datacleaning

September 19, 2024

[1]: import pandas as pd

```
import matplotlib.pyplot as plt
     df = pd.read_excel(r"D:\python tut\csv files\Customer Call List.xlsx")
     df
[1]:
                                     Last_Name
                                                 Phone_Number
         CustomerID First_Name
                1001
                           Frodo
                                       Baggins
                                                 123-545-5421
     1
                1002
                                          Nadir
                                                 123/643/9775
                            Abed
     2
                1003
                          Walter
                                         /White
                                                    7066950392
     3
                1004
                          Dwight
                                       Schrute
                                                 123-543-2345
     4
                1005
                                           Snow
                                                 876 | 678 | 3469
                             Jon
     5
                1006
                             Ron
                                       Swanson
                                                 304-762-2467
     6
                1007
                            Jeff
                                        Winger
                                                           NaN
     7
                        Sherlock
                1008
                                        Holmes
                                                 876 | 678 | 3469
     8
                1009
                         Gandalf
                                            NaN
                                                           N/a
     9
                1010
                           Peter
                                        Parker
                                                 123-545-5421
     10
                1011
                                         Gamgee
                         Samwise
                                                           NaN
     11
                1012
                           Harry
                                     ...Potter
                                                 7066950392
     12
                1013
                             Don
                                         Draper
                                                 123-543-2345
     13
                1014
                          Leslie
                                          Knope
                                                 876 | 678 | 3469
     14
                1015
                            Toby
                                   Flenderson_
                                                 304-762-2467
     15
                1016
                             Ron
                                       Weasley
                                                 123-545-5421
     16
                                                 123/643/9775
                1017
                        Michael
                                          Scott
     17
                                                    7066950392
                1018
                           Clark
                                           Kent
     18
                1019
                           Creed
                                         Braton
                                                           N/a
     19
                1020
                          Anakin
                                     Skywalker
                                                 876 | 678 | 3469
     20
                1020
                          Anakin
                                     Skywalker
                                                 876 | 678 | 3469
                                           Address Paying Customer Do_Not_Contact
     0
                           123 Shire Lane, Shire
                                                                                   No
                                                                 Yes
     1
                             93 West Main Street
                                                                  No
                                                                                  Yes
     2
                              298 Drugs Driveway
                                                                   N
                                                                                 NaN
     3
         980 Paper Avenue, Pennsylvania, 18503
                                                                 Yes
                                                                                    Y
                                                                   Y
     4
                                 123 Dragons Road
                                                                                   No
     5
                                 768 City Parkway
                                                                 Yes
                                                                                  Yes
     6
                                1209 South Street
                                                                  No
                                                                                   No
     7
                                    98 Clue Drive
                                                                   N
                                                                                   No
     8
                                 123 Middle Earth
                                                                 Yes
                                                                                  NaN
```

```
9
                     25th Main Street, New York
                                                              Yes
                                                                               No
     10
                          612 Shire Lane, Shire
                                                              Yes
                                                                               No
                           2394 Hogwarts Avenue
     11
                                                                Y
                                                                              NaN
     12
                               2039 Main Street
                                                              Yes
                                                                                N
     13
                               343 City Parkway
                                                              Yes
                                                                               No
     14
                                  214 HR Avenue
                                                                N
                                                                               No
     15
                           2395 Hogwarts Avenue
                                                               No
                                                                                N
     16
                121 Paper Avenue, Pennsylvania
                                                              Yes
                                                                               No
                                                                Y
     17
                                3498 Super Lane
                                                                              NaN
     18
                                             N/a
                                                              N/a
                                                                              Yes
                    910 Tatooine Road, Tatooine
     19
                                                                                N
                                                              Yes
     20
                    910 Tatooine Road, Tatooine
                                                              Yes
                                                                                N
         Not_Useful_Column
     0
                       True
                      False
     1
     2
                       True
     3
                       True
                       True
     4
     5
                       True
                      False
     6
     7
                      False
     8
                      False
     9
                       True
     10
                       True
     11
                       True
                      False
     12
     13
                      False
     14
                      False
                      False
     15
     16
                      False
     17
                       True
     18
                       True
     19
                       True
     20
                       True
[3]: df["Last Name"] = df["Last Name"].str.strip("123/ .")
     df["First_Name"]
     df["Phone_Number"] = df["Phone_Number"].str.replace('[^a-zA-Z0-9]', '', | )
      ⇔regex=True)
     df["Phone Number"] = df["Phone Number"].apply(lambda x: str(x))
     df["Phone_Number"] = df["Phone_Number"].apply(lambda x: x[0:3]+ "-" + x[3:6] +
      \circ"-"+ x[6:10])
     df["Phone_Number"] = df["Phone_Number"].str.replace('nan--', '')
```

[8]: df["Phone_Number"] = df["Phone_Number"].str.replace('--', '')

[10]: df

	CustomerID	First_Name	Last_Name	Phone_Number	\		
0	1001	Frodo	Baggins	123-545-5421			
1	1002	Abed	Nadir	123-643-9775			
2	1003	Walter	White				
3	1004						
4	1005	Jon	Snow	876-678-3469			
5	1006	Ron	Swanson	304-762-2467			
6	1007	Jeff	Winger				
7	1008	Sherlock	Holmes	876-678-3469			
8	1009	Gandalf	NaN				
9	1010	Peter	Parker	123-545-5421			
10	1011	Samwise	Gamgee				
1	1012	Harry	Potter				
1:	2 1013	Don	Draper	123-543-2345			
13	3 1014	Leslie	Knope	876-678-3469			
14	1015	Toby	Flenderson	304-762-2467			
1	5 1016	Ron	Weasley	123-545-5421			
10	3 1017	Michael	Scott	123-643-9775			
1	7 1018	Clark	Kent				
18	3 1019	Creed	Braton				
19	1020	Anakin	Skywalker	876-678-3469			
20	1020	Anakin	Skywalker	876-678-3469			
^			Addr	ess Paying Cus	tomer	Do_Not_Contact	\
()		123 Sh	ire Lane Sh	ire	Yes	No	
0			ire Lane, Sh West Main Str		Yes No	No Yes	
1		93 W	est Main Str	eet	No	Yes	
1 2	980 Paper	93 W 298	est Main Str Drugs Drive	reet way	No N	Yes NaN	
1 2 3	980 Paper .	93 W 298 Avenue, Penn	est Main Str Drugs Drive sylvania, 18	reet way 8503	No N Yes	Yes NaN Y	
1 2 3 4	980 Paper .	93 W 298 Avenue, Penn 1	est Main Str Drugs Drive sylvania, 18 23 Dragons R	eet way 503 oad	No N Yes Y	Yes NaN Y No	
1 2 3 4 5	980 Paper .	93 W 298 Avenue, Penn 1 7	est Main Str Drugs Drive Sylvania, 18 23 Dragons R 68 City Park	eet way 5503 coad way	No N Yes Y	Yes NaN Y No Yes	
1 2 3 4 5 6	980 Paper .	93 W 298 Avenue, Penn 1 7	est Main Str Drugs Drive sylvania, 18 23 Dragons R 68 City Park 09 South Str	reet way 503 coad way reet	No N Yes Y Yes	Yes NaN Y No Yes No	
1 2 3 4 5 6 7	980 Paper .	93 W 298 Avenue, Penn 1 7 12	Test Main Str B Drugs Drive Sylvania, 18 23 Dragons R 68 City Park 109 South Str 98 Clue Dr	reet way 5503 coad way reet rive	No N Yes Y Yes No N	Yes NaN Y No Yes No No	
1 2 3 4 5 6 7 8	980 Paper .	93 W 298 Avenue, Penn 1 7 12	Test Main Str Drugs Drive Sylvania, 18 23 Dragons R 68 City Park 109 South Str 98 Clue Dr 23 Middle Ea	reet way 5503 coad way reet rive	No N Yes Y Yes No N Yes	Yes NaN Y No Yes No No NaN	
1 2 3 4 5 6 7 8		93 W 298 Avenue, Penn 1 7 12 1 25th Main S	est Main Str Drugs Drive sylvania, 18 23 Dragons R 68 City Park 09 South Str 98 Clue Dr 23 Middle Ea	eet way 503 coad way eet ive crth	No N Yes Y Yes No N Yes Yes	Yes NaN Y No Yes No No No No	
1 2 3 4 5 6 7 8 9)	93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh	Test Main Str Brugs Drive Sylvania, 18 23 Dragons R 68 City Park 09 South Str 98 Clue Dr 23 Middle Ea Street, New Y	eet way 503 coad way eet rive arth ork	No N Yes Y Yes No N Yes Yes Yes	Yes NaN Y No Yes No No No No No NaN No	
1 2 3 4 5 6 7 8 9 10	-) [93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh 2394	Test Main Str S Drugs Drive Sylvania, 18 23 Dragons R 68 City Park 209 South Str 98 Clue Dr 23 Middle Ea Street, New Y Lire Lane, Sh Hogwarts Ave	reet way 503 coad way reet rive arth Tork sire	No N Yes Y Yes No N Yes Yes Yes	Yes NaN Y No Yes No No No No NaN No No No	
1 2 3 4 5 6 7 8 9 1 1) 1 2	93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh 2394	Test Main Str S Drugs Drive Sylvania, 18 23 Dragons R 68 City Park 09 South Str 98 Clue Dr 23 Middle Ea Street, New Y Lire Lane, Sh Hogwarts Ave	eet way 503 coad way eet rive rth fork dire	No N Yes Y Yes No N Yes Yes Yes Yes	Yes NaN Y No Yes No No No NaN No No NaN	
1 2 3 4 5 6 7 8 9 10 11) L 2	93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh 2394	est Main Str Drugs Drive sylvania, 18 23 Dragons R 68 City Park 09 South Str 98 Clue Dr 23 Middle Ea treet, New Y ire Lane, Sh Hogwarts Ave 039 Main Str 43 City Park	eet way 503 coad way eet rive rth fork dire enue	No N Yes Y Yes No N Yes Yes Yes Yes Yes Yes	Yes NaN Y No Yes No No No No NaN No No NaN No No NaN No	
1 2 3 4 5 6 7 8 9 10 1:) 1 2 3	93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh 2394 2	Test Main Str S Drugs Drive Sylvania, 18 23 Dragons R 68 City Park 98 Clue Dr 23 Middle Ea Street, New Y ire Lane, Sh Hogwarts Ave 1039 Main Str 143 City Park 214 HR Ave	eet way 503 coad way eet rive crth fork cire enue eet	No N Yes Y Yes No N Yes Yes Yes Yes Y	Yes NaN Y No Yes No No No NaN No	
1 2 3 4 5 6 7 8 9 1 1 1 1 1) 1 2 3 4	93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh 2394 2	dest Main Str S Drugs Drive Sylvania, 18 23 Dragons R 68 City Park 209 South Str 98 Clue Dr 23 Middle Ea Street, New Y dire Lane, Sh Hogwarts Ave 2039 Main Str 43 City Park 214 HR Ave	eet way 503 coad way eet rive arth fork dire mue eet way	No N Yes Yes No N Yes Yes Yes Yes You No N No	Yes NaN Y No Yes No No No NaN No No No NaN No No NaN No	
1 2 3 4 5 6 7 8 9 10 1: 1: 1:) 1 2 3 4 5 5 121	93 W 298 Avenue, Penn 1 7 12 25th Main S 612 Sh 2394 2 3 2395 Paper Avenu	dest Main Str Brugs Drive Sylvania, 18 23 Dragons R 68 City Park 09 South Str 98 Clue Dr 23 Middle Ea Street, New Y Lire Lane, Sh Hogwarts Ave 1039 Main Str 143 City Park 214 HR Ave Hogwarts Ave 10, Pennsylva	eet way 5503 coad way eet rive rth fork dire enue eet way mue mue	No N Yes Y Yes No N Yes Yes Yes Yes You No No Yes	Yes NaN Y No Yes No No No NaN No No No NaN No No NaN No No No No No	
1 2 3 4 5 6 7 8 9 1 1 1; 1; 1; 1;) 1 2 3 4 5 5 121	93 W 298 Avenue, Penn 1 7 12 25th Main S 612 Sh 2394 2 3 2395 Paper Avenu	dest Main Str Brugs Drive Sylvania, 18 23 Dragons R 68 City Park 98 Clue Dr 23 Middle Ea Street, New Y ire Lane, Sh Hogwarts Ave 2039 Main Str 214 HR Ave Hogwarts Ave 143 City Park 214 HR Ave Hogwarts Ave 149 Super L	eet way 503 coad way eet rive orth fork dire enue eet way enue enue nia dane	No N Yes Y Yes No N Yes Yes Yes Yes Yes Yes Yes Y	Yes NaN Y No Yes No No No NaN No No No NaN No No NaN No No No No No No No No	
1 2 3 4 5 6 7 8 9 10 1: 1: 1:) 1 2 3 4 5 5 6 121 7	93 W 298 Avenue, Penn 1 7 12 1 25th Main S 612 Sh 2394 2 3 2395 Paper Avenu	dest Main Str Brugs Drive Sylvania, 18 23 Dragons R 68 City Park 98 Clue Dr 23 Middle Ea Street, New Y ire Lane, Sh Hogwarts Ave 2039 Main Str 214 HR Ave Hogwarts Ave 143 City Park 214 HR Ave Hogwarts Ave 149 Super L	reet way 2503 coad way reet rive arth fork dire enue reet way enue enue nia ane N/a	No N Yes Y Yes No N Yes Yes Yes Yes You No No Yes	Yes NaN Y No Yes No No No NaN No No No NaN No No NaN No No No No No	

```
0
                        True
                       False
      1
      2
                        True
      3
                        True
      4
                        True
      5
                        True
      6
                       False
      7
                       False
      8
                       False
      9
                        True
      10
                        True
      11
                        True
      12
                       False
      13
                       False
      14
                       False
      15
                       False
      16
                       False
      17
                        True
      18
                        True
      19
                        True
      20
                        True
[14]: address_split = df["Address"].str.split(',', expand = True)
      df = df.assign(Street_Address = address_split[0], State = address_split[1],__

¬Zip_Code = address_split[2])
[30]: df["Paying Customer
                                   "] = df["Paying Customer"].str.replace("Yes","Y").
       ⇔str.replace("No","N")
      df["Do_Not_Contact"] = df["Do_Not_Contact"].str.replace("Yes","Y").str.

¬replace("No","N")

[30]:
          CustomerID First_Name
                                   Last_Name
                                               Phone_Number Paying Customer
                 1001
                           Frodo
                                               123-545-5421
                                     Baggins
      1
                 1002
                            Abed
                                        Nadir 123-643-9775
                                                                            N
      2
                1003
                          Walter
                                        White
                                                                            N
      3
                                                                            Y
                 1004
                          Dwight
                                      Schrute 123-543-2345
      4
                                                                            Y
                 1005
                             Jon
                                         Snow 876-678-3469
                                                                            Y
      5
                 1006
                             Ron
                                      Swanson 304-762-2467
      6
                 1007
                            Jeff
                                       Winger
                                                                            N
      7
                 1008
                        Sherlock
                                       Holmes
                                              876-678-3469
                                                                            N
      8
                1009
                         Gandalf
                                          NaN
                                                                            Y
      9
                1010
                                              123-545-5421
                                                                            Y
                           Peter
                                       Parker
      10
                 1011
                         Samwise
                                       Gamgee
                                                                            Y
                                                                            Y
                 1012
                                       Potter
      11
                           Harry
      12
                 1013
                             Don
                                       Draper
                                                                            Y
                                               123-543-2345
```

Not_Useful_Column

13	1014	Leslie	Knope	876-678-3469	Y
14	1015	Toby	Flenderson	304-762-2467	N
15	1016	Ron	Weasley	123-545-5421	N
16	1017	Michael	Scott	123-643-9775	Y
17	1018	Clark	Kent		Y
18	1019	Creed	Braton		N/a
19	1020	Anakin	Skywalker	876-678-3469	Y
20	1020	Anakin	Skywalker	876-678-3469	Y
	Do_Not_Contact Not_Usefu		ful_Column	${ t Street_Address}$	
0		N	True	123 Shire Lane	
1	•	Y	False	93 West Main Street	

	Do_Not_Contact	Not_Useful_Column	Street_Address	State	\
(N N	True	123 Shire Lane	Shire	
	1 Y	False	93 West Main Street	None	
2	NaN	True	298 Drugs Driveway	None	
;	З У	True	980 Paper Avenue	Pennsylvania	
4	1 N	True	123 Dragons Road	None	
į	5 Y	True	768 City Parkway	None	
(5 N	False	1209 South Street	None	
٠	7 N	False	98 Clue Drive	None	
8	NaN	False	123 Middle Earth	None	
9	9 N	True	25th Main Street	New York	
	10 N	True	612 Shire Lane	Shire	
	11 NaN	True	2394 Hogwarts Avenue	None	
	12 N	False	2039 Main Street	None	
	13 N	False	343 City Parkway	None	
	14 N	False	214 HR Avenue	None	
	15 N	False	2395 Hogwarts Avenue	None	
	16 N	False	121 Paper Avenue	Pennsylvania	
	NaN	True	3498 Super Lane	None	
	18 Y	True	N/a	None	
	19 N	True	910 Tatooine Road	Tatooine	
2	20 N	True	910 Tatooine Road	Tatooine	

	Zip_Code	Paying	Customer\t
0	None		Y
1	None		N
2	None		N
3	18503		Y
4	None		Y
5	None		Y
6	None		N
7	None		N
8	None		Y
9	None		Y
10	None		Y
11	None		Y
12	None		Y
13	None		Y

```
15
              None
                                    N
      16
              None
                                    Y
                                    Y
      17
              None
      18
              None
                                  N/a
      19
             None
                                    Y
      20
             None
                                    γ
[32]:
     df = df.drop(columns="Paying Customer\t")
[35]: df.fillna('', inplace=True)
      df
[35]:
          CustomerID First_Name
                                    Last_Name Phone_Number Paying Customer
                 1001
                                                123-545-5421
      0
                            Frodo
                                       Baggins
                 1002
      1
                             Abed
                                         Nadir
                                                123-643-9775
                                                                              N
      2
                 1003
                           Walter
                                                                              N
                                         White
      3
                 1004
                                                                              Y
                           Dwight
                                       Schrute
                                                123-543-2345
      4
                                                                              Y
                 1005
                              Jon
                                          Snow
                                                876-678-3469
      5
                                                                              Y
                 1006
                              Ron
                                       Swanson
                                                304-762-2467
      6
                 1007
                             Jeff
                                        Winger
                                                                              N
      7
                 1008
                         Sherlock
                                        Holmes
                                                                              N
                                                876-678-3469
      8
                                                                              Y
                 1009
                         Gandalf
      9
                 1010
                            Peter
                                        Parker
                                                123-545-5421
                                                                              Y
                                                                              Y
      10
                 1011
                         Samwise
                                        Gamgee
                                        Potter
                                                                              Y
      11
                 1012
                            Harry
      12
                 1013
                                                                              Y
                              Don
                                        Draper 123-543-2345
                                                                              Y
      13
                 1014
                           Leslie
                                         Knope
                                                876-678-3469
      14
                 1015
                             Toby
                                   Flenderson
                                                304-762-2467
                                                                             N
      15
                 1016
                                                                              N
                              Ron
                                       Weasley
                                                123-545-5421
      16
                 1017
                        Michael
                                         Scott
                                                123-643-9775
                                                                              Y
                                                                              Y
      17
                 1018
                            Clark
                                          Kent
      18
                                                                           N/a
                 1019
                            Creed
                                        Braton
      19
                 1020
                           Anakin
                                                                              Y
                                    Skywalker
                                                876-678-3469
                 1020
                                                                              Y
      20
                           Anakin
                                    Skywalker
                                                876-678-3469
                                                                                State \
         Do_Not_Contact
                           Not_Useful_Column
                                                      Street_Address
      0
                       N
                                         True
                                                      123 Shire Lane
                                                                                Shire
      1
                       Y
                                        False
                                                93 West Main Street
      2
                                                 298 Drugs Driveway
                                         True
      3
                       Y
                                         True
                                                    980 Paper Avenue
                                                                        Pennsylvania
      4
                       N
                                         True
                                                    123 Dragons Road
      5
                       Y
                                         True
                                                    768 City Parkway
      6
                       N
                                        False
                                                   1209 South Street
      7
                       N
                                        False
                                                       98 Clue Drive
                                                    123 Middle Earth
      8
                                        False
      9
                       N
                                         True
                                                    25th Main Street
                                                                             New York
```

N

14

None

10		N	True	612 Shire Lane	e Shire
11			True	2394 Hogwarts Avenue	9
12		N	False	2039 Main Street	
13		N	False	343 City Parkway	7
14		N	False	214 HR Avenue	
15		N	False	2395 Hogwarts Avenue	
16		N	False	121 Paper Avenue	
17			True	3498 Super Lane	
18		Y	True	N/a	
19		N	True	910 Tatooine Road	
20		N	True	910 Tatooine Road	
20		IV	irue	910 TatooThe Road	i latooine
	Zip_Code				
0	Zip_code				
1 2					
3	18503				
	10505				
4 5					
6					
7					
8 9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
: df					
:	CustomerTD	First_Name	Last_Name	Phone_Number Paying	g Customer \
0	1001	Frodo	Baggins	123-545-5421	Y
1	1002	Abed	Nadir	123-643-9775	N
2	1003	Walter	White		N
3	1004	Dwight	Schrute	123-543-2345	Y
4	1005	Jon	Snow	876-678-3469	Y
5	1003	Ron	Swanson	304-762-2467	Y
0	1000	7.011	Dwallsoll	004 102 2 4 01	1

[39]

[39]

6

7

8

1007

1008

1009

Holmes 876-678-3469

Winger

Jeff

Sherlock

Gandalf

N

N

Y

9	1010	Peter	Parker	123-545-5421	Y	
10	1011	Samwise	Gamgee		Y	
11	1012	Harry	Potter		Y	
12	1013	Don	Draper	123-543-2345	Y	
13	1014	Leslie	_		Y	
			Knope			
14	1015	Toby	Flenderson		N	
15	1016	Ron	Weasley		N	
16	1017	Michael	Scott	123-643-9775	Y	
17	1018	Clark	Kent		Y	
18	1019	Creed	Braton		N/a	
19	1020	Anakin	Skywalker	876-678-3469	Y	
20	1020	Anakin	Skywalker	876-678-3469	Y	
	Do_Not_Conta	ct Not Use	ful_Column	Street_Address	State	\
0		N	True	123 Shire Lane	Shire	•
1		Y	False	93 West Main Street	DIIIIC	
2		1	True			
		V	True	298 Drugs Driveway	D	
3		Y		980 Paper Avenue	Pennsylvania	
4		N	True	123 Dragons Road		
5		Y	True	768 City Parkway		
6		N	False	1209 South Street		
7		N	False	98 Clue Drive		
8			False	123 Middle Earth		
9		N	True	25th Main Street	New York	
10		N	True	612 Shire Lane	Shire	
11			True	2394 Hogwarts Avenue		
12		N	False	2039 Main Street		
13		N	False	343 City Parkway		
14		N	False	214 HR Avenue		
15		N	False	2395 Hogwarts Avenue		
16		N	False	121 Paper Avenue	Pennsylvania	
17		14	True	3498 Super Lane	1 ching i vania	
		V		N/a		
18		Y	True		T-42	
19		N	True	910 Tatooine Road	Tatooine	
20		N	True	910 Tatooine Road	Tatooine	
	Zip_Code					
0						
1						
2						
3	18503					
4						
5						
6						
7						
8						
9						
Э						

```
10
      11
      12
      13
      14
      15
      16
      17
      18
      19
      20
[45]: for x in df.index:
          if df.loc[x,"Do_Not_Contact"] == "Y":
               df.drop(x, inplace=True)
[47]: for x in df.index:
          if df.loc[x,"Phone_Number"] == " ":
               df.drop(x, inplace= True)
[48]: df
[48]:
          CustomerID First_Name
                                    Last_Name
                                               Phone_Number Paying Customer
      0
                 1001
                           Frodo
                                      Baggins
                                               123-545-5421
                                                                            Y
      2
                 1003
                          Walter
                                        White
                                                                            N
                                                                            Y
      4
                 1005
                             Jon
                                         Snow
                                               876-678-3469
      6
                 1007
                            Jeff
                                       Winger
                                                                            N
      7
                 1008
                        Sherlock
                                       Holmes
                                               876-678-3469
                                                                            N
                 1009
                         Gandalf
                                                                            Y
      8
      9
                 1010
                           Peter
                                       Parker
                                               123-545-5421
                                                                            Y
      10
                1011
                                                                            Y
                         Samwise
                                       Gamgee
                                                                            Y
      11
                 1012
                           Harry
                                       Potter
      12
                 1013
                             Don
                                       Draper
                                               123-543-2345
                                                                            Y
      13
                 1014
                          Leslie
                                        Knope
                                               876-678-3469
                                                                            Y
      14
                 1015
                            Toby
                                  Flenderson 304-762-2467
                                                                            N
      15
                 1016
                             Ron
                                      Weasley
                                               123-545-5421
                                                                            N
                        Michael
                                        Scott 123-643-9775
      16
                 1017
                                                                            Y
      17
                 1018
                           Clark
                                         Kent
                                                                            Y
                 1020
                          Anakin
                                    Skywalker
                                               876-678-3469
                                                                            Y
      19
      20
                 1020
                                    Skywalker
                                               876-678-3469
                                                                            Y
                          Anakin
                         Not_Useful_Column
                                                     Street Address
                                                                              State \
         Do_Not_Contact
      0
                       N
                                        True
                                                     123 Shire Lane
                                                                              Shire
      2
                                        True
                                                298 Drugs Driveway
```

```
4
                       N
                                        True
                                                   123 Dragons Road
      6
                       N
                                       False
                                                  1209 South Street
      7
                                       False
                       N
                                                      98 Clue Drive
      8
                                       False
                                                   123 Middle Earth
      9
                       N
                                        True
                                                   25th Main Street
                                                                            New York
      10
                       N
                                        True
                                                     612 Shire Lane
                                                                               Shire
                                        True
      11
                                               2394 Hogwarts Avenue
      12
                       N
                                       False
                                                   2039 Main Street
      13
                       N
                                       False
                                                   343 City Parkway
      14
                       N
                                       False
                                                      214 HR Avenue
      15
                                       False
                                               2395 Hogwarts Avenue
                       N
      16
                       N
                                       False
                                                   121 Paper Avenue
                                                                        Pennsylvania
      17
                                                    3498 Super Lane
                                        True
      19
                       N
                                        True
                                                  910 Tatooine Road
                                                                            Tatooine
      20
                       N
                                        True
                                                  910 Tatooine Road
                                                                            Tatooine
         Zip_Code
      0
      2
      4
      6
      7
      8
      9
      10
      11
      12
      13
      14
      15
      16
      17
      19
      20
[49]: df.to_csv(r"D:\Dataset\new_data.csv")
```

[]: