Data Cleaning

```
In [1]: import pandas as pd
```

```
In [2]: df=pd.read_excel("Customer Call List.xlsx")
```

In [3]: df

Out[3]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_C
0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	
1	1002	Abed	Nadir	123/643/9775	93 West Main Street	No	
2	1003	Walter	/White	7066950392	298 Drugs Driveway	N	
3	1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	
4	1005	Jon	Snow	876|678|3469	123 Dragons Road	Y	
5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	
6	1007	Jeff	Winger	NaN	1209 South Street	No	
7	1008	Sherlock	Holmes	876|678|3469	98 Clue Drive	N	
8	1009	Gandalf	NaN	N/a	123 Middle Earth	Yes	
9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	
10	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	
11	1012	Harry	...Potter	7066950392	2394 Hogwarts Avenue	Y	
12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	
13	1014	Leslie	Knope	876|678|3469	343 City Parkway	Yes	
14	1015	Toby	Flenderson_	304-762-2467	214 HR Avenue	N	
15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	
16	1017	Michael	Scott	123/643/9775	121 Paper Avenue, Pennsylvania	Yes	
17	1018	Clark	Kent	7066950392	3498 Super Lane	Y	
18	1019	Creed	Braton	N/a	N/a	N/a	
19	1020	Anakin	Skywalker	876|678|3469	910 Tatooine Road, Tatooine	Yes	
20	1020	Anakin	Skywalker	876|678|3469	910 Tatooine Road, Tatooine	Yes	

1. Remove duplicate

In [4]:
```python
df= df.drop_duplicates()
```

In [5]: df

Out[5]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_C
0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	
1	1002	Abed	Nadir	123/643/9775	93 West Main Street	No	
2	1003	Walter	/White	7066950392	298 Drugs Driveway	N	
3	1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	
4	1005	Jon	Snow	876|678|3469	123 Dragons Road	Y	
5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	
6	1007	Jeff	Winger	NaN	1209 South Street	No	
7	1008	Sherlock	Holmes	876|678|3469	98 Clue Drive	N	
8	1009	Gandalf	NaN	N/a	123 Middle Earth	Yes	
9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	
10	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	
11	1012	Harry	...Potter	7066950392	2394 Hogwarts Avenue	Y	
12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	
13	1014	Leslie	Knope	876|678|3469	343 City Parkway	Yes	
14	1015	Toby	Flenderson_	304-762-2467	214 HR Avenue	N	
15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	
16	1017	Michael	Scott	123/643/9775	121 Paper Avenue, Pennsylvania	Yes	
17	1018	Clark	Kent	7066950392	3498 Super Lane	Y	
18	1019	Creed	Braton	N/a	N/a	N/a	
19	1020	Anakin	Skywalker	876|678|3469	910 Tatooine Road, Tatooine	Yes	

2. Remove Column

```
In [6]:  df = df.drop(columns = "Not_Useful_Column")
```

In [7]: df

Out[7]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_C
0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	
1	1002	Abed	Nadir	123/643/9775	93 West Main Street	No	
2	1003	Walter	/White	7066950392	298 Drugs Driveway	N	
3	1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	
4	1005	Jon	Snow	876|678|3469	123 Dragons Road	Y	
5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	
6	1007	Jeff	Winger	NaN	1209 South Street	No	
7	1008	Sherlock	Holmes	876|678|3469	98 Clue Drive	N	
8	1009	Gandalf	NaN	N/a	123 Middle Earth	Yes	
9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	
10	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	
11	1012	Harry	...Potter	7066950392	2394 Hogwarts Avenue	Y	
12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	
13	1014	Leslie	Knope	876|678|3469	343 City Parkway	Yes	
14	1015	Toby	Flenderson_	304-762-2467	214 HR Avenue	N	
15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	
16	1017	Michael	Scott	123/643/9775	121 Paper Avenue, Pennsylvania	Yes	
17	1018	Clark	Kent	7066950392	3498 Super Lane	Y	
18	1019	Creed	Braton	N/a	N/a	N/a	
19	1020	Anakin	Skywalker	876|678|3469	910 Tatooine Road, Tatooine	Yes	

3. Fixing Last Name Column

Using Strip Python Code

In [8]:
```python
df["Last_Name"].str.strip()
```

Out[8]:
```
0          Baggins
1            Nadir
2           /White
3          Schrute
4             Snow
5          Swanson
6           Winger
7           Holmes
8              NaN
9           Parker
10          Gamgee
11       ...Potter
12          Draper
13           Knope
14      Flenderson_
15         Weasley
16           Scott
17            Kent
18          Braton
19       Skywalker
Name: Last_Name, dtype: object
```

In [9]:
```python
#df["Last_Name"] = df["Last_Name"].str.lstrip("...")
#df["Last_Name"] = df["Last_Name"].str.lstrip("/")
#df["Last_Name"] = df["Last_Name"].str.rstrip("_")
df["Last_Name"] = df["Last_Name"].str.strip("123._/")
```

In [10]: df

Out[10]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_C
0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Yes	
1	1002	Abed	Nadir	123/643/9775	93 West Main Street	No	
2	1003	Walter	White	7066950392	298 Drugs Driveway	N	
3	1004	Dwight	Schrute	123-543-2345	980 Paper Avenue, Pennsylvania, 18503	Yes	
4	1005	Jon	Snow	876|678|3469	123 Dragons Road	Y	
5	1006	Ron	Swanson	304-762-2467	768 City Parkway	Yes	
6	1007	Jeff	Winger	NaN	1209 South Street	No	
7	1008	Sherlock	Holmes	876|678|3469	98 Clue Drive	N	
8	1009	Gandalf	NaN	N/a	123 Middle Earth	Yes	
9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Yes	
10	1011	Samwise	Gamgee	NaN	612 Shire Lane, Shire	Yes	
11	1012	Harry	Potter	7066950392	2394 Hogwarts Avenue	Y	
12	1013	Don	Draper	123-543-2345	2039 Main Street	Yes	
13	1014	Leslie	Knope	876|678|3469	343 City Parkway	Yes	
14	1015	Toby	Flenderson	304-762-2467	214 HR Avenue	N	
15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	No	
16	1017	Michael	Scott	123/643/9775	121 Paper Avenue, Pennsylvania	Yes	
17	1018	Clark	Kent	7066950392	3498 Super Lane	Y	
18	1019	Creed	Braton	N/a	N/a	N/a	
19	1020	Anakin	Skywalker	876|678|3469	910 Tatooine Road, Tatooine	Yes	

4. Fixing Phone Number Column

Using Replace Code

In [11]:
```python
df["Phone_Number"] = df["Phone_Number"].str.replace('[^a-zA-Z0-9]','')
```

```
C:\Users\Tarun Gaurav\AppData\Local\Temp\ipykernel_20084\1866839349.py:1:
FutureWarning: The default value of regex will change from True to False i
n a future version.
  df["Phone_Number"] = df["Phone_Number"].str.replace('[^a-zA-Z0-9]','')
```

In [12]: df

Out[12]:

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

Changing to string and place -- USA format mobile number

In [13]:
```python
df["Phone_Number"]=df["Phone_Number"].apply(lambda x: str(x))
```

In [14]:
```python
df["Phone_Number"]=df["Phone_Number"].apply(lambda x: x[0:3] + '-' + x[3:6]
```

In [15]: df

Out[15]:

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

Repacing NAN-- and Na--

```
In [16]: df["Phone_Number"]=df["Phone_Number"].str.replace('nan--','')
         df["Phone_Number"]=df["Phone_Number"].str.replace('Na--','')
```

In [17]: `df`

Out[17]:

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

Cleaning address spliting into three column

Using split

In [18]:
```python
df[["Street_Address","State","Zip_code"]]=df["Address"].str.split(',',2,exp
```

In [19]: df

Out[19]:

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

Replacing Yes to y and No to y

Using replace

In [20]:
```python
df["Paying Customer"]=df["Paying Customer"].str.replace('Yes','Y')
```

In [21]:
```python
df["Paying Customer"]=df["Paying Customer"].str.replace('No','N')
```

In [22]: df

Out[22]:

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

Filling none place to blank "

```
In [23]: #df.replace('N/a')
         #df.replace('NaN')
         df=df.fillna('')
```

In [24]: df

Out[24]:

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

In [25]: `df.replace('N/a')`

Out[25]:

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

In [26]:
```python
df["Do_Not_Contact"]=df["Do_Not_Contact"].str.replace('Yes','Y')
df["Do_Not_Contact"]=df["Do_Not_Contact"].str.replace('No','N')
```

In [27]: df

Out[27]:

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

Replace N/a to Blank (" ")

In [28]:
```python
df=df.replace('N/a')
```

In [29]: df

Out[29]:

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

◀ [   ] ▶

Filtering out Yes in do_not_contact column

In [30]:
```python
for x in df.index:
    if df.loc[x,"Do_Not_Contact"] == "Y":
        df.drop(x, inplace=True)

df
```

Out[30]:

	CustomerID	First_Name	Last_Name	Phone_Number	Address	Paying Customer	Do_Not_C
0	1001	Frodo	Baggins	123-545-5421	123 Shire Lane, Shire	Y	
2	1003	Walter	White		298 Drugs Driveway	N	
4	1005	Jon	Snow	876-678-3469	123 Dragons Road	Y	
6	1007	Jeff	Winger		1209 South Street	N	
7	1008	Sherlock	Holmes	876-678-3469	98 Clue Drive	N	
8	1009	Gandalf			123 Middle Earth	Y	
9	1010	Peter	Parker	123-545-5421	25th Main Street, New York	Y	
10	1011	Samwise	Gamgee		612 Shire Lane, Shire	Y	
11	1012	Harry	Potter		2394 Hogwarts Avenue	Y	
12	1013	Don	Draper	123-543-2345	2039 Main Street	Y	
13	1014	Leslie	Knope	876-678-3469	343 City Parkway	Y	
14	1015	Toby	Flenderson	304-762-2467	214 HR Avenue	N	
15	1016	Ron	Weasley	123-545-5421	2395 Hogwarts Avenue	N	
16	1017	Michael	Scott	123-643-9775	121 Paper Avenue, Pennsylvania	Y	
17	1018	Clark	Kent		3498 Super Lane	Y	
19	1020	Anakin	Skywalker	876-678-3469	910 Tatooine Road, Tatooine	Y	

Droping Out Phone_Number to Blank ("")

In [31]:
```python
for x in df.index:
    if df.loc[x,"Phone_Number"] == "":
        df.drop(x, inplace=True)

df
#df=df.dropna(subset="Phone_Number",inplace=True)
```

Out[31]:

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

Reset index

In [32]:
```python
df=df.reset_index(drop=True)
```

In [33]: df

Out[33]:

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

In [ ]: