```
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
print('Actual data:')
print(df)
Actual data:
           REGN0
                      NAME
                                   DOB GENDER
                                                    ADDRESS
                                                               M1
   SN0
M2
     М3
                                                  THANDALAM
        1220121
                      ARUN
                            2000-02-10
                                          MALE
0
      1
                                                             82.0
81.0
      90.0
      2
        1220122
                      BABU 1999-01-25
                                          MALE KANCHIPURAM
                                                             56.0
1
61.0
      80.0
      3
         1220123
                    CHARAN
                            2000.09.21
                                          MALE
                                                  THANDALAM
                                                              NaN
59.0
      60.0
                      DEVA
      4
        1220124
                            2000-11-09
                                          MALE
                                                 POONAMALEE
                                                             74.0
79.0
      80.0
        1220125
      5
                     ESTER
                            2000-11-21
                                        FEMALE
                                                    CHITHUR
                                                             92.0
95.0
      96.0
                   FARHANA 1999-03-05
      6
        1220126
                                        FEMALE
                                                  THANDALAM
                                                             91.0
88.0
      90.0
      7 1220127
                      GANI
                            2000-10-02
                                          MALE
                                                KANCHIPURAM
                                                             49.0
51.0
      70.0
        1220127
                      GANI
                            2000 - 10 - 02
                                          MALE
                                                KANCHIPURAM
                                                             49.0
7
      7
51.0
      70.0
8
      8
        1220128
                      HEMA 1999-01-25
                                        FEMALE
                                                 POONAMALEE
                                                             95.0
96.0
      90.0
9
      9
        1220129
                     INDRA
                                        FEMALE KANCHIPURAM
                            2000.09.21
                                                             64.0
      NaN
NaN
                    JAHITH 2000-11-09
                                          MALE
10
     10
        1220130
                                                  THANDALAM
                                                             34.0
45.0
     50.0
        1220131
                      KANI
                            2000-11-21
                                        FEMALE
                                                    CHITHUR
                                                             96.0
11
     11
     96.0
95.0
12
     12 1220132 LATHESSH 1999-03-05
                                          MALE
                                                  THANDALAM
                                                              NaN
68.0
     70.0
13
     13
       1220133
                      MANI
                            2000 - 10 - 02
                                          MALE KANCHIPURAM
                                                             71.0
76.0
       NaN
14
     14
        1220134
                      NANI
                              20001109
                                          MALE
                                                 POONAMALEE
                                                             79.0
77.0
     80.0
15
     15
        1220135
                       NaN
                              19990125
                                           NaN
                                                        NaN
                                                              NaN
NaN
      NaN
16
     16
                   PRATHAP
                              20000921
                                          MALE
                                                KANCHIPURAM
                                                             86.0
        1220136
     90.0
84.0
17
     17
        1220137
                     RAGHU
                              20001109
                                          MALE
                                                 POONAMALEE 
                                                             67.0
64.0
     70.0
18
     18
        1220138
                     RATHI
                              20001121
                                        FEMALE KANCHIPURAM
                                                             81.0
86.0
      90.0
19
     19
        1220139
                   SARVESH
                              19990305
                                          MALE
                                                  THANDALAM
                                                             84.0
87.0
       NaN
```

```
20
         1220140
                  SANTH0SH
                                20001002
                                            MALE
     20
                                                   KANCHIPURAM 76.0
69.0 80.0
      M4
          T0TAL
                         AVG
0
     NaN
            NaN
                         NaN
1
    56.0
          253.0
                   84.333333
2
                    0.000000
    70.0
            NaN
3
    74.0
          307.0
                  102.333333
4
          375.0
    92.0
                  125.000000
5
    91.0
          360.0
                  120.000000
6
    49.0
          219.0
                   73.000000
7
    49.0
          219.0
                   73.000000
          376.0
8
    95.0
                  125.333333
9
    64.0
            NaN
                    0.000000
10
    34.0
          163.0
                   54.333333
11
    96.0
          383.0
                  127.666667
12
    70.0
          208.0
                   69.333333
13
    71.0
            NaN
                    0.000000
14
    79.0
          315.0
                  105.000000
15
            0.0
                    0.000000
     NaN
16
    86.0
          346.0
                  115.333333
          201.0
17
     NaN
                   67.000000
18
    81.0
          338.0
                  112.666667
19
    84.0
            NaN
                    0.000000
20
    76.0
          301.0
                  100.333333
import pandas as pd
import numpy as np
df= pd.read_csv('SAMPLEIDS.csv')
print(df.describe())
                                                     M2
                                                                 M3
              SN0
                          REGNO
                                         M1
M4 \
count
       21.000000
                   2.100000e+01
                                  18.000000
                                              19.000000
                                                         17.000000
18.000000
       10.333333
                   1.220130e+06
                                  73.666667
                                             74.315789
                                                         79.529412
mean
73.166667
std
        5.816643
                   5.816643e+00
                                 17.580069
                                             15.836149
                                                         13.010177
17.426315
min
        1.000000
                   1.220121e+06
                                  34.000000
                                              45.000000
                                                         50.000000
34.000000
25%
        6.000000
                  1.220126e+06 64.750000
                                             62.500000
                                                         70.000000
65.500000
       10.000000
                   1.220130e+06
                                  77.500000
                                              77.000000
                                                         80.000000
50%
75.000000
75%
       15.000000
                   1.220135e+06
                                  85.500000
                                             86.500000
                                                         90.000000
85.500000
                                                         96.000000
       20.000000
                   1.220140e+06
                                  96.000000
                                              96.000000
max
96.000000
```

```
T0TAL
                           AVG
        16.000000
                     20,000000
count
       272.750000
                     72.733333
mean
std
       102.048681
                     48.017127
         0.000000
                      0.000000
min
25%
       216.250000
                     40.750000
50%
       304.000000
                     78.666667
                    113.333333
75%
       349.500000
                    127.666667
       383.000000
max
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
print(df.info())
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 21 entries, 0 to 20
Data columns (total 12 columns):
              Non-Null Count
 #
     Column
                               Dtype
- - -
 0
     SN0
               21 non-null
                                int64
               21 non-null
 1
     REGNO
                                int64
 2
              20 non-null
                                object
     NAME
 3
               21 non-null
     D0B
                                object
 4
     GENDER
               20 non-null
                                object
 5
     ADDRESS
              20 non-null
                                object
 6
     Μ1
               18 non-null
                                float64
 7
     M2
               19 non-null
                                float64
 8
     М3
               17 non-null
                                float64
 9
     M4
              18 non-null
                                float64
 10
     T0TAL
               16 non-null
                                float64
     AVG
 11
               20 non-null
                                float64
dtypes: float64(6), int64(2), object(4)
memory usage: 2.1+ KB
None
import pandas as pd
import numpy as np
df= pd.read_csv('SAMPLEIDS.csv')
print(df.isnull().sum())
SN0
           0
REGNO
           0
           1
NAME
           0
D0B
           1
GENDER
ADDRESS
           1
```

```
M1
           3
           2
M2
           4
М3
           3
M4
           5
TOTAL
           1
AVG
dtype: int64
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
print(df.nunique())
SN0
           20
           20
REGN0
NAME
           19
D0B
           13
GENDER
            2
ADDRESS
           4
М1
           17
M2
           17
М3
            6
M4
           16
T0TAL
           15
AVG
           15
dtype: int64
import pandas as pd
import numpy as np
df= pd.read_csv('SAMPLEIDS.csv')
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
x2 = df.dropna(how='all').shape
print(x2)
(21, 12)
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
x2 = df.dropna(how='all').shape
print(x2)
(21, 12)
```

```
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
tot=df.dropna(subset=['TOTAL'],how='any')
print(tot)
    SN0
           REGN0
                      NAME
                                   DOB GENDER
                                                    ADDRESS
                                                               M1
     M3 \
M2
1
      2
        1220122
                      BABU
                             1/25/1999
                                          MALE KANCHIPURAM
                                                             56.0
61.0
      80.0
                      DEVA
                                          MALE
                                                 POONAMALEE
      4
        1220124
                             11/9/2000
                                                             74.0
79.0
      80.0
      5
        1220125
                     ESTER 11/21/2000
                                        FEMALE
                                                    CHITHUR
                                                             92.0
95.0
      96.0
      6 1220126
                   FARHANA
                              3/5/1999
                                        FEMALE
                                                  THANDALAM
                                                             91.0
88.0
      90.0
      7 1220127
                      GANI
                                          MALE
                                                KANCHIPURAM
                                                             49.0
                             10/2/2000
6
51.0
      70.0
        1220127
                      GANI
                             10/2/2000
                                          MALE
                                                KANCHIPURAM
                                                             49.0
7
      7
51.0
      70.0
      8
        1220128
                      HEMA
                             1/25/1999
                                        FEMALE
                                                 POONAMALEE
                                                             95.0
96.0
      90.0
10
     10
        1220130
                    JAHITH
                             11/9/2000
                                          MALE
                                                  THANDALAM
                                                             34.0
45.0
     50.0
        1220131
                      KANI
                            11/21/2000
                                        FEMALE
                                                    CHITHUR
                                                             96.0
11
     11
95.0 96.0
12
     12 1220132
                 LATHESSH
                                          MALE
                              3/5/1999
                                                  THANDALAM
                                                              NaN
     70.0
68.0
14
     14
        1220134
                      NANI
                              20001109
                                          MALE
                                                 POONAMALEE
                                                             79.0
77.0
     80.0
15
     15 1220135
                       NaN
                              19990125
                                           NaN
                                                        NaN
                                                              NaN
      NaN
NaN
                                                KANCHIPURAM
                                                             86.0
16
     16
        1220136
                   PRATHAP
                              20000921
                                          MALE
     90.0
84.0
17
     17 1220137
                     RAGHU
                                          MALE
                                                 POONAMALEE
                              20001109
                                                             67.0
64.0
     70.0
                     RATHI
18
     18
        1220138
                                        FEMALE
                                                KANCHIPURAM
                              20001121
                                                             81.0
86.0
     90.0
20
     20
        1220140
                  SANTHOSH 
                              20001002
                                          MALE
                                                KANCHIPURAM 76.0
69.0 80.0
     M4
         T0TAL
                        AVG
1
    56.0
         253.0
                  84.333333
3
         307.0
                 102.333333
    74.0
                 125.000000
4
    92.0
         375.0
5
    91.0
         360.0
                 120,000000
    49.0
         219.0
                  73.000000
6
7
    49.0
         219.0
                  73.000000
8
    95.0
         376.0
                 125.333333
```

```
10
   34.0
         163.0
                 54.333333
11
   96.0
         383.0
                127.666667
12
   70.0
         208.0
                 69.333333
14
   79.0
         315.0
                 105,000000
15
     NaN
            0.0
                  0.000000
         346.0
16
   86.0
                115.333333
17
     NaN
         201.0
                67.000000
18
   81.0
         338.0
                112,666667
20 76.0 301.0 100.333333
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
tot2=df.dropna(subset=['M1','M2','M3','M4'],how='any')
print(tot2)
   SN0
          REGNO
                     NAME
                                  DOB GENDER
                                                   ADDRESS
                                                              M1
M2
     M3 \
      2
        1220122
                     BABU
                            1/25/1999
                                         MALE KANCHIPURAM
                                                            56.0
1
      80.0
61.0
      4
        1220124
                     DEVA
                            11/9/2000
                                         MALE
                                                POONAMALEE
                                                            74.0
3
79.0
     80.0
      5 1220125
                    ESTER 11/21/2000
                                       FEMALE
                                                   CHITHUR
                                                            92.0
95.0
      96.0
                  FARHANA
                                       FEMALE
5
      6
        1220126
                             3/5/1999
                                                 THANDALAM 91.0
88.0
      90.0
      7 1220127
                     GANI
                            10/2/2000
                                         MALE KANCHIPURAM
                                                            49.0
6
51.0
     70.0
                     GANI
7
      7
        1220127
                            10/2/2000
                                         MALE
                                               KANCHIPURAM
                                                            49.0
51.0
      70.0
        1220128
                     HEMA
                            1/25/1999
                                       FEMALE
                                                POONAMALEE
                                                            95.0
      8
96.0
     90.0
                            11/9/2000
10
     10
        1220130
                   JAHITH
                                         MALE
                                                 THANDALAM
                                                            34.0
     50.0
45.0
11
     11
        1220131
                     KANI 11/21/2000
                                       FEMALE
                                                   CHITHUR
                                                            96.0
     96.0
95.0
14
     14
        1220134
                     NANI
                             20001109
                                         MALE
                                                POONAMALEE
                                                           79.0
77.0 80.0
     16
16
        1220136
                   PRATHAP
                             20000921
                                         MALE KANCHIPURAM
                                                            86.0
84.0
     90.0
18
     18
        1220138
                    RATHI
                              20001121
                                       FEMALE
                                               KANCHIPURAM
                                                            81.0
86.0
     90.0
20
     20
        1220140
                 SANTHOSH
                                         MALE
                                               KANCHIPURAM 76.0
                              20001002
69.0 80.0
     M4
         TOTAL
                       AVG
   56.0
         253.0
                 84.333333
1
3
   74.0
         307.0
                 102.333333
   92.0
         375.0
                 125.000000
```

```
5
    91.0
          360.0
                 120.000000
          219.0
6
    49.0
                  73.000000
7
    49.0
          219.0
                  73.000000
          376.0
8
    95.0
                 125.333333
10
    34.0
          163.0
                  54.333333
    96.0
          383.0
                 127,666667
11
    79.0
          315.0
                 105.000000
14
16
    86.0
          346.0
                 115.333333
    81.0
                 112.666667
18
          338.0
20 76.0
          301.0
                 100.333333
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
tot3=df.fillna(0)
print(tot3)
    SN0
           REGN0
                      NAME
                                    D0B
                                         GENDER
                                                     ADDRESS
                                                                 M1
M2
      М3
         1220121
                      ARUN
                              2/10/2000
0
      1
                                           MALE
                                                   THANDALAM
                                                              82.0
81.0
      90.0
      2
         1220122
                      BABU
                              1/25/1999
                                           MALE KANCHIPURAM
                                                               56.0
1
61.0
      80.0
                    CHARAN
                            2000.09.21
                                           MALE
      3
         1220123
                                                   THANDALAM
                                                                0.0
59.0
      60.0
      4
         1220124
                      DEVA
                              11/9/2000
                                           MALE
                                                  POONAMALEE
                                                               74.0
79.0
      80.0
      5
        1220125
                     ESTER 11/21/2000
                                         FEMALE
                                                     CHITHUR
                                                               92.0
4
95.0
      96.0
5
      6
        1220126
                   FARHANA
                               3/5/1999
                                         FEMALE
                                                   THANDALAM
                                                               91.0
88.0
      90.0
      7
        1220127
                      GANI
                              10/2/2000
                                           MALE
                                                 KANCHIPURAM
                                                               49.0
6
51.0
      70.0
         1220127
                      GANI
                              10/2/2000
                                           MALE
                                                 KANCHIPURAM
                                                               49.0
7
      7
51.0
      70.0
                      HEMA
                              1/25/1999
                                         FEMALE
      8
         1220128
                                                  POONAMALEE
                                                               95.0
96.0
      90.0
9
        1220129
                     INDRA
                            2000.09.21
                                         FEMALE KANCHIPURAM
                                                               64.0
      9
      0.0
0.0
10
     10
        1220130
                    JAHITH
                              11/9/2000
                                           MALE
                                                   THANDALAM
                                                               34.0
     50.0
45.0
11
     11
        1220131
                      KANI
                            11/21/2000
                                         FEMALE
                                                     CHITHUR
                                                               96.0
95.0
     96.0
                 LATHESSH
12
     12
        1220132
                               3/5/1999
                                           MALE
                                                   THANDALAM
                                                                0.0
68.0
     70.0
        1220133
13
     13
                      MANI
                              10/2/2000
                                           MALE KANCHIPURAM
                                                              71.0
       0.0
76.0
     14
        1220134
                      NANI
14
                               20001109
                                           MALE
                                                  POONAMALEE 79.0
     80.0
77.0
```

```
15
     15 1220135
                          0
                               19990125
                                               0
                                                                 0.0
0.0
      0.0
16
     16 1220136
                    PRATHAP
                               20000921
                                            MALE KANCHIPURAM
                                                                86.0
     90.0
84.0
17
     17
        1220137
                      RAGHU
                               20001109
                                            MALE
                                                    POONAMALEE
                                                                67.0
64.0
     70.0
        1220138
                                          FEMALE KANCHIPURAM
18
     18
                      RATHI
                               20001121
                                                                81.0
86.0
     90.0
19
     19
        1220139
                    SARVESH
                               19990305
                                            MALE
                                                     THANDALAM
                                                                84.0
87.0
       0.0
     20
20
        1220140
                  SANTHOSH
                               20001002
                                            MALE KANCHIPURAM
                                                               76.0
69.0 80.0
      M4
          T0TAL
                         AVG
0
     0.0
            0.0
                    0.000000
1
    56.0
          253.0
                   84.333333
2
    70.0
            0.0
                    0.000000
3
    74.0
          307.0
                  102.333333
4
    92.0
          375.0
                  125.000000
5
    91.0
          360.0
                  120.000000
6
    49.0
          219.0
                  73.000000
7
          219.0
                  73.000000
    49.0
8
    95.0
          376.0
                  125.333333
9
    64.0
            0.0
                    0.000000
10
    34.0
          163.0
                   54.333333
    96.0
          383.0
                  127.666667
11
12
    70.0
          208.0
                   69.333333
13
    71.0
            0.0
                    0.000000
14
    79.0
          315.0
                  105.000000
15
     0.0
            0.0
                    0.000000
    86.0
          346.0
16
                 115.333333
17
     0.0
          201.0
                   67.000000
18
    81.0
          338.0
                  112,666667
19
    84.0
            0.0
                    0.000000
20
   76.0
          301.0
                  100.333333
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
tot4= df.fillna(method='ffill')
print(tot4)
    SN0
           REGNO
                       NAME
                                     D0B
                                          GENDER
                                                       ADDRESS
                                                                  M1
M2
      М3
      1
         1220121
                       ARUN
                              2/10/2000
                                            MALE
                                                     THANDALAM
                                                                82.0
81.0
      90.0
         1220122
                                            MALE KANCHIPURAM
      2
                       BABU
                              1/25/1999
                                                                56.0
1
61.0
      80.0
```

2

3

1220123

CHARAN

2000.09.21

MALE

THANDALAM

56.0

59.0 3	60. 4	0 1220124	DEVA	11/9/2000	MALE	POONAMALEE	74.0
79.0			DEVA	11/ 3/ 2000	IIALL	TOONAHALLE	74.0
4 95.0	5 96.	1220125	ESTER	11/21/2000	FEMALE	CHITHUR	92.0
5	6	1220126	FARHANA	3/5/1999	FEMALE	THANDALAM	91.0
88.0 6	7	1220127	GANI	10/2/2000	MALE	KANCHIPURAM	49.0
51.0 7	7	0 1220127	GANI	10/2/2000	MALE	KANCHIPURAM	49.0
51.0			LIEMA	1 /25 /1000	FFMALF	DOONAMALEE	05.0
8 96.0	8 90.	1220128	HEMA	1/25/1999	FEMALE	POONAMALEE	95.0
9	9	1220129	INDRA	2000.09.21	FEMALE	KANCHIPURAM	64.0
96.0			7.4117.711	11 (0 (2000	MALE	THANDALAM	24.0
10	10 50.	1220130	JAHITH	11/9/2000	MALE	THANDALAM	34.0
45.0 11	ง 56. 11	1220131	KANI	11/21/2000	FEMALE	CHITHUR	96.0
95.0			10 1112	11, 21, 2000		CHILITION	3010
12	12	1220132	LATHESSH	3/5/1999	MALE	THANDALAM	96.0
68.0 13	70. 13	1220133	MANI	10/2/2000	MALE	KANCHIPURAM	71.0
76.0			7,000	10, 2, 2000	111/122	TO III CITE I OIU III	7110
14	14	1220134	NANI	20001109	MALE	POONAMALEE	79.0
77.0 15	80. 15	1220135	NANI	19990125	MALE	POONAMALEE	79.0
77.0 16	80. 16	0 1220136	PRATHAP	20000921	MALE	KANCHIPURAM	86.0
84.0			HAHA	20000321	IIALL	NANCHII ONAH	00.0
17	17	1220137	RAGHU	20001109	MALE	P00NAMALEE	67.0
64.0 18	70. 18	1220138	RATHI	20001121	FEMALE	KANCHIPURAM	81.0
86.0	90.	. 0					
19 87.0	19 90.	1220139	SARVESH	19990305	MALE	THANDALAM	84.0
20	20	1220140	SANTHOSH	20001002	MALE	KANCHIPURAM	76.0
69.0	80.	. 0					
	M4	T0TAL	AVG				
0	NaN	NaN	NaN				
	56.0	253.0	84.333333				
	70.0	253.0	0.00000				
	74.0	307.0	102.333333				
	92.0	375.0	125.000000				
	91.0	360.0	120.000000				
	49.0	219.0	73.000000				
	49.0	219.0	73.000000				
	95.0	376.0	125.333333				
9	64.0	376.0	0.000000				

```
10 34.0
         163.0
                 54.333333
         383.0 127.666667
11 96.0
12 70.0 208.0
                 69.333333
13 71.0 208.0
                   0.000000
14 79.0 315.0 105.000000
15 79.0
           0.0
                  0.000000
16 86.0 346.0 115.333333
17 86.0 201.0
                67.000000
18 81.0 338.0 112.666667
19 84.0 338.0
                  0.000000
20 76.0 301.0 100.333333
<ipython-input-34-4e29e1559c89>:5: FutureWarning: DataFrame.fillna
with 'method' is deprecated and will raise in a future version. Use
obj.ffill() or obj.bfill() instead.
 tot4= df.fillna(method='ffill')
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
tot5=df.isna().sum()
print(tot5)
SN0
           0
REGNO
           0
           1
NAME
          0
D0B
           1
GENDER
          1
ADDRESS
M1
           3
           2
M2
М3
          4
          3
M4
          5
T0TAL
AVG
           1
dtype: int64
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
import pandas as pd
import numpy as np
df= pd.read csv('SAMPLEIDS.csv')
import pandas as pd
import numpy as np
```

```
df= pd.read csv('SAMPLEIDS.csv')
tot5=df.isnull()
print(tot5)
     SN0
          REGNO
                 NAME
                        D0B
                             GENDER ADDRESS
                                               М1
                                                      M2
                                                            M3
M4
   False False False
                              False
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8
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10 False False False
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11 False False False
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12 False False False
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13
   False False False
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14 False False False
                              False
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15
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16 False
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18 False
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False
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19 False
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                                      False
                                             False
                                                   False
                                                         True
False
                              False
                                             False
20 False False False
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                                                   False
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False
   T0TAL
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```

```
0
    True
           True
1
    False False
2
    True False
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    False False
4
    False False
5
    False False
6
    False False
7
    False False
8
    False False
9
    True False
10 False False
    False False
11
12
    False False
13
   True False
14 False False
15
   False False
   False False
16
17
   False False
18
   False False
19
    True False
20 False False
import pandas as pd
import numpy as np
df= pd.read_csv('SAMPLEIDS.csv')
df=df.duplicated()
print(df)
0
      False
1
     False
2
     False
3
     False
4
     False
5
     False
6
     False
7
      True
8
     False
9
     False
10
     False
11
     False
12
     False
13
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14
     False
15
     False
16
     False
17
     False
18
     False
19
     False
```

20 False
dtype: bool

import pandas as pd
import numpy as np

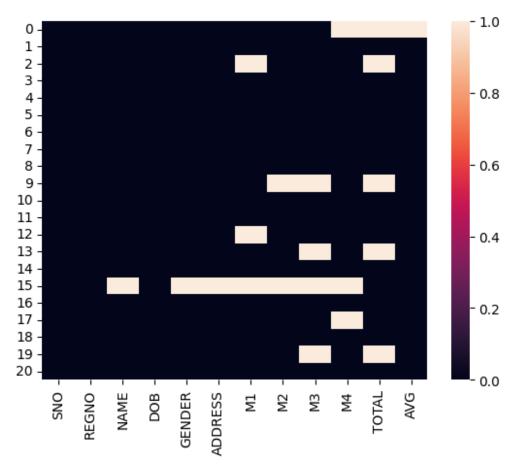
df= pd.read_csv('SAMPLEIDS.csv')

m= df.drop_duplicates(inplace=False)
print(m)

SNO REGNO NAME DO
M2 M3 \
0 1 1220121 ARUN 2/10/200
81.0 90.0

	SNO	REGN0	NAME	D0B	GENDER	ADDRESS	M1
M2 0	M3 1	1220121	ARUN	2/10/2000	MALE	THANDALAM	82.0
81.0	_		AITON	2/10/2000	TIALL	HIANDALAN	02.0
1	2	1220122	BABU	1/25/1999	MALE	KANCHIPURAM	56.0
61.0							
2	3	1220123	CHARAN	2000.09.21	MALE	THANDALAM	NaN
59.0	_		DEVA	11 /0 /2000	MALE	DOOMAMALEE	74.0
3 79.0	4 80	1220124	DEVA	11/9/2000	MALE	POONAMALEE	74.0
4	5	1220125	ESTER	11/21/2000	FEMALE	CHITHUR	92.0
95.0			LSTER	11, 21, 2000	I LII/(LL	CHITHOR	3210
5	6	1220126	FARHANA	3/5/1999	FEMALE	THANDALAM	91.0
88.0	90.	. 0					
6	7	1220127	GANI	10/2/2000	MALE	KANCHIPURAM	49.0
51.0			115040	1 (25 (1000		DOOMAMALEE	05.0
8	8	1220128	HEMA	1/25/1999	FEMALE	POONAMALEE	95.0
96.0 9	90. 9	1220129	INDRA	2000.09.21	FEMALE	KANCHIPURAM	64.0
NaN	NaN		INDIA	2000.09.21	ILMALL	KANCHIFUKAN	04.0
10	10	1220130	JAHITH	11/9/2000	MALE	THANDALAM	34.0
45.0			-	, . ,			
11	11	1220131	KANI	11/21/2000	FEMALE	CHITHUR	96.0
95.0							
12	12	1220132	LATHESSH	3/5/1999	MALE	THANDALAM	NaN
68.0			MANIT	10 /2 /2000	MAI =	LANCHEDUDAM	71 0
13 76.0	13 Na	1220133	MANI	10/2/2000	MALE	KANCHIPURAM	71.0
14	14	1220134	NANI	20001109	MALE	POONAMALEE	79.0
77.0			IVAIVI	20001109	TIALL	TOUNAMALLE	79.0
15	15	1220135	NaN	19990125	NaN	NaN	NaN
NaN	NaN						110111
16	16	1220136	PRATHAP	20000921	MALE	KANCHIPURAM	86.0
84.0							
17	17	1220137	RAGHU	20001109	MALE	POONAMALEE	67.0
64.0			DATUT	20001121		LANCHEDUDAM	01 0
18 86.0	18 90.	1220138	RATHI	20001121	FEMALE	KANCHIPURAM	81.0
19	90. 19	. 0 1220139	SARVESH	19990305	MALE	THANDALAM	84.0
19	19	1220139	SANVLSII	19990303	MALE	HIANDALAN	04.0

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87.0
       NaN
     20 1220140 SANTHOSH
                                           MALE KANCHIPURAM 76.0
20
                               20001002
69.0 80.0
      M4
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     NaN
            NaN
                         NaN
1
    56.0
          253.0
                  84.333333
2
    70.0
            NaN
                   0.000000
3
    74.0
          307.0
                 102.333333
4
    92.0
          375.0
                 125.000000
5
    91.0
          360.0
                 120.000000
6
    49.0
          219.0
                 73.000000
          376.0
8
    95.0
                 125.333333
9
    64.0
            NaN
                   0.000000
10
                  54.333333
    34.0
          163.0
11
    96.0
          383.0
                 127.666667
12
    70.0
          208.0
                  69.333333
13
    71.0
            NaN
                   0.000000
14
    79.0
          315.0
                 105.000000
15
     NaN
            0.0
                   0.000000
16
          346.0
    86.0
                 115.333333
          201.0
17
     NaN
                 67.000000
18
    81.0
          338.0
                 112.666667
19
    84.0
                   0.000000
            NaN
20
   76.0
         301.0
                 100.333333
import pandas as pd
import numpy as np
import seaborn as sns
df= pd.read csv('SAMPLEIDS.csv')
sns.heatmap(df.isnull())
<Axes: >
```



```
import pandas as pd
# Read the CSV file into a pandas DataFrame
df = pd.read_csv('SAMPLEIDS.csv')
print("__
# Display the first few rows of the DataFrame
print(df.head())
print("
# Get summary statistics of the DataFrame
print(df.describe())
# Get information about the DataFrame (data types, non-null values,
etc.)
print(df.info())
print("
# Check for missing values in each column
print(df.isnull().sum())
# Count the number of unique values in each column
print(df.nunique())
print("__
# Drop rows with missing values in the 'TOTAL' column
```

```
df_no_missing_total = df.dropna(subset=['TOTAL'])
print(df no missing total)
print("
# Fill missing values with 0
df filled zero = df.fillna(0)
print(df_filled_zero)
print("
# Fill missing values using forward fill
df filled forward = df.fillna(method='ffill')
print(df filled forward)
print("
# Check for duplicate rows
print(df.duplicated())
print("
# Drop duplicate rows
df no duplicates = df.drop duplicates()
print(df no duplicates)
   SN<sub>0</sub>
          REGN0
                   NAME
                                D0B
                                     GENDER
                                                 ADDRESS
                                                            M1
                                                                  M2
M3 \
     1
       1220121
                   ARUN
                         2000-02-10
                                       MALE
                                               THANDALAM
                                                          82.0 81.0
0
90.0
1
     2
        1220122
                   BABU
                         1999-01-25
                                       MALE KANCHIPURAM
                                                          56.0
                                                                 61.0
80.0
                CHARAN 2000.09.21
                                                            NaN 59.0
2
     3
        1220123
                                       MALE
                                               THANDALAM
60.0
3
        1220124
                   DEVA 2000-11-09
                                       MALE
                                              POONAMALEE
                                                          74.0
                                                                79.0
80.0
        1220125
                  ESTER 2000-11-21 FEMALE
                                                 CHITHUR
                                                          92.0
                                                                95.0
4
     5
96.0
     M4
         T0TAL
                       AVG
0
    NaN
           NaN
                       NaN
         253.0
1
   56.0
                 84.333333
2
                  0.000000
  70.0
           NaN
3
  74.0
                102.333333
        307.0
  92.0
        375.0
                125.000000
             SN0
                         REGNO
                                       M1
                                                  M2
                                                              M3
M4 \
count 21.000000 2.100000e+01
                               18.000000
                                           19.000000
                                                      17.000000
18.000000
       10.333333 1.220130e+06 73.666667
                                           74.315789
                                                     79.529412
mean
73.166667
        5.816643 5.816643e+00 17.580069
std
                                           15.836149
                                                      13.010177
17.426315
        1.000000 1.220121e+06
                                34.000000
                                           45.000000
                                                      50.000000
min
34.000000
        6.000000 1.220126e+06 64.750000
                                           62.500000
                                                      70.000000
25%
```

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65.500000
       10.000000 1.220130e+06 77.500000 77.000000
                                                        80.000000
50%
75.000000
75%
       15.000000 1.220135e+06 85.500000
                                             86.500000
                                                        90.000000
85.500000
       20.000000 1.220140e+06 96.000000
                                             96.000000
                                                        96,000000
max
96.000000
            TOTAL.
                           AVG
        16.000000
                     20.000000
count
       272.750000
                     72.733333
mean
       102.048681
                     48.017127
std
min
         0.000000
                     0.000000
25%
       216.250000
                     40.750000
50%
       304.000000
                    78.666667
75%
       349.500000
                    113.333333
       383,000000
                   127,666667
max
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 21 entries, 0 to 20
Data columns (total 12 columns):
              Non-Null Count
#
     Column
                               Dtype
     -----
                               ----
 0
     SN0
              21 non-null
                               int64
 1
     REGN0
              21 non-null
                               int64
2
              20 non-null
     NAME
                               object
 3
     D0B
              21 non-null
                               object
 4
     GENDER
              20 non-null
                               object
 5
                               object
     ADDRESS
              20 non-null
 6
     M1
              18 non-null
                               float64
                               float64
 7
     M2
              19 non-null
 8
     М3
              17 non-null
                               float64
 9
     M4
              18 non-null
                               float64
10
     T0TAL
              16 non-null
                               float64
 11
     AVG
              20 non-null
                               float64
dtypes: float64(6), int64(2), object(4)
memory usage: 2.1+ KB
None
SN0
           0
           0
REGNO
           1
NAME
           0
D0B
           1
GENDER
ADDRESS
           1
           3
M1
           2
M2
           4
M3
           3
M4
```

TOTAL AVG dtype: i	5 1 nt64	
SNO REGNO NAME DOB GENDER ADDRESS M1 M2 M3 M4 TOTAL	20 20 19 13 2 4 17 17 6 16	
AVG dtype: i	15 nt64	

	SN0	REGNO	NAME	_ DOB	GENDER	ADDRESS	M1
M2	M3	\	IVALIL	БОВ	OLINDLIN	ADDITESS	LIT
1	2	1220122	BABU	1999-01-25	MALE	KANCHIPURAM	56.0
61.0	80						
3	4	1220124	DEVA	2000-11-09	MALE	POONAMALEE	74.0
79.0			ECTED	2000 11 21		CHTTHID	02.0
4	5	1220125	ESTER	2000-11-21	FEMALE	CHITHUR	92.0
95.0 5	96 6	.0 1220126	FARHANA	1999-03-05	FEMALE	THANDALAM	91.0
88.0	_		ГАППАНА	1999-03-03	FEMALE	I HANDALAM	91.0
6	7	1220127	GANI	2000-10-02	MALE	KANCHIPURAM	49.0
51.0	-	_	0,=				
7	7	1220127	GANI	2000-10-02	MALE	KANCHIPURAM	49.0
51.0		_					
8	8	1220128	HEMA	1999-01-25	FEMALE	POONAMALEE	95.0
96.0			7 4 1 1 7 7 1 1	2000 11 00		T	24.0
10	10	1220130	JAHITH	2000-11-09	MALE	THANDALAM	34.0
45.0 11	50 11	.0 1220131	KANI	2000-11-21	FEMALE	CHITHUR	96.0
95.0			KANI	2000-11-21	FEMALE	CULTION	90.0
12	12	1220132	LATHESSH	1999-03-05	MALE	THANDALAM	NaN
68.0			L/(IIILSSII	1333 03 03	11/12	111711427127111	itait
14	14	1220134	NANI	20001109	MALE	POONAMALEE	79.0
77.0	80	. 0					
15	15	1220135	NaN	19990125	NaN	NaN	NaN
NaN	Nal						
16	16	1220136	PRATHAP	20000921	MALE	KANCHIPURAM	86.0
84.0 17	90 17		DACHII	20001100	MALE	DOONAMALEE	67.0
64.0		1220137	RAGHU	20001109	MALE	POONAMALEE	07.0
18	18	1220138	RATHI	20001121	FEMALE	KANCHIPURAM	81.0
10	10	1220130	IVAIIII	20001121	LIIALL	TO MICHTED OTTAL	31.0

86.0 20 69.0	20	1220140	SANTHOSH	20001002	MALE	KANCHIPURAM	76.0
1 3 4 5 6 7 8 10 11 12 14 15 16 17 18 20	M4 56.0 74.0 92.0 91.0 49.0 95.0 34.0 96.0 70.0 79.0 NaN 86.0 NaN 81.0 76.0	TOTAL 253.0 307.0 375.0 360.0 219.0 219.0 376.0 163.0 383.0 208.0 315.0 0.0 346.0 201.0 338.0 301.0	AVG 84.333333 102.333333 125.000000 120.000000 73.000000 125.333333 54.333333 127.666667 69.333333 105.000000 0.000000 115.333333 67.000000 112.666667 100.333333				
	SN0	REGNO	NAME	DOB	GENDER	ADDRESS	M1
M2 0 81.0	M3 1 9 90	1220121	ARUN	2000-02-10	MALE	THANDALAM	82.0
1 61.0	2	1220122	BABU	1999-01-25	MALE	KANCHIPURAM	56.0
2 59.0	3	1220123	CHARAN	2000.09.21	MALE	THANDALAM	0.0
3 79.0	4	1220124	DEVA	2000-11-09	MALE	POONAMALEE	74.0
4 95.0	5	1220125	ESTER	2000-11-21	FEMALE	CHITHUR	92.0
5	6	1220126	FARHANA	1999-03-05	FEMALE	THANDALAM	91.0
88.0	7	1220127	GANI	2000-10-02	MALE	KANCHIPURAM	49.0
7		1220127	GANI	2000-10-02	MALE	KANCHIPURAM	49.0
51.0	8	1220128	HEMA	1999-01-25	FEMALE	POONAMALEE	95.0
96.0 9	9	1220129	INDRA	2000.09.21	FEMALE	KANCHIPURAM	64.0
0.0 10) 1220130	JAHITH	2000-11-09	MALE	THANDALAM	34.0
45.0 11	9 50 11	.0 1220131	KANI	2000-11-21	FEMALE	CHITHUR	96.0
95.0 12	96	. 0		1999-03-05			

68.	0	70	0					
13		13	1220133	MANI	2000-10-02	MALE	KANCHIPURAM	71.0
76.		0						
14 77.		14 80	1220134	NANI	20001109	MALE	POONAMALEE	79.0
15		อย 15	1220135	0	19990125	0	Θ	0.0
0.0		0.0		ŭ	13330123		· ·	0.0
16			1220136	PRATHAP	20000921	MALE	KANCHIPURAM	86.0
84. 17		90. 17	.0 1220137	RAGHU	20001109	MALE	POONAMALEE	67.0
64.		70.		RAUTU	20001109	MALE	PUUNAMALEE	07.0
18		18	1220138	RATHI	20001121	FEMALE	KANCHIPURAM	81.0
86.		90		G 4 5 4 7 G 1 4				
19 87.		19 0	1220139	SARVESH	19990305	MALE	THANDALAM	84.0
20		20	1220140	SANTH0SH	20001002	MALE	KANCHIPURAM	76.0
69.		80		5/111110011		==		
		N/ /	TOTAL	A)/C				
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1		6.0	253.0	84.333333				
2		9.0	0.0	0.000000				
2 3		4.0	307.0	102.333333				
4		2.0	375.0	125.000000				
5		1.0	360.0	120.000000				
6		9.0		73.000000				
7		9.0		73.000000				
8		5.0	376.0	125.333333				
9		4.0	0.0	0.000000				
10		4.0	163.0	54.333333				
11		6.0	383.0	127.666667				
12	70	0.0	208.0	69.333333				
13	7	1.0	0.0	0.000000				
14	79	9.0	315.0	105.000000				
15	(9.0	0.0	0.000000				
16	86	6.0	346.0	115.333333				
17	(0.0		67.000000				
18		1.0		112.666667				
				0.000000				
20	76	6.0	301.0	100.333333				
	SI	NO	REGNO	NAME	_ DOB	GENDER	ADDRESS	M1
M2	51	M3		IVALIL	505	GLIVDLIN	ADDITESS	111
0		1	1220121	ARUN	2000-02-10	MALE	THANDALAM	82.0
81.	0	90		DADU	1000 01 25	MALE	IZANICUT DUD ARA	FC 0
1 61.	0	2 80	1220122	BABU	1999-01-25	MALE	KANCHIPURAM	56.0
2	Ü		1220123	CHARAN	2000.09.21	MALE	THANDALAM	56.0
59.	0	60		C17110114	2000103121	,		3313

3 79.0			DEVA	2000-11-09	MALE	P00NAMALEE	74.0
4	5	1220125	ESTER	2000-11-21	FEMALE	CHITHUR	92.0
95.0 5	96. 6		FARHANA	1999-03-05	FEMALE	THANDALAM	91.0
88.0 6	90. 7		GANI	2000-10-02	MAIF	KANCHIPURAM	49.0
51.0 7	70.	0					49.0
, 51.0			GANI	2000-10-02	MALE	KANCHIPURAM	49.0
8 96.0			HEMA	1999-01-25	FEMALE	POONAMALEE	95.0
9	9	1220129	INDRA	2000.09.21	FEMALE	KANCHIPURAM	64.0
96.0 10			JAHITH	2000-11-09	MALE	THANDALAM	34.0
45.0	50.	0					
11 95.0			KANI	2000-11-21	FEMALE	CHITHUR	96.0
12	12	1220132	LATHESSH	1999-03-05	MALE	THANDALAM	96.0
68.0 13			MANI	2000-10-02	MΔIF	KANCHIPURAM	71.0
76.0	70.	0					
14 77 Ռ	14 80.		NANI	20001109	MALE	POONAMALEE	79.0
15	15	1220135	NANI	19990125	MALE	POONAMALEE	79.0
77.0 16	80. 16	0 1220136	PRATHAP	20000921	MALE	KANCHIPURAM	86.0
84.0	90.	0					
17 64.0			RAGHU	20001109	MALE	POONAMALEE	67.0
18	18	1220138	RATHI	20001121	FEMALE	KANCHIPURAM	81.0
86.0 19			SARVESH	19990305	MALE	THANDALAM	84.0
87.0	90.	0					
20 69.0	20 80.		SANTH0SH	20001002	MALE	KANCHIPURAM	76.0
03.0							
0	M4 NaN	TOTAL NaN	AVG NaN				
	56.0	253.0	84.333333				
2 :	70.0	253.0	0.000000				
	74.0	307.0	102.333333				
	92.0	375.0	125.000000				
	91.0 49.0	360.0 219.0	120.000000 73.000000				
	49.0 49.0	219.0	73.000000				
	95.0	376.0	125.333333				
	64.0	376.0	0.000000				
	34.0	163.0	54.333333				

```
11
    96.0
           383.0
                  127.666667
    70.0
           208.0
                   69.333333
12
13
    71.0
           208.0
                     0.000000
    79.0
           315.0
14
                   105.000000
15
    79.0
             0.0
                     0.000000
16
    86.0
           346.0
                  115.333333
    86.0
           201.0
17
                   67.000000
18
    81.0
           338.0
                  112.666667
19
    84.0
           338.0
                     0.000000
20
    76.0
           301.0
                  100.333333
0
      False
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3
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7
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dtype: bool
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            REGNO
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                                                                     M1
      М3
M2
0
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         1220121
                        ARUN
                              2000-02-10
                                              MALE
                                                       THANDALAM
                                                                  82.0
81.0
      90.0
      2
                        BABU
         1220122
                              1999-01-25
                                              MALE KANCHIPURAM
                                                                   56.0
61.0
      80.0
                              2000.09.21
          1220123
                      CHARAN
                                              MALE
      3
                                                       THANDALAM
                                                                    NaN
59.0
      60.0
      4
          1220124
                        DEVA
                              2000-11-09
                                              MALE
                                                      POONAMALEE
                                                                   74.0
79.0
      80.0
         1220125
                       ESTER
      5
                              2000-11-21
                                            FEMALE
                                                         CHITHUR
                                                                   92.0
      96.0
95.0
5
      6
         1220126
                     FARHANA
                              1999-03-05
                                            FEMALE
                                                       THANDALAM
                                                                   91.0
      90.0
88.0
6
      7
         1220127
                        GANI
                              2000-10-02
                                              MALE KANCHIPURAM
                                                                   49.0
```

51.0 70.0	
8 8 1220128 HEMA 1999-01-25 FEMALE POONAM	1ALEE 95.0
96.0 90.0 9 9 1220129 INDRA 2000.09.21 FEMALE KANCHIF	PURAM 64.0
NaN NaN 10 10 1220130 JAHITH 2000-11-09 MALE THAND	ALAM 34.0
45.0 50.0 11 11 1220131 KANI 2000-11-21 FEMALE CHI	THUR 96.0
95.0 96.0 12 12 1220132 LATHESSH 1999-03-05 MALE THAND	OALAM NaN
68.0 70.0	
13 13 1220133 MANI 2000-10-02 MALE KANCHIF 76.0 NaN	
14 14 1220134 NANI 20001109 MALE POONAM 77.0 80.0	1ALEE 79.0
15 15 1220135 NaN 19990125 NaN NaN NaN	NaN NaN
16 16 1220136 PRATHAP 20000921 MALE KANCHIF	PURAM 86.0
84.0 90.0 17 17 1220137 RAGHU 20001109 MALE POONAM	MALEE 67.0
64.0 70.0 18 18 1220138 RATHI 20001121 FEMALE KANCHIF	PURAM 81.0
86.0 90.0 19 19 1220139 SARVESH 19990305 MALE THAND	ALAM 84.0
87.0 NaN 20 20 1220140 SANTHOSH 20001002 MALE KANCHIF	PURAM 76.0
69.0 80.0	7010
M4 TOTAL AVG 0 NaN NaN NaN NaN 1 56.0 253.0 84.333333 2 70.0 NaN 0.000000 3 74.0 307.0 102.333333 4 92.0 375.0 125.000000 5 91.0 360.0 120.000000 6 49.0 219.0 73.000000 8 95.0 376.0 125.333333 9 64.0 NaN 0.000000 10 34.0 163.0 54.333333 11 96.0 383.0 127.666667 12 70.0 208.0 69.333333 13 71.0 NaN 0.000000 14 79.0 315.0 105.000000 15 NaN 0.0 0.000000 16 86.0 346.0 115.333333 17 NaN 201.0 67.000000 18 81.0 338.0 112.666667	
19 84.0 NaN 0.000000 20 76.0 301.0 100.333333	

<ipython-input-9-3a5eb3497995>:30: FutureWarning: DataFrame.fillna
with 'method' is deprecated and will raise in a future version. Use
obj.ffill() or obj.bfill() instead.
 df_filled_forward = df.fillna(method='ffill')