```
# Practical - 2
# Bendre Anushka A.
# TC0D74
import pandas as pd
import numpy as np
index = pd.date range("1/1/2000", periods=8)
s = pd.Series(np.random.randn(5), index=["a", "b", "c", "d", "e"])
S
   -0.086528
a
b
   -0.711500
   -1.342835
С
d
   -1.297275
    2.132302
е
dtype: float64
df = pd.DataFrame(np.random.randn(8, 3), index=index, columns=["A",
"B", "C"])
df
2000-01-01 -0.648552  0.659313 -0.099236
2000-01-02 -0.887142  0.667063  1.466192
2000-01-03  0.445046 -1.231343 -0.377259
2000-01-04 0.187401 2.075141 -1.254141
2000-01-05 -0.742831 0.669048 0.672633
2000-01-06 -0.488106 1.133684 -1.105367
2000-01-07 -2.042008 2.546807 -1.239859
2000-01-08 0.360245 -0.380727 0.112358
df.head()
                  Α
2000-01-01 -0.648552  0.659313 -0.099236
2000-01-02 -0.887142 0.667063 1.466192
2000-01-03 0.445046 -1.231343 -0.377259
2000-01-04 0.187401 2.075141 -1.254141
2000-01-05 -0.742831 0.669048 0.672633
df.head(2)
                             В
2000-01-01 -0.648552  0.659313 -0.099236
2000-01-02 -0.887142 0.667063 1.466192
df.tail()
                             В
2000-01-04 0.187401 2.075141 -1.254141
2000-01-05 -0.742831 0.669048 0.672633
```

```
2000-01-06 -0.488106 1.133684 -1.105367
2000-01-07 -2.042008 2.546807 -1.239859
2000-01-08  0.360245 -0.380727  0.112358
df.tail(2)
                            В
2000-01-07 -2.042008 2.546807 -1.239859
2000-01-08  0.360245  -0.380727  0.112358
df = pd.DataFrame(
   {
        "one": pd.Series(np.random.randn(3), index=["a", "b", "c"]),
        "two": pd.Series(np.random.randn(4), index=["a", "b", "c",
"d"]),
       "three": pd.Series(np.random.randn(3), index=["b", "c", "d"]),
   }
)
df
       one two
                         three
a -0.944549 -0.240045
                           NaN
b 0.517087 -1.841126 0.313439
c -0.396527 2.780265 -0.447179
       NaN -1.313342 -0.506332
df.sub(df.iloc[2], axis="columns")
       one
                 two
                         three
a -0.548022 -3.020310
                           NaN
b 0.913614 -4.621391 0.760618
c 0.000000 0.000000 0.000000
       NaN -4.093607 -0.059153
df.sub(df.iloc[2], axis=1)
                 two
                         three
       one
a -0.548022 -3.020310
                           NaN
b 0.913614 -4.621391 0.760618
c 0.000000 0.000000 0.000000
       NaN -4.093607 -0.059153
df.sub(df["one"], axis=0)
  one
                    three
            two
a 0.0 0.704504
                      NaN
b 0.0 -2.358213 -0.203648
c 0.0 3.176792 -0.050652
d NaN
                      NaN
            NaN
df2 = df.copy()
df2
```

```
one two th
a -0.944549 -0.240045
                        three
                          NaN
b 0.517087 -1.841126 0.313439
c -0.396527 2.780265 -0.447179
d NaN -1.313342 -0.506332
df2.loc["d", "one"] = 0.08
df2
       one two three
a -0.944549 -0.240045
                          NaN
b 0.517087 -1.841126 0.313439
c -0.396527 2.780265 -0.447179
d 0.080000 -1.313342 -0.506332
df
one two three a -0.944549 -0.240045 NaN
b 0.517087 -1.841126 0.313439
c -0.396527 2.780265 -0.447179
d NaN -1.313342 -0.506332
df.gt(df2)
    one two three
a False False False
b False False False
c False False False
d False False False
df.lt(df2)
   one two three
a False False False
b False False
С
   False False False
d False False False
df.ge(df2)
    one two three
   True True
a
               False
  True True True
b
c True True
               True
d False True True
df.ne(df2)
  one two three
a False False True
```

```
b False False
c False False False
d True False False
(df > 0).any()
        True
one
        True
two
three
        True
dtype: bool
df
                two
                       three
       one
a -0.944549 -0.240045
                         NaN
b 0.517087 -1.841126 0.313439
c -0.396527 2.780265 -0.447179
d NaN -1.313342 -0.506332
df.loc["d"] = df.loc["a"].copy()
df
       one two
                       three
a -0.944549 -0.240045
                         NaN
b 0.517087 -1.841126 0.313439
c -0.396527 2.780265 -0.447179
d -0.944549 -0.240045 NaN
s = pd.Series(["a", "b", "c"], dtype=object)
S
0 a
1
    b
2
    C
dtype: object
s[0]=None
S
0
    None
1
       b
2
       C
dtype: object
s.iloc[0] = np.nan
0
    NaN
1
   b
```

```
dtype: object
ser1 = pd.Series([np.nan, np.nan, 2, 3])
ser2=pd.Series([np.nan, 1, np.nan, 4])
ser1
0
     NaN
     NaN
1
2
     2.0
     3.0
dtype: float64
ser2
0
     NaN
     1.0
1
2
     NaN
3
     4.0
dtype: float64
ser1+ser2
0
     NaN
1
     NaN
2
     NaN
     7.0
dtype: float64
pd.Series([1,2,3,4,5], dtype="float64").sum()
15.0
ser1
0
     NaN
1
     NaN
2
     2.0
3
     3.0
dtype: float64
ser1.dropna() #remove null val
2
     2.0
     3.0
dtype: float64
ser2
0
     NaN
     1.0
1
2
     NaN
```

```
4.0
dtype: float64
ser2.fillna(999) # replace NA by 999
0
     999.0
1
       1.0
2
     999.0
3
       4.0
dtype: float64
data=pd.read csv("/home/ubuntu/Desktop/DATA.csv")
data
    gender NationalITy PlaceofBirth
                                             StageID GradeID SectionID \
0
                     KW
                               KuwaIT
                                          lowerlevel
                                                         G-04
1
         М
                     KW
                               KuwaIT
                                          lowerlevel
                                                         G-04
                                                                        Α
2
         М
                     KW
                               KuwaIT
                                          lowerlevel
                                                         G-04
                                                                        Α
3
         М
                     KW
                               KuwaIT
                                          lowerlevel
                                                         G-04
                                                                        Α
4
         М
                     ΚW
                               KuwaIT
                                          lowerlevel
                                                         G-04
                                                                        Α
475
                               Jordan
                                        MiddleSchool
          F
                 Jordan
                                                         G-08
                                                                        Α
          F
476
                 Jordan
                               Jordan
                                        MiddleSchool
                                                         G-08
477
                 Jordan
                               Jordan
                                        MiddleSchool
                                                         G-08
                                                                        Α
          F
                                        MiddleSchool
                                                         G-08
478
                 Jordan
                               Jordan
479
          F
                 Jordan
                               Jordan MiddleSchool
                                                         G-08
                                   raisedhands
                                                 VisITedResources
          Topic Semester Relation
0
                        F
                            Father
                                               15
                                                                16.0
             IT
             IT
                        F
1
                            Father
                                               20
                                                                20.0
2
             IT
                        F
                            Father
                                               10
                                                                 7.0
3
             IT
                            Father
                                               30
                                                                25.0
4
                        F
             IT
                            Father
                                               40
                                                                50.0
                        S
                            Father
                                                5
475
     Chemistry
                                                                 NaN
476
       Geology
                        F
                            Father
                                               50
                                                                 NaN
477
                        S
                            Father
                                               55
       Geology
                                                                 NaN
478
       History
                        F
                            Father
                                               30
                                                                 NaN
                                               35
479
                            Father
                                                                 NaN
            NaN
                          Discussion ParentAnsweringSurvey \
     AnnouncementsView
0
                                   20
1
                                   25
                       3
                                                          Yes
2
                      0
                                   30
                                                           No
3
                       5
                                   35
                                                           No
4
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                                                          . . .
475
                      5
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                                                           No
476
                     14
                                   28
                                                           No
                      25
                                   29
477
                                                           No
```

```
478
                      14
                                    57
                                                             No
479
                      23
                                    62
                                                             No
    ParentschoolSatisfaction StudentAbsenceDays Class
0
                           Good
                                             Under-7
                                                           М
1
                           Good
                                             Under-7
                                                           M
2
                            Bad
                                             Above-7
                                                           L
3
                            Bad
                                             Above-7
4
                                                           М
                                             Above-7
                            Bad
475
                            Bad
                                             Above-7
                                                           L
476
                            Bad
                                             Under-7
                                                           M
477
                            Bad
                                             Under-7
                                                           М
478
                            Bad
                                             Above-7
                                                           L
479
                            Bad
                                             Above-7
[480 rows x 17 columns]
df2=pd.DataFrame(data)
df2
    gender NationalITy PlaceofBirth
                                               StageID GradeID SectionID
0
                      KW
                                 KuwaIT
                                            lowerlevel
                                                            G-04
          М
                                                                           Α
          М
                                            lowerlevel
                                                            G-04
1
                      KW
                                 KuwaIT
                                                                           Α
2
          М
                      KW
                                 KuwaIT
                                            lowerlevel
                                                            G-04
                                                                           Α
3
                      KW
                                 KuwaIT
                                            lowerlevel
                                                            G-04
          М
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4
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          М
                      KW
                                 KuwaIT
                                            lowerlevel
                                                                           Α
475
          F
                  Jordan
                                 Jordan
                                          MiddleSchool
                                                            G-08
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476
          F
                  Jordan
                                 Jordan
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                                                            G-08
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                  Jordan
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477
          F
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                                                            G-08
                                                                           Α
478
          F
                  Jordan
                                 Jordan
                                          MiddleSchool
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479
                  Jordan
                                 Jordan
                                          MiddleSchool
                                                            G-08
          Topic Semester Relation
                                      raisedhands
                                                     VisITedResources
0
             IT
                         F
                             Father
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                                                                   16.0
1
             IT
                         F
                                                 20
                                                                   20.0
                             Father
2
             IT
                         F
                             Father
                                                 10
                                                                    7.0
3
             IT
                         F
                                                 30
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                             Father
4
                         F
             IT
                             Father
                                                40
                                                                   50.0
. .
     Chemistry
                         S
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475
                             Father
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476
                         F
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        Geology
                             Father
                                                                    NaN
                         S
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477
        Geology
                             Father
                                                                    NaN
478
        History
                         F
                             Father
                                                 30
                                                                    NaN
                         S
479
                                                 35
            NaN
                             Father
                                                                    NaN
     AnnouncementsView
                           Discussion ParentAnsweringSurvey \
0
                                    20
                                                            Yes
                        2
                        3
1
                                    25
                                                            Yes
```

2 3 4		1	0 30 5 30 12 50	5		No No No	
475 476 477 478 479] 2 1	5 6 14 29 25 29 14 5 23 6	8 8 9 7		No No No No No No	
0 1 2 3 4 475 476 477 478 479	rows >	schoolSatis	Graction Stude Good Good Bad	entAbsenceDay Under- Under- Above- Above- Under- Under- Above- Above-	7 M 7 L 7 L 7 L 7 M		
	head() nder Na	ationalITy	PlaceofBirth	StageID	GradeID	SectionID	Topic
0	М	KW	KuwaIT	lowerlevel	G-04	А	IT
1	М	KW	KuwaIT	lowerlevel	G-04	А	IT
2	М	KW	KuwaIT	lowerlevel	G-04	Α	IT
3	М	KW	KuwaIT	lowerlevel	G-04	А	IT
4	М	KW	KuwaIT	lowerlevel	G-04	Α	IT
Ser\	mester	Relation	raisedhands	VisITedResou	ırces Aı	nnouncement	isView
0	F	Father	15		16.0		2
1	F	Father	20		20.0		3
2	F	Father	10		7.0		0
3	F	Father	30		25.0		5
4	F	Father	40		50.0		12

```
Discussion ParentAnsweringSurvey ParentschoolSatisfaction \
0
           20
                                  Yes
                                                            Good
1
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                                  Yes
2
           30
                                   No
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3
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                                   No
4
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                                   No
                                                             Bad
  StudentAbsenceDays Class
0
              Under-7
1
              Under-7
                          М
2
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3
             Above-7
                          L
4
              Above-7
                          М
df2.tail()
    gender NationalITy PlaceofBirth StageID GradeID SectionID
475
         F
                 Jordan
                               Jordan
                                       MiddleSchool
                                                         G-08
                                                                       Α
         F
476
                 Jordan
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                               Jordan MiddleSchool
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478
                 Jordan
                               Jordan MiddleSchool
                                                                       Α
479
                 Jordan
                               Jordan MiddleSchool
                                                         G-08
                                                 VisITedResources
         Topic Semester Relation
                                    raisedhands
475
     Chemistry
                       S
                            Father
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                                                                NaN
476
                       F
                                              50
       Geology
                            Father
                                                                NaN
477
       Geology
                       S
                            Father
                                              55
                                                                NaN
478
       History
                       F
                            Father
                                              30
                                                                NaN
479
                       S
           NaN
                            Father
                                              35
                                                                NaN
                         Discussion ParentAnsweringSurvey \
     AnnouncementsView
475
                      5
                                   8
                                                          No
476
                     14
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                                  29
477
                     25
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478
                     14
                                  57
                                                          No
479
                     23
                                  62
                                                          No
    ParentschoolSatisfaction StudentAbsenceDays Class
475
                           Bad
                                           Above-7
476
                           Bad
                                           Under-7
                                                        М
477
                           Bad
                                           Under-7
                                                       М
478
                                           Above-7
                           Bad
                                                        L
479
                           Bad
                                           Above-7
                                                       L
```