
```

Problem 11: Select row number 5oth, 25th, 15th and column label passenger class, fare, age, with both loc and iloc function .

```
#Syntax:  Dataframe.iloc[[. , . , .], ["","",""]]

titanic.loc[[50, 25, 15], ["pclass", "fare", "age"]]
```

```
    pclass      fare   age
50       1  512.3292  58.0
25       1   26.0000  25.0
15       1   25.9250   NaN
```

```
titanic.iloc[[50,25,15], [0,8,4]]
```

```
    pclass      fare   age
50       1  512.3292  58.0
```

```
25        1   26.0000  25.0
15        1   25.9250   NaN
```

Problem 12: Select rows from 10th to 12th and column label passenger class, fare, age with both loc and iloc function.

```
titanic.loc[10:25, ["pclass","fare","age"]]       #Extracting starting
from 10 and ending at 25. using ':'
```

```
    pclass      fare   age
10        1  227.5250  47.0
11        1  227.5250  18.0
12        1   69.3000  24.0
13        1   78.8500  26.0
14        1   30.0000  80.0
15        1   25.9250   NaN
16        1  247.5208  24.0
17        1  247.5208  50.0
18        1   76.2917  32.0
19        1   75.2417  36.0
20        1   52.5542  37.0
21        1   52.5542  47.0
22        1   30.0000  26.0
23        1  227.5250  42.0
24        1  221.7792  29.0
25        1   26.0000  25.0
```

```
titanic.iloc[10:26, [0,8,4]]            #In iloc function last index
is not included! It has [....)
```

```
    pclass      fare   age
10        1  227.5250  47.0
11        1  227.5250  18.0
12        1   69.3000  24.0
13        1   78.8500  26.0
14        1   30.0000  80.0
15        1   25.9250   NaN
16        1  247.5208  24.0
17        1  247.5208  50.0
18        1   76.2917  32.0
19        1   75.2417  36.0
20        1   52.5542  37.0
21        1   52.5542  47.0
22        1   30.0000  26.0
23        1  227.5250  42.0
24        1  221.7792  29.0
```

Problem 13: Select rows from 10th to 15th and columns from passenger class to age with both loc and iloc function.

```
titanic.loc[10:15, "pclass" : "age" ]
```

```
    pclass  survived                                                  
name  \
10       1         0                              Astor, Col. John 
Jacob   
11       1         1  Astor, Mrs. John Jacob (Madeleine Talmadge 
Force)   
12       1         1                         Aubart, Mme. Leontine 
Pauline   
13       1         1                          Barber, Miss. Ellen 
"Nellie"   
14       1         1                  Barkworth, Mr. Algernon Henry 
Wilson   
15       1         0                                 Baumann, Mr. John 
D   

       sex   age  
10    male  47.0  
11  female  18.0  
12  female  24.0  
13  female  26.0  
14    male  80.0  
15    male   NaN  
```

```
titanic.iloc[10:16, 0:5]
```

```
    pclass  survived                                                  
name  \
10       1         0                              Astor, Col. John 
Jacob   
11       1         1  Astor, Mrs. John Jacob (Madeleine Talmadge 
Force)   
12       1         1                         Aubart, Mme. Leontine 
Pauline   
13       1         1                          Barber, Miss. Ellen 
"Nellie"   
14       1         1                  Barkworth, Mr. Algernon Henry 
Wilson   
15       1         0                                 Baumann, Mr. John 
D   

       sex   age  
10    male  47.0  
11  female  18.0  
12  female  24.0  
13  female  26.0  
14    male  80.0  
15    male   NaN  
```

Problem 14: Select all passengers with age equal to and more than 35 years.

```
titanic[(titanic["age"]>= 35)]
```

```
      pclass  survived
name  \
5          1         1                              Anderson, Mr.
Harry
6          1         1                Andrews, Miss. Kornelia
Theodosia
7          1         0                           Andrews, Mr. Thomas
Jr
8          1         1    Appleton, Mrs. Edward Dale (Charlotte
Lamson)
9          1         0                          Artagaveytia, Mr.
Ramon
...      ...       ...                                                 ..
.
1286       3         1  Whabee, Mrs. George Joseph (Shawneene Abi-
Saab)
1287       3         0               Widegren, Mr. Carl/Charles
Peter
1290       3         1               Wilkes, Mrs. James (Ellen
Needs)
1298       3         0                      Wittevrongel, Mr.
Camille
1301       3         0                           Youseff, Mr.
Gerious

         sex   age  sibsp  parch    ticket     fare cabin embarked
boat  \
5       male  48.0      0      0     19952  26.5500   E12        S
3
6     female  63.0      1      0     13502  77.9583    D7        S
10
7       male  39.0      0      0    112050   0.0000   A36        S
NaN
8     female  53.0      2      0     11769  51.4792  C101        S
D
9       male  71.0      0      0  PC 17609  49.5042   NaN        C
NaN
...      ...   ...    ...    ...       ...      ...   ...      ...  ..
.
1286  female  38.0      0      0      2688   7.2292   NaN        C
C
1287    male  51.0      0      0    347064   7.7500   NaN        S
NaN
1290  female  47.0      1      0    363272   7.0000   NaN        S
NaN
1298    male  36.0      0      0    345771   9.5000   NaN        S
NaN
1301    male  45.5      0      0      2628   7.2250   NaN        C
```

```
NaN

       body           home.dest
5       NaN        New York, NY
6       NaN          Hudson, NY
7       NaN         Belfast, NI
8       NaN  Bayside, Queens, NY
9      22.0  Montevideo, Uruguay
...     ...                  ...
1286    NaN                  NaN
1287    NaN                  NaN
1290    NaN                  NaN
1298    NaN                  NaN
1301  312.0                  NaN

[345 rows x 14 columns]
```

Problem 15: Select all passengers with age equal to and more than 35 years and column with label passenger class to age.

```
titanic.loc[(titanic["age"]>= 35), "pclass":"age"]
```

```
      pclass  survived                                                 
name  \
5          1         1                              Anderson, Mr. 
Harry   
6          1         1                Andrews, Miss. Kornelia 
Theodosia   
7          1         0                           Andrews, Mr. Thomas 
Jr   
8          1         1    Appleton, Mrs. Edward Dale (Charlotte 
Lamson)   
9          1         0                          Artagaveytia, Mr. 
Ramon   
...      ...       ...                                                ..
.   
1286       3         1  Whabee, Mrs. George Joseph (Shawneene Abi-
Saab)   
1287       3         0                Widegren, Mr. Carl/Charles 
Peter   
1290       3         1                Wilkes, Mrs. James (Ellen 
Needs)   
1298       3         0                       Wittevrongel, Mr. 
Camille   
1301       3         0                            Youseff, Mr. 
Gerious   

         sex   age
5       male  48.0
6     female  63.0
```

```
7       male  39.0
8     female  53.0
9       male  71.0
...      ...   ...
1286  female  38.0
1287    male  51.0
1290  female  47.0
1298    male  36.0
1301    male  45.5

[345 rows x 5 columns]
```

Problem 16: Select all female passengers with age equal to and more than 35 years.

```
titanic.loc[(titanic["sex"] == "female") & (titanic["age"]>=35)]
```

```
      pclass  survived
name  \
6          1         1                 Andrews, Miss. Kornelia
Theodosia
8          1         1     Appleton, Mrs. Edward Dale (Charlotte
Lamson)
17         1         1   Baxter, Mrs. James (Helene DeLaudeniere
Chaput)
21         1         1  Beckwith, Mrs. Richard Leonard (Sallie
Monypeny)
23         1         1                             Bidois, Miss.
Rosalie
...      ...       ...                                          .
..
1158       3         0          Rosblom, Mrs. Viktor (Helena
Wilhelmina)
1211       3         0   Skoog, Mrs. William (Anna Bernhardina
Karlsson)
1261       3         1                            Turkula, Mrs.
(Hedwig)
1286       3         1   Whabee, Mrs. George Joseph (Shawneene Abi-
Saab)
1290       3         1                  Wilkes, Mrs. James (Ellen
Needs)

         sex   age  sibsp  parch    ticket      fare    cabin embarked
boat  \
6     female  63.0      1      0     13502   77.9583       D7        S
10
8     female  53.0      2      0     11769   51.4792     C101        S
D
17    female  50.0      0      1  PC 17558  247.5208  B58 B60        C
6
21    female  47.0      1      1     11751   52.5542      D35        S
5
```

```
23    female  42.0      0      0  PC 17757  227.5250      NaN        C
4
...      ...   ...    ...    ...       ...       ...      ...      ...
...
1158  female  41.0      0      2    370129   20.2125      NaN        S
NaN
1211  female  45.0      1      4    347088   27.9000      NaN        S
NaN
1261  female  63.0      0      0      4134    9.5875      NaN        S
15
1286  female  38.0      0      0      2688    7.2292      NaN        C
C
1290  female  47.0      1      0    363272    7.0000      NaN        S
NaN

      body            home.dest
6      NaN           Hudson, NY
8      NaN  Bayside, Queens, NY
17     NaN         Montreal, PQ
21     NaN         New York, NY
23     NaN                  NaN
...    ...                  ...
1158   NaN                  NaN
1211   NaN                  NaN
1261   NaN                  NaN
1286   NaN                  NaN
1290   NaN                  NaN

[125 rows x 14 columns]
```