In [1]: import pandas as pd

In [2]: data = pd.read_excel('Customer Call List.xlsx')
Read the data from Local
data

Out[2]:		CustomerID	First_Name	Last Name	Phone_Number	Address	Paying Customer	Do Not Contact	Not_Useful_Column
		1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	No	True
	1	1002	Abed	Nadir	123/643/9775	93 West Main Street	No	Yes	False
	2		Walter	/White	7066950392	298 Drugs Driveway	N	NaN	True
	3		Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	Υ	True
	4	1005	Jon	Snow	876 678 3469	123 Dragons Road	Υ	No	True
	5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	Yes	True
	6	1007	Jeff	Winger	NaN	1209 South Street	No	No	False
	7	1008	Sherlock	Holmes	876 678 3469	98 Clue Drive	N	No	False
	8	1009	Gandalf	NaN	N/a	123 Middle Earth	Yes	NaN	False
	9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	No	True
	10	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	No	True
	11	1012	Harry	Potter	7066950392	2394 Hogwarts Avenue	Υ	NaN	True
	12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	N	False
	13	1014	Leslie	Knope	876 678 3469	343 City Parkway	Yes	No	False
	14	1015	Toby	Flenderson_	304-762-2467	214 HR Avenue	N	No	False
	15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	N	False
	16	1017	Michael	Scott	123/643/9775	121 Paper Avenue, Pennsylvania	Yes	No	False
	17	1018	Clark	Kent	7066950392	3498 Super Lane	Υ	NaN	True
	18	1019	Creed	Braton	N/a	N/a	N/a	Yes	True
	19	1020	Anakin	Skywalker	876 678 3469	910 Tatooine Road, Tatooine	Yes	N	True
	20	1020	Anakin	Skywalker	876 678 3469	910 Tatooine Road, Tatooine	Yes	N	True

```
In [3]: data.isnull().sum()
        # check for Null values
Out[3]: CustomerID
                             0
        First Name
                             0
        Last Name
                             1
        Phone_Number
                             2
        Address
                             0
        Paying Customer
                             0
        Do Not Contact
                             4
        Not Useful Column
                             0
        dtype: int64
In [4]: data.dtypes
        # check for data types
Out[4]: CustomerID
                              int64
        First Name
                             object
        Last Name
                             object
        Phone_Number
                             object
        Address
                             object
        Paying Customer
                             object
        Do_Not_Contact
                             object
        Not_Useful_Column
                               bool
        dtype: object
In [5]: data = data.drop(columns='Not_Useful_Column')
        # Drop unwanted column
```

In [7]: data
After dropping column 'Not_Useful_Column'

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CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_Contact
1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	No
1002	Abed	Nadir	123/643/9775	93 West Main Street	No	Yes
1003	Walter	/White	7066950392	298 Drugs Driveway	N	NaN
1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	Υ
1005	Jon	Snow	876 678 3469	123 Dragons Road	Υ	No
1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	Yes
1007	Jeff	Winger	NaN	1209 South Street	No	No
1008	Sherlock	Holmes	876 678 3469	98 Clue Drive	N	No
1009	Gandalf	NaN	N/a	123 Middle Earth	Yes	NaN
1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	No
1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	No
1012	Harry	Potter	7066950392	2394 Hogwarts Avenue	Υ	NaN
1013	Don	Draper	123-543-2345	2039 Main Street	Yes	N
1014	Leslie	Knope	876 678 3469	343 City Parkway	Yes	No
1015	Toby	Flenderson_	304-762-2467	214 HR Avenue	N	No
1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	N
1017	Michael	Scott	123/643/9775	121 Paper Avenue, Pennsylvania	Yes	No
1018	Clark	Kent	7066950392	3498 Super Lane	Υ	NaN
1019	Creed	Braton	N/a	N/a	N/a	Yes
1020	Anakin	Skywalker	876 678 3469	910 Tatooine Road, Tatooine	Yes	N
1020	Anakin	Skywalker	876 678 3469	910 Tatooine Road, Tatooine	Yes	N
	1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020	1001 Frodo 1002 Abed 1003 Walter 1004 Dwight 1005 Jon 1006 Ron 1007 Jeff 1008 Sherlock 1009 Gandalf 1010 Peter 1011 Samwise 1012 Harry 1013 Don 1014 Leslie 1015 Toby 1016 Ron 1017 Michael 1018 Clark 1019 Creed 1020 Anakin	1001 Frodo Baggins 1002 Abed Nadir 1003 Walter /White 1004 Dwight Schrute 1005 Jon Snow 1006 Ron Swanson 1007 Jeff Winger 1008 Sherlock Holmes 1009 Gandalf NaN 1010 Peter Parker 1011 Samwise Gamgee 1012 HarryPotter 1013 Don Draper 1014 Leslie Knope 1015 Toby Flenderson_ 1016 Ron Weasley 1017 Michael Scott 1018 Clark Kent 1019 Creed Braton 1020 Anakin Skywalker	1001 Frodo Baggins 123-545-5421 1002 Abed Nadir 123/643/9775 1003 Walter /White 7066950392 1004 Dwight Schrute 123-543-2345 1005 Jon Snow 876 678 3469 1006 Ron Swanson 304-762-2467 1007 Jeff Winger NaN 1008 Sherlock Holmes 876 678 3469 1009 Gandalf NaN N/a 1010 Peter Parker 123-545-5421 1011 Samwise Gamgee NaN 1012 HarryPotter 7066950392 1013 Don Draper 123-543-2345 1014 Leslie Knope 876 678 3469 1015 Toby Flenderson_ 304-762-2467 1016 Ron Weasley 123-545-5421 1017 Michael Scott 123/643/9775 1018 Clark Kent 7066950392 1019 Creed Braton N/a 1020 Anakin Skywalker 876 678 3469	1001 Frodo Baggins 123-545-5421 123 Shire Lane, Shire 1002 Abed Nadir 123/643/9775 93 West Main Street 1003 Walter /White 7066950392 298 Drugs Driveway 1004 Dwight Schrute 123-543-2345 980 Paper Avenue, Pennsylvania, 18503 1005 Jon Snow 876 678 3469 123 Dragons Road 1006 Ron Swanson 304-762-2467 768 City Parkway 1007 Jeff Winger NaN 1209 South Street 1008 Sherlock Holmes 876 678 3469 98 Clue Drive 1009 Gandalf NaN N/a 123 Middle Earth 1010 Peter Parker 123-545-5421 25th Main Street, New York 1011 Samwise Gamgee NaN 612 Shire Lane, Shire 1012 Harry Potter 7066950392 2394 Hogwarts Avenue 1013 Don Draper 123-543-2345 2039 Main Street 1014 Leslie	1001 Frodo Baggins 123-545-5421 123 Shire Lane, Shire Yes 1002 Abed Nadir 123/643/9775 93 West Main Street No 1003 Walter /White 7066950392 298 Drugs Driveway N 1004 Dwight Schrute 123-543-2345 980 Paper Avenue, Pennsylvania, 18503 Yes 1005 Jon Snow 876 678 3469 123 Dragons Road Y 1006 Ron Swanson 304-762-2467 768 City Parkway Yes 1007 Jeff Winger NaN 1209 South Street No 1008 Sherlock Holmes 876 678 3469 98 Clue Drive N 1009 Gandalf NaN N/a 123 Middle Earth Yes 1010 Peter Parker 123-545-5421 25th Main Street, New York Yes 1011 Samwise Gamgee NaN 612 Shire Lane, Shire Yes 1012 Harry Potter 7066950392 2394 Hogwarts

```
In [9]: data['Last_Name'] = data['Last_Name'].str.replace('/', '')
    data['Last_Name'] = data['Last_Name'].str.replace('...', '')
    data['Last_Name'] = data['Last_Name'].str.replace('_', '')
    # Removing unwanted special characters for 'Last_Name' column
    data
```

0u	t	[9]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_Contact
0	1001	Frodo	Baggins	1235455421	123 Shire Lane, Shire	Yes	No
1	1002	Abed	Nadir	1236439775	93 West Main Street	No	Yes
2	1003	Walter	White	NaN	298 Drugs Driveway	N	NaN
3	1004	Dwight	Schrute	1235432345	980 Paper Avenue, Pennsylvania, 18503	Yes	Υ
4	1005	Jon	Snow	8766783469	123 Dragons Road	Υ	No
5	1006	Ron	Swanson	3047622467	768 City Parkway	Yes	Yes
6	1007	Jeff	Winger	NaN	1209 South Street	No	No
7	1008	Sherlock	Holmes	8766783469	98 Clue Drive	N	No
8	1009	Gandalf	NaN	Na	123 Middle Earth	Yes	NaN
9	1010	Peter	Parker	1235455421	25th Main Street, New York	Yes	No
10	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	No
11	1012	Harry	Potter	NaN	2394 Hogwarts Avenue	Υ	NaN
12	1013	Don	Draper	1235432345	2039 Main Street	Yes	N
13	1014	Leslie	Knope	8766783469	343 City Parkway	Yes	No
14	1015	Toby	Flenderson	3047622467	214 HR Avenue	N	No
15	1016	Ron	Weasley	1235455421	2395 Hogwarts Avenue	No	N
16	1017	Michael	Scott	1236439775	121 Paper Avenue, Pennsylvania	Yes	No
17	1018	Clark	Kent	NaN	3498 Super Lane	Υ	NaN
18	1019	Creed	Braton	Na	N/a	N/a	Yes
19	1020	Anakin	Skywalker	8766783469	910 Tatooine Road, Tatooine	Yes	N
20	1020	Anakin	Skywalker	8766783469	910 Tatooine Road, Tatooine	Yes	N

In [8]: data['Phone_Number'] = data['Phone_Number'].str.replace('/', '')
 data['Phone_Number'] = data['Phone_Number'].str.replace('-', '')
 data['Phone_Number'] = data['Phone_Number'].str.replace('|', '')
 # Removing unwanted special characters for 'Phone_Number' column
 data

Skywalker

8766783469

Anakin

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:	Custon	nerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_Contact
	0	1001	Frodo	Baggins	1235455421	123 Shire Lane, Shire	Yes	No
	1	1002	Abed	Nadir	1236439775	93 West Main Street	No	Yes
	2	1003	Walter	/White	NaN	298 Drugs Driveway	N	NaN
	3	1004	Dwight	Schrute	1235432345	980 Paper Avenue, Pennsylvania, 18503	Yes	Υ
	4	1005	Jon	Snow	8766783469	123 Dragons Road	Υ	No
	5	1006	Ron	Swanson	3047622467	768 City Parkway	Yes	Yes
	6	1007	Jeff	Winger	NaN	1209 South Street	No	No
	7	1008	Sherlock	Holmes	8766783469	98 Clue Drive	N	No
	8	1009	Gandalf	NaN	Na	123 Middle Earth	Yes	NaN
	9	1010	Peter	Parker	1235455421	25th Main Street, New York	Yes	No
1	0	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	No
1	1	1012	Harry	Potter	NaN	2394 Hogwarts Avenue	Y	NaN
1	2	1013	Don	Draper	1235432345	2039 Main Street	Yes	N
1	3	1014	Leslie	Knope	8766783469	343 City Parkway	Yes	No
1	4	1015	Toby	Flenderson_	3047622467	214 HR Avenue	N	No
1	5	1016	Ron	Weasley	1235455421	2395 Hogwarts Avenue	No	N
1	6	1017	Michael	Scott	1236439775	121 Paper Avenue, Pennsylvania	Yes	No
1	7	1018	Clark	Kent	NaN	3498 Super Lane	Υ	NaN
1	8	1019	Creed	Braton	Na	N/a	N/a	Yes
1	9	1020	Anakin	Skywalker	8766783469	910 Tatooine Road, Tatooine	Yes	N

910 Tatooine Road, Tatooine

Ν

Yes

```
In [11]: data['Phone_Number'] = data['Phone_Number'].apply(lambda x: str(x))
# converting 'Phone_Number' column into string to avoid error while formating the phone numbers
# ex. 1234567899 -> 123-456-7899
```

```
In [14]: data['Phone_Number'] = data['Phone_Number'].apply(lambda x: x[0:3] + '-' + x[3:6] + '-' + x[6:10])
# Formating the phone numbers
```

In [15]: data

15

16

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19

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1016

1017

1018

1019

1020

1020

Ron

Michael

Clark

Creed

Anakin

Anakin

Weasley

Scott

Kent

Braton

Skywalker

Skywalker

123-545-5421

123-643-9775

876-678-3469

876-678-3469

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[15]:		CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_Contact
_	0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	No
	1	1002	Abed	Nadir	123-643-9775	93 West Main Street	No	Yes
	2	1003	Walter	White	nan	298 Drugs Driveway	N	NaN
	3	1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	Υ
	4	1005	Jon	Snow	876-678-3469	123 Dragons Road	Υ	No
	5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	Yes
	6	1007	Jeff	Winger	nan	1209 South Street	No	No
	7	1008	Sherlock	Holmes	876-678-3469	98 Clue Drive	N	No
	8	1009	Gandalf	NaN	Na	123 Middle Earth	Yes	NaN
	9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	No
	10	1011	Samwise	Gamgee	nan	612 Shire Lane, Shire	Yes	No
	11	1012	Harry	Potter	nan	2394 Hogwarts Avenue	Υ	NaN
	12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	N
	13	1014	Leslie	Knope	876-678-3469	343 City Parkway	Yes	No
	14	1015	Toby	Flenderson	304-762-2467	214 HR Avenue	N	No

2395 Hogwarts Avenue

3498 Super Lane

N/a

121 Paper Avenue, Pennsylvania

910 Tatooine Road, Tatooine

910 Tatooine Road, Tatooine

No

Yes

Υ

N/a

Yes

Yes

Ν

No

NaN

Yes

Ν

Ν

Anakin Skywalker

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1020

r Do_Not_Contact	Paying Customer	Address	Phone_Number	Last_Name	First_Name	CustomerID	•
s No	Yes	123 Shire Lane, Shire	123-545-5421	Baggins	Frodo	1001	0
Yes	No	93 West Main Street	123-643-9775	Nadir	Abed	1002	1
N NaN	N	298 Drugs Driveway		White	Walter	1003	2
s Y	Yes	980 Paper Avenue, Pennsylvania, 18503	123-543-2345	Schrute	Dwight	1004	3
Y No	Υ	123 Dragons Road	876-678-3469	Snow	Jon	1005	4
s Yes	Yes	768 City Parkway	304-762-2467	Swanson	Ron	1006	5
o No	No	1209 South Street		Winger	Jeff	1007	6
No No	N	98 Clue Drive	876-678-3469	Holmes	Sherlock	1008	7
s NaN	Yes	123 Middle Earth		NaN	Gandalf	1009	8
s No	Yes	25th Main Street, New York	123-545-5421	Parker	Peter	1010	9
s No	Yes	612 Shire Lane, Shire		Gamgee	Samwise	1011	10
Y NaN	Υ	2394 Hogwarts Avenue		Potter	Harry	1012	11
s N	Yes	2039 Main Street	123-543-2345	Draper	Don	1013	12
s No	Yes	343 City Parkway	876-678-3469	Knope	Leslie	1014	13
No No	N	214 HR Avenue	304-762-2467	Flenderson	Toby	1015	14
o N	No	2395 Hogwarts Avenue	123-545-5421	Weasley	Ron	1016	15
s No	Yes	121 Paper Avenue, Pennsylvania	123-643-9775	Scott	Michael	1017	16
/ NaN	Υ	3498 Super Lane		Kent	Clark	1018	17
a Yes	N/a	N/a		Braton	Creed	1019	18
s N	Yes	910 Tatooine Road, Tatooine	876-678-3469	Skywalker	Anakin	1020	19

876-678-3469

910 Tatooine Road, Tatooine

Yes

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In [26]: data['Address'].str.split(',', expand=True)
Splitting the 'Address' column by comma separated

Out[26]:		0	1	2
	0	123 Shire Lane	Shire	None
	1	93 West Main Street	None	None
	2	298 Drugs Driveway	None	None
	3	980 Paper Avenue	Pennsylvania	18503
	4	123 Dragons Road	None	None
	5	768 City Parkway	None	None
	6	1209 South Street	None	None
	7	98 Clue Drive	None	None
	8	123 Middle Earth	None	None
	9	25th Main Street	New York	None
	10	612 Shire Lane	Shire	None
	11	2394 Hogwarts Avenue	None	None
	12	2039 Main Street	None	None
	13	343 City Parkway	None	None
	14	214 HR Avenue	None	None
	15	2395 Hogwarts Avenue	None	None
	16	121 Paper Avenue	Pennsylvania	None
	17	3498 Super Lane	None	None
	18	N/a	None	None
	19	910 Tatooine Road	Tatooine	None

910 Tatooine Road

Tatooine None

20

```
In [27]: data[['Street_Address', 'State', 'Zip_Code']] = data['Address'].str.split(',', expand=True)
# Create columns and Append splitted Address into actual Dataframe
data
```

Out[27]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	No	123 Shire Lane	Shire	None
1	1002	Abed	Nadir	123-643-9775	93 West Main Street	No	Yes	93 West Main Street	None	None
2	1003	Walter	White		298 Drugs Driveway	N	NaN	298 Drugs Driveway	None	None
3	1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	Υ	980 Paper Avenue	Pennsylvania	18503
4	1005	Jon	Snow	876-678-3469	123 Dragons Road	Υ	No	123 Dragons Road	None	None
5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	Yes	768 City Parkway	None	None
6	1007	Jeff	Winger		1209 South Street	No	No	1209 South Street	None	None
7	1008	Sherlock	Holmes	876-678-3469	98 Clue Drive	N	No	98 Clue Drive	None	None
8	1009	Gandalf	NaN		123 Middle Earth	Yes	NaN	123 Middle Earth	None	None
9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	No	25th Main Street	New York	None
10	1011	Samwise	Gamgee		612 Shire Lane, Shire	Yes	No	612 Shire Lane	Shire	None
11	1012	Harry	Potter		2394 Hogwarts Avenue	Υ	NaN	2394 Hogwarts Avenue	None	None
12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	N	2039 Main Street	None	None
13	1014	Leslie	Knope	876-678-3469	343 City Parkway	Yes	No	343 City Parkway	None	None
14	1015	Toby	Flenderson	304-762-2467	214 HR Avenue	N	No	214 HR Avenue	None	None
15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	N	2395 Hogwarts Avenue	None	None
16	1017	Michael	Scott	123-643-9775	121 Paper Avenue, Pennsylvania	Yes	No	121 Paper Avenue	Pennsylvania	None
17	1018	Clark	Kent		3498 Super Lane	Υ	NaN	3498 Super Lane	None	None
18	1019	Creed	Braton		N/a	N/a	Yes	N/a	None	None
19	1020	Anakin	Skywalker	876-678-3469	910 Tatooine Road, Tatooine	Yes	N	910 Tatooine Road	Tatooine	None
20	1020	Anakin	Skywalker	876-678-3469	910 Tatooine Road, Tatooine	Yes	N	910 Tatooine Road	Tatooine	None

In [28]: data = data.drop(columns='Address')
Dropping 'Address' column, as we don't need it anymore
data

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	CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
0	1001	Frodo	Baggins	123-545-5421	Yes	No	123 Shire Lane	Shire	None
1	1002	Abed	Nadir	123-643-9775	No	Yes	93 West Main Street	None	None
2	1003	Walter	White		N	NaN	298 Drugs Driveway	None	None
3	1004	Dwight	Schrute	123-543-2345	Yes	Υ	980 Paper Avenue	Pennsylvania	18503
4	1005	Jon	Snow	876-678-3469	Υ	No	123 Dragons Road	None	None
5	1006	Ron	Swanson	304-762-2467	Yes	Yes	768 City Parkway	None	None
6	1007	Jeff	Winger		No	No	1209 South Street	None	None
7	1008	Sherlock	Holmes	876-678-3469	N	No	98 Clue Drive	None	None
8	1009	Gandalf	NaN		Yes	NaN	123 Middle Earth	None	None
9	1010	Peter	Parker	123-545-5421	Yes	No	25th Main Street	New York	None
10	1011	Samwise	Gamgee		Yes	No	612 Shire Lane	Shire	None
11	1012	Harry	Potter		Y	NaN	2394 Hogwarts Avenue	None	None
12	1013	Don	Draper	123-543-2345	Yes	N	2039 Main Street	None	None
13	1014	Leslie	Knope	876-678-3469	Yes	No	343 City Parkway	None	None
14	1015	Toby	Flenderson	304-762-2467	N	No	214 HR Avenue	None	None
15	1016	Ron	Weasley	123-545-5421	No	N	2395 Hogwarts Avenue	None	None
16	1017	Michael	Scott	123-643-9775	Yes	No	121 Paper Avenue	Pennsylvania	None
17	1018	Clark	Kent		Y	NaN	3498 Super Lane	None	None
18	1019	Creed	Braton		N/a	Yes	N/a	None	None
19	1020	Anakin	Skywalker	876-678-3469	Yes	N	910 Tatooine Road	Tatooine	None
20	1020	Anakin	Skywalker	876-678-3469	Yes	N	910 Tatooine Road	Tatooine	None

Out[45]:

	CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
0	1001	Frodo	Baggins	123-545-5421	Υ	No	123 Shire Lane	Shire	None
1	1002	Abed	Nadir	123-643-9775	N	Yes	93 West Main Street	None	None
2	1003	Walter	White		N	NaN	298 Drugs Driveway	None	None
3	1004	Dwight	Schrute	123-543-2345	Υ	Υ	980 Paper Avenue	Pennsylvania	18503
4	1005	Jon	Snow	876-678-3469	Υ	No	123 Dragons Road	None	None
5	1006	Ron	Swanson	304-762-2467	Υ	Yes	768 City Parkway	None	None
6	1007	Jeff	Winger		N	No	1209 South Street	None	None
7	1008	Sherlock	Holmes	876-678-3469	N	No	98 Clue Drive	None	None
8	1009	Gandalf	NaN		Υ	NaN	123 Middle Earth	None	None
9	1010	Peter	Parker	123-545-5421	Υ	No	25th Main Street	New York	None
10	1011	Samwise	Gamgee		Υ	No	612 Shire Lane	Shire	None
11	1012	Harry	Potter		Υ	NaN	2394 Hogwarts Avenue	None	None
12	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street	None	None
13	1014	Leslie	Knope	876-678-3469	Υ	No	343 City Parkway	None	None
14	1015	Toby	Flenderson	304-762-2467	N	No	214 HR Avenue	None	None
15	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue	None	None
16	1017	Michael	Scott	123-643-9775	Υ	No	121 Paper Avenue	Pennsylvania	None
17	1018	Clark	Kent		Υ	NaN	3498 Super Lane	None	None
18	1019	Creed	Braton		N/a	Yes	N/a	None	None
19	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	None
20	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	None

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CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire	None
1002	Abed	Nadir	123-643-9775	N	Υ	93 West Main Street	None	None
1003	Walter	White		N	NaN	298 Drugs Driveway	None	None
1004	Dwight	Schrute	123-543-2345	Υ	Υ	980 Paper Avenue	Pennsylvania	18503
1005	Jon	Snow	876-678-3469	Υ	N	123 Dragons Road	None	None
1006	Ron	Swanson	304-762-2467	Υ	Υ	768 City Parkway	None	None
1007	Jeff	Winger		N	N	1209 South Street	None	None
1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive	None	None
1009	Gandalf	NaN		Υ	NaN	123 Middle Earth	None	None
1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York	None
1011	Samwise	Gamgee		Υ	N	612 Shire Lane	Shire	None
1012	Harry	Potter		Υ	NaN	2394 Hogwarts Avenue	None	None
1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street	None	None
1014	Leslie	Knope	876-678-3469	Υ	N	343 City Parkway	None	None
1015	Toby	Flenderson	304-762-2467	N	N	214 HR Avenue	None	None
1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue	None	None
1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania	None
1018	Clark	Kent		Υ	NaN	3498 Super Lane	None	None
1019	Creed	Braton		N/a	Υ	N/a	None	None
1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	None
1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	None
	1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020	1001 Frodo 1002 Abed 1003 Walter 1004 Dwight 1005 Jon 1006 Ron 1007 Jeff 1008 Sherlock 1009 Gandalf 1010 Peter 1011 Samwise 1012 Harry 1013 Don 1014 Leslie 1015 Toby 1016 Ron 1017 Michael 1018 Clark 1019 Creed 1020 Anakin	1001 Frodo Baggins 1002 Abed Nadir 1003 Walter White 1004 Dwight Schrute 1005 Jon Snow 1006 Ron Swanson 1007 Jeff Winger 1008 Sherlock Holmes 1009 Gandalf NaN 1010 Peter Parker 1011 Samwise Gamgee 1012 Harry Potter 1013 Don Draper 1014 Leslie Knope 1015 Toby Flenderson 1016 Ron Weasley 1017 Michael Scott 1018 Clark Kent 1019 Creed Braton 1020 Anakin Skywalker	1001 Frodo Baggins 123-545-5421 1002 Abed Nadir 123-643-9775 1003 Walter White 1004 Dwight Schrute 123-543-2345 1005 Jon Snow 876-678-3469 1006 Ron Swanson 304-762-2467 1007 Jeff Winger 1008 Sherlock Holmes 876-678-3469 1009 Gandalf NaN 1010 Peter Parker 123-545-5421 1011 Samwise Gamgee 1012 Harry Potter 1013 Don Draper 123-543-2345 1014 Leslie Knope 876-678-3469 1015 Toby Flenderson 304-762-2467 1016 Ron Weasley 123-545-5421 1017 Michael Scott 123-643-9775 1018 Clark Kent 1019 Creed Braton 1020 Anakin Skywalker 876-678-3469	1001 Frodo Baggins 123-545-5421 Y 1002 Abed Nadir 123-643-9775 N 1003 Walter White N 1004 Dwight Schrute 123-543-2345 Y 1005 Jon Snow 876-678-3469 Y 1006 Ron Swanson 304-762-2467 Y 1007 Jeff Winger N 1008 Sherlock Holmes 876-678-3469 N 1009 Gandalf NaN Y 1010 Peter Parker 123-545-5421 Y 1011 Samwise Gamgee Y 1012 Harry Potter Y 1013 Don Draper 123-543-2345 Y 1014 Leslie Knope 876-678-3469 Y 1015 Toby Flenderson 304-762-2467 N 1016 Ron Weasley 123-643-9775 Y	1001 Frodo Baggins 123-545-5421 Y N 1002 Abed Nadir 123-643-9775 N Y 1003 Walter White N Nan 1004 Dwight Schrute 123-543-2345 Y Y 1005 Jon Snow 876-678-3469 Y N 1006 Ron Swanson 304-762-2467 Y Y 1007 Jeff Winger N N N 1008 Sherlock Holmes 876-678-3469 N N N 1009 Gandalf NaN Y NaN 1010 Peter Parker 123-545-5421 Y N 1011 Samwise Gamgee Y N 1012 Harry Potter Y N 1013 Don Draper 123-543-2345 Y N 1014 Leslie Knope 876-678-3469 Y	1001 Frodo Baggins 123-545-5421 Y N 123 Shire Lane 1002 Abed Nadir 123-643-9775 N Y 93 West Main Street 1003 Walter White N NaN 298 Drugs Driveway 1004 Dwight Schrute 123-543-2345 Y Y 980 Paper Avenue 1005 Jon Snow 876-678-3469 Y N 123 Dragons Road 1006 Ron Swanson 304-762-2467 Y Y 768 City Parkway 1007 Jeff Winger N N 1209 South Street 1008 Sherlock Holmes 876-678-3469 N N 98 Clue Drive 1009 Gandalf NaN Y NaN 123 Middle Earth 1010 Peter Parker 123-545-5421 Y N 612 Shire Lane 1011 Samwise Gamgee Y N 123 Hogwarts Avenue 1013 Don Drape	1001

In [47]: data = data.fillna('')
Filling up NaN, None values as empty
data

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	CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
0	1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire	
1	1002	Abed	Nadir	123-643-9775	N	Υ	93 West Main Street		
2	1003	Walter	White		N		298 Drugs Driveway		
3	1004	Dwight	Schrute	123-543-2345	Y	Υ	980 Paper Avenue	Pennsylvania	18503
4	1005	Jon	Snow	876-678-3469	Y	N	123 Dragons Road		
5	1006	Ron	Swanson	304-762-2467	Υ	Υ	768 City Parkway		
6	1007	Jeff	Winger		N	N	1209 South Street		
7	1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive		
8	1009	Gandalf			Υ		123 Middle Earth		
9	1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York	
10	1011	Samwise	Gamgee		Υ	N	612 Shire Lane	Shire	
11	1012	Harry	Potter		Υ		2394 Hogwarts Avenue		
12	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street		
13	1014	Leslie	Knope	876-678-3469	Υ	N	343 City Parkway		
14	1015	Toby	Flenderson	304-762-2467	N	N	214 HR Avenue		
15	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue		
16	1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania	
17	1018	Clark	Kent		Υ		3498 Super Lane		
18	1019	Creed	Braton		N/a	Υ	N/a		
19	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	
20	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	

In [49]: for drop_yes in data.index:
 if data.loc[drop_yes, 'Do_Not_Contact'] == 'Y':
 data.drop(drop_yes, inplace=True)
Dropping Customers, who we not gonna call again
data

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Out[49]:		CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
	0	1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire	
	2	1003	Walter	White		N		298 Drugs Driveway		
	4	1005	Jon	Snow	876-678-3469	Y	N	123 Dragons Road		
	6	1007	Jeff	Winger		N	N	1209 South Street		
	7	1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive		
	8	1009	Gandalf			Υ		123 Middle Earth		
	9	1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York	
	10	1011	Samwise	Gamgee		Υ	N	612 Shire Lane	Shire	
	11	1012	Harry	Potter		Υ		2394 Hogwarts Avenue		
	12	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street		
	13	1014	Leslie	Knope	876-678-3469	Υ	Y N			
	14	1015	Toby	Flenderson	304-762-2467	N N		214 HR Avenue		
	15	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue		
	16	1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania	
	17	1018	Clark	Kent		Υ	Υ			
	19	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	
	20 10		Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	

```
In [50]: for empty_numbers in data.index:
    if data.loc[empty_numbers, 'Phone_Number'] == '':
        data.drop(empty_numbers, inplace=True)
# Dropping Customers, who's phone numbers doesn't exists
data

# Another way to drop Customers, who's phone numbers doesn't exists
# data = data.dropna(subset='Phone_Number'), inplace=True)
```

Anakin Skywalker

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1020

Out[50]:		CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State	Zip_Code
_	0	1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire	
	4	1005	Jon	Snow	876-678-3469	Υ	N	123 Dragons Road		
	7	1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive		
	9	1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York	
	12	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street		
	13	1014	Leslie	Knope	876-678-3469	Υ	N	343 City Parkway		
	14	1015	Toby	Flenderson	304-762-2467	N	N	214 HR Avenue		
	15	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue		
	16	1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania	
	19	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine	

910 Tatooine Road

Tatooine

876-678-3469

In [51]: data = data.drop(columns= 'Zip_Code')
Drop 'Zip_Code' column
data

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	CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State
0	1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire
4	1005	Jon	Snow	876-678-3469	Υ	N	123 Dragons Road	
7	1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive	
9	1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York
12	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street	
13	1014	Leslie	Knope	876-678-3469	Υ	N	343 City Parkway	
14	1015	Toby	Flenderson	304-762-2467	N	N	214 HR Avenue	
15	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue	
16	1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania
19	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine
20	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine

In [52]: data = data.drop_duplicates()
Drop duplicates, forgot to do it at initial
data

19

1020

Anakin

Skywalker

Out[52]:		CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State
	0	1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire
	4	1005	Jon	Snow	876-678-3469	Υ	N	123 Dragons Road	
	7	1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive	
	9	1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York
	12	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street	
	13	1014	Leslie	Knope	876-678-3469	Υ	N	343 City Parkway	
	14	1015	Toby	Flenderson	304-762-2467	N	N	214 HR Avenue	
	15	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue	
	16	1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania

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910 Tatooine Road

Tatooine

876-678-3469

In [53]: data = data.reset_index(drop=True)
Resetting the index values
data

Out[53]:		CustomerID	First_Name	Last_Name	Phone_Number	Paying Customer	Do_Not_Contact	Street_Address	State
	0	1001	Frodo	Baggins	123-545-5421	Υ	N	123 Shire Lane	Shire
	1	1005	Jon	Snow	876-678-3469	Υ	N	123 Dragons Road	
	2	1008	Sherlock	Holmes	876-678-3469	N	N	98 Clue Drive	
	3	1010	Peter	Parker	123-545-5421	Υ	N	25th Main Street	New York
	4	1013	Don	Draper	123-543-2345	Υ	N	2039 Main Street	
	5	1014	Leslie	Knope	876-678-3469	Υ	N	343 City Parkway	
	6	1015	Toby	Flenderson	304-762-2467	N	N	214 HR Avenue	
	7	1016	Ron	Weasley	123-545-5421	N	N	2395 Hogwarts Avenue	
	8	1017	Michael	Scott	123-643-9775	Υ	N	121 Paper Avenue	Pennsylvania
	9	1020	Anakin	Skywalker	876-678-3469	Υ	N	910 Tatooine Road	Tatooine

In []: