```python
# Import libraries need for Modelling
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
from sklearn.preprocessing import StandardScaler
from sklearn.model_selection import train_test_split, GridSearchCV
import pickle

import warnings
warnings.filterwarnings('ignore')
```

```python
# Reading CSV file and converting into dataframe
dt=pd.read_csv('test.csv')
dt1=pd.read_csv('train.csv')
```

```python
pd.set_option("display.max_columns", 100)
```

```python
dt
```

	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope	Neighborhood	Condition1	Condition2	Bldg
0	337	20	RL	86.0	14157	Pave	NaN	IR1	HLS	AllPub	Corner	Gtl	StoneBr	Norm	Norm	
1	1018	120	RL	NaN	5814	Pave	NaN	IR1	Lvl	AllPub	CulDSac	Gtl	StoneBr	Norm	Norm	Tw
2	929	20	RL	NaN	11838	Pave	NaN	Reg	Lvl	AllPub	Inside	Gtl	CollgCr	Norm	Norm	
3	1148	70	RL	75.0	12000	Pave	NaN	Reg	Bnk	AllPub	Inside	Gtl	Crawfor	Norm	Norm	
4	1227	60	RL	86.0	14598	Pave	NaN	IR1	Lvl	AllPub	CulDSac	Gtl	Somerst	Feedr	Norm	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
287	83	20	RL	78.0	10206	Pave	NaN	Reg	Lvl	AllPub	Inside	Gtl	Somerst	Norm	Norm	
288	1048	20	RL	57.0	9245	Pave	NaN	IR2	Lvl	AllPub	Inside	Gtl	CollgCr	Norm	Norm	
289	17	20	RL	NaN	11241	Pave	NaN	IR1	Lvl	AllPub	CulDSac	Gtl	NAmes	Norm	Norm	
290	523	50	RM	50.0	5000	Pave	NaN	Reg	Lvl	AllPub	Corner	Gtl	BrkSide	Feedr	Norm	
291	1379	160	RM	21.0	1953	Pave	NaN	Reg	Lvl	AllPub	Inside	Gtl	BrDale	Norm	Norm	T

292 rows × 80 columns

```python
dt1
```

	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	LandContour	Utilities	LotConfig	LandSlope	Neighborhood	Condition1	Condition2	Bldg
0	127	120	RL	NaN	4928	Pave	NaN	IR1	Lvl	AllPub	Inside	Gtl	NPkVill	Norm	Norm	Tw
1	889	20	RL	95.0	15865	Pave	NaN	IR1	Lvl	AllPub	Inside	Mod	NAmes	Norm	Norm	
2	793	60	RL	92.0	9920	Pave	NaN	IR1	Lvl	AllPub	CulDSac	Gtl	NoRidge	Norm	Norm	
3	110	20	RL	105.0	11751	Pave	NaN	IR1	Lvl	AllPub	Inside	Gtl	NWAmes	Norm	Norm	
4	422	20	RL	NaN	16635	Pave	NaN	IR1	Lvl	AllPub	FR2	Gtl	NWAmes	Norm	Norm	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
1163	289	20	RL	NaN	9819	Pave	NaN	IR1	Lvl	AllPub	Inside	Gtl	Sawyer	Norm	Norm	
1164	554	20	RL	67.0	8777	Pave	NaN	Reg	Lvl	AllPub	Inside	Gtl	Edwards	Feedr	Norm	
1165	196	160	RL	24.0	2280	Pave	NaN	Reg	Lvl	AllPub	FR2	Gtl	NPkVill	Norm	Norm	T
1166	31	70	C (all)	50.0	8500	Pave	Pave	Reg	Lvl	AllPub	Inside	Gtl	IDOTRR	Feedr	Norm	
1167	617	60	RL	NaN	7861	Pave	NaN	IR1	Lvl	AllPub	Inside	Gtl	Gilbert	Norm	Norm	

1168 rows × 81 columns

```python
#NAN values
print('The NAN values in train is', dt1.isna().sum())
print('*'*100)
print('The NAN values in test is', dt.isna().sum())
```

```
The NAN values in train is Id                0
MSSubClass        0
MSZoning          0
LotFrontage     214
LotArea           0
                ...
MoSold            0
YrSold            0
SaleType          0
SaleCondition     0
SalePrice         0
Length: 81, dtype: int64
****************************************************************************************
The NAN values in test is Id                0
MSSubClass        0
MSZoning          0
LotFrontage      45
LotArea           0
                ..
MiscVal           0
MoSold            0
YrSold            0
SaleType          0
SaleCondition     0
Length: 80, dtype: int64
```

```python
# Dataframe columns
print('The columns in train is', dt1.columns)
print('*'*100)
```

```python
print('The columns in test is', dt.columns)
```

```
The columns in train is Index(['Id', 'MSSubClass', 'MSZoning', 'LotFrontage', 'LotArea', 'Street',
       'Alley', 'LotShape', 'LandContour', 'Utilities', 'LotConfig',
       'LandSlope', 'Neighborhood', 'Condition1', 'Condition2', 'BldgType',
       'HouseStyle', 'OverallQual', 'OverallCond', 'YearBuilt', 'YearRemodAdd',
       'RoofStyle', 'RoofMatl', 'Exterior1st', 'Exterior2nd', 'MasVnrType',
       'MasVnrArea', 'ExterQual', 'ExterCond', 'Foundation', 'BsmtQual',
       'BsmtCond', 'BsmtExposure', 'BsmtFinType1', 'BsmtFinSF1',
       'BsmtFinType2', 'BsmtFinSF2', 'BsmtUnfSF', 'TotalBsmtSF', 'Heating',
       'HeatingQC', 'CentralAir', 'Electrical', '1stFlrSF', '2ndFlrSF',
       'LowQualFinSF', 'GrLivArea', 'BsmtFullBath', 'BsmtHalfBath', 'FullBath',
       'HalfBath', 'BedroomAbvGr', 'KitchenAbvGr', 'KitchenQual',
       'TotRmsAbvGrd', 'Functional', 'Fireplaces', 'FireplaceQu', 'GarageType',
       'GarageYrBlt', 'GarageFinish', 'GarageCars', 'GarageArea', 'GarageQual',
       'GarageCond', 'PavedDrive', 'WoodDeckSF', 'OpenPorchSF',
       'EnclosedPorch', '3SsnPorch', 'ScreenPorch', 'PoolArea', 'PoolQC',
       'Fence', 'MiscFeature', 'MiscVal', 'MoSold', 'YrSold', 'SaleType',
       'SaleCondition', 'SalePrice'],
      dtype='object')
********************************************************************************************************
The columns in test is Index(['Id', 'MSSubClass', 'MSZoning', 'LotFrontage', 'LotArea', 'Street',
       'Alley', 'LotShape', 'LandContour', 'Utilities', 'LotConfig',
       'LandSlope', 'Neighborhood', 'Condition1', 'Condition2', 'BldgType',
       'HouseStyle', 'OverallQual', 'OverallCond', 'YearBuilt', 'YearRemodAdd',
       'RoofStyle', 'RoofMatl', 'Exterior1st', 'Exterior2nd', 'MasVnrType',
       'MasVnrArea', 'ExterQual', 'ExterCond', 'Foundation', 'BsmtQual',
       'BsmtCond', 'BsmtExposure', 'BsmtFinType1', 'BsmtFinSF1',
       'BsmtFinType2', 'BsmtFinSF2', 'BsmtUnfSF', 'TotalBsmtSF', 'Heating',
       'HeatingQC', 'CentralAir', 'Electrical', '1stFlrSF', '2ndFlrSF',
       'LowQualFinSF', 'GrLivArea', 'BsmtFullBath', 'BsmtHalfBath', 'FullBath',
       'HalfBath', 'BedroomAbvGr', 'KitchenAbvGr', 'KitchenQual',
       'TotRmsAbvGrd', 'Functional', 'Fireplaces', 'FireplaceQu', 'GarageType',
       'GarageYrBlt', 'GarageFinish', 'GarageCars', 'GarageArea', 'GarageQual',
       'GarageCond', 'PavedDrive', 'WoodDeckSF', 'OpenPorchSF',
       'EnclosedPorch', '3SsnPorch', 'ScreenPorch', 'PoolArea', 'PoolQC',
       'Fence', 'MiscFeature', 'MiscVal', 'MoSold', 'YrSold', 'SaleType',
       'SaleCondition'],
      dtype='object')
```

In [130…
```python
# To find types of data present in the dataset
print('The unique columns in train is', dt1.nunique())
print('*'*100)
print('The unique columns in test is', dt.nunique())
```

```
The unique columns in train is Id             1168
MSSubClass       15
MSZoning          5
LotFrontage     106
LotArea         892
                ...
MoSold           12
YrSold            5
SaleType          9
SaleCondition     6
SalePrice       581
Length: 81, dtype: int64
********************************************************************************************************
The unique columns in test is Id              292
MSSubClass       15
MSZoning          4
LotFrontage      65
LotArea         249
                ...
MiscVal           8
MoSold           12
YrSold            5
SaleType          6
SaleCondition     4
Length: 80, dtype: int64
```

In [131…
```python
# To find the data type of the dataset
for col in dt1:
    print ('This column', col ,'has', dt1[col].unique(),'unique elements')
    print ('*'*100)
print('-+-'*166)
for col in dt:
    print ('This column', col ,'has', dt[col].unique(),'unique elements')
    print ('*'*100)
```

```
This column Id has [127 889 793 ... 196  31 617] unique elements
********************************************************************************************************
This column MSSubClass has [120  20  60  50  70  30 160  85  45  90  40  80 190  75 180] unique elements
********************************************************************************************************
This column MSZoning has ['RL' 'RM' 'FV' 'RH' 'C (all)'] unique elements
********************************************************************************************************
This column LotFrontage has [ nan  95.  92. 105.  58.  88.  70.  80.  50.  44. 129.  59.  55.  64.
  24.  68.  71.  74.  61.  60. 120.  84. 141.  30.  65.  76. 100.  85.
  75. 107. 122.  82.  62.  73.  79.  77.  41.  69.  90.  96.  72.  34.
  78.  63.  40.  98. 160. 108. 128.  51.  81.  99.  66.  37. 174.  87.
  53. 152.  47.  86.  56.  89.  35.  52.  21. 104.  57.  83.  46. 101.
 112. 149.  93.  49.  43. 130.  54.  91.  67.  97. 110. 103. 115.  94.
  48.  36. 313. 109. 144. 121. 102. 116. 182.  32.  42. 168. 118.  38.
 140. 134. 114. 124.  39. 111.  45. 106. 153.] unique elements
********************************************************************************************************
This column LotArea has [  4928  15865   9920  11751  16635  14054  11341  13125   9170   8480
   8600   9548   9196   8892  16466  10592   5890   7314   7917   2016
  12435   8445   9717  10659   9230  21000  25339  11394   6380  11988
   7658   3378  18890  12358  14762  10356  10400  12615   7540   9100
  31770  13300   3180   2522   8385   8314   8123  12000   5000   7931
  14331  10440   8400   8712  11100   9742  19900  10186   8765  11923
   7200   7838   7024  11287   8834   5500   9858  32668   8760   8366
   9158   6780   9020   4270  10637  10410  13891  16196   8990   8635
   9786  10010   7950   6180   8461   7642   9600   9240   9525   4923
  11075   6820   9204   8973   8125   5330   5868  11250  22950  11308
  10500  13600  10152   4590   6960  14803   9317 115149   9700   7700
   7500  13031   3696  50271   3842   8294  11040   7920  11717  10496
  10106   4800   9450  11957  10463   3182  11050  10634   9505   8339
  12203  15623  16669   9550   8816  12677  13360   9313   6130   9830
  16659  14774   9135   6000   9350  12160  12735   6627   3635  11003
```

```
  4426   5395  15593   7875   8737   9000   9937   7094   1920   7800
 14115   7056   3636   9638   7740   6305   7000  11639   3316  15611
 11000  12493  15138  18386  11924   4045  12134   6930   8525   9156
 12925  13728   7763   9375   9084  20781   9947   8475   9142  23595
 12640   7350   9880  12665   9500   4230  11210  10125  11425   8960
 12898   7750   4274   6120   9060   6240   8885   8072   1680  13518
 14859  10800   7064  10920  15870   4571   5700  11880  12919  10655
  7558  46589  10005   2544  13159  10593  20544   8176   9453   6563
 10395   8899  12378  11600   8499   9765  10120   7252  12090  21750
  8773  11584  14215   9439   8100  12376  12256  10574  10859   8800
  6155  14260   8521  19296  12342  10991  11409   6270  17503  10084
  7162   9477  14006   9991  12003   2160  16056  10000   4282  12589
  5271  12692   8250  19690   9066  11340   6768   2308   5664  11198
  4750  11345  14175   9262   5436   8814  11414   9382   8430  12393
  8640  15256   3196   9286   9416  14200  11767  10542   9187  11207
 13695  12464   3922   8520   8160  16737   3013   7175   8769   7728
  9800  11065  53227  11029  13515  11216  40094   7420  11796  13811
  9473  17140  12474   8405   6858   8820  12274  11316  13173   7050
  8777  13700   9572   6762  12438  15578  11228  10603  12384   7415
  7630  10994  10625  12803   9480  13478  12122   5925  10140  10200
 10197   8963  12508  10728   8450   3604   8120  10029  14230   7758
 10207  11625  12968  13869  11670   7180   1890   5063   9760  10171
 14781   3500  13350   7301   9120  13400   9531   8593  16157   7128
  7804  25000  25095   9520  12030   7930   4500   6993  10530  10970
 12168  15384  10680  14850   4403   8755   9337   2117   9541  16905
  8410  13450   8872  12243   9750   6371   7446  11888   9758  14559
 10628  12900  12257   9588   4435  21695  25286   9825  12546  10182
  7844   9587   8000  28698   7264   4251  11400   5684  17542   9492
  7449   5062  11839   7472   9245   7018  10482   6600   9340  11645
 10437   9842   8767  26142   9590  12327  11275  22420  11526  11367
  1533   4712  16770   8172  12182   5900   2628   8530   4043   8925
 10615   8536   7577   8923  13837  11361  20896  12772   9591   8487
 17600   9042  16692   9248  13214  10335  10475   9069   4608   6897
  9873   7313  17217   5604   8658   9986  13500  63887   9900  10712
  7438  45600  15602  10918   9300  14154   4671  10552  15306   3230
 11248  11616  10896   5350  11426   9018   8393  13860   2368  15750
 21384   3684  10944  10448  11999   9206   7590  14778   8544  18450
  5362  17671   8910  11435  13000  10192  24682   9353   8235   6342
 10011   5820   7153  10769  11885  10386  10320   2592   7560  10300
  5720  11764  10240  10921   9246   1300  10420   9430  10762   6300
 10927  12354  10380   2887  70761  10012  21535   4438  14684   5381
 10708   9320  13651   1477   8854  10264   8877   9950   8320  10382
 11218   9650  16560  12886   7819  21453  17500   6882  11146   6204
 12444   8967  13501  11235   4130   7862  11782  10316   8029   9303
 11184   9200  10237  14442   8750  12099  10665   2001   9364   8064
  9808  13474  10690   4060  11664   8562  13693  14572  13472   5100
  9101   8470  10846  12209  12704   8471   2645  11404  13650   7226
  7681  11214  14892  13005   9790  12155   9612   5587  10402  11103
  9906  11694   7244  23257  10667   5687  13526  13346   7407  14585
  8402   7892  14000   2651   9297  10793   7227   8163   8004   1950
  6900  11851  13072   9360   5105  16285   1491   2280  39104  11302
  8924  35760  21780  14963  11120   7015  10020  11344   4017   8281
 13560   5790   9179  20431  12416   8900  10480   7820  14450  19138
  1869   6420   7082   8993  12984  16545   8741   3000  14364   7851
  8688  11500   2665  10141   4400  12118  19378  11606  10832   7990
  7406   7588   9803  21286  12205   2268  16381   7136  10624   7032
  8012  11911  10791  10041   9965   9549  13132  17423   7596  10452
  8200  11457  11512  14191  14541   1974   8731  10839  11423   7388
 16647   7390   6442   4280   6173   9130  12144   3675  10007   8244
 11070  13673   9400   8263   8944   7879   9571  13907   5400   8190
 10780  10880  12513   8926  13517  13418  24090  10150   5389  14112
  8724  32463  11787   9017   9945   7943  16259  16226  12150   3363
  8248  17104  11194   9452  10784   7795  12461  11096  13710   8740
 12095   7685   8089  13704   9672  10289  10650   7150  12220   8749
  3136  12227  10778   8978   9144   6629   5520  15523   7060   4058
 11249  12224   3600  14977   9250   6040  10364 159000  34650  12420
 10652  13680   8738   4118   7399   7837   7910   2448  11310  27650
 21872   3950   3010   5310   8700  12537  11443   7207  10267   9554
  8880   9828  13006  10635   4920   8500   9180  12328  17755  57200
  6955  11175   9855  13758  11478  13175   6970  18000  11200   8529
  8791   9150   7100  11932  11700  16059  10434   8335   8935   3072
  9938   9291   9464  12798   7585  25419   8849  10721 164660   3982
  2500  10357   6911  10570   6402  13284   8556  10205  10134  11841
 15498  14303  11844   8063   8068  10562   9738   8546   7711   8212
  9819   7861] unique elements
********************************************************************************
This column Street has ['Pave' 'Grvl'] unique elements
********************************************************************************
This column Alley has [nan 'Grvl' 'Pave'] unique elements
********************************************************************************
This column LotShape has ['IR1' 'Reg' 'IR2' 'IR3'] unique elements
********************************************************************************
This column LandContour has ['Lvl' 'Bnk' 'HLS' 'Low'] unique elements
********************************************************************************
This column Utilities has ['AllPub'] unique elements
********************************************************************************
This column LotConfig has ['Inside' 'CulDSac' 'FR2' 'Corner' 'FR3'] unique elements
********************************************************************************
This column LandSlope has ['Gtl' 'Mod' 'Sev'] unique elements
********************************************************************************
This column Neighborhood has ['NPkVill' 'NAmes' 'NoRidge' 'NWAmes' 'Gilbert' 'Sawyer' 'Edwards'
 'IDOTRR' 'CollgCr' 'Mitchel' 'Crawfor' 'BrDale' 'StoneBr' 'BrkSide'
 'NridgHt' 'OldTown' 'Somerst' 'Timber' 'SWISU' 'SawyerW' 'ClearCr'
 'Veenker' 'Blmngtn' 'MeadowV' 'Blueste'] unique elements
********************************************************************************
This column Condition1 has ['Norm' 'Feedr' 'RRAn' 'PosA' 'RRAe' 'Artery' 'PosN' 'RRNe' 'RRNn'] unique elements
********************************************************************************
This column Condition2 has ['Norm' 'RRAe' 'Feedr' 'PosN' 'Artery' 'RRNn' 'PosA' 'RRAn'] unique elements
********************************************************************************
This column BldgType has ['TwnhsE' '1Fam' 'Duplex' 'Twnhs' '2fmCon'] unique elements
********************************************************************************
This column HouseStyle has ['1Story' '2Story' '1.5Fin' 'SFoyer' '1.5Unf' 'SLvl' '2.5Fin' '2.5Unf'] unique elements
********************************************************************************
This column OverallQual has [ 6  8  7  5  9  1  2  4  3 10] unique elements
********************************************************************************
This column OverallCond has [5 6 7 4 8 2 3 9 1] unique elements
********************************************************************************
This column YearBuilt has [1976 1970 1996 1977 2006 1957 1965 1947 1937 2003 1960 1955 1923 1930
 2007 2001 1972 1950 1961 1953 1918 2010 1922 1934 2005 1946 1941 1948
 1975 1978 1956 2004 1982 2000 2002 1920 1992 1936 1967 1989 1929 1968
 1959 1935 1966 1931 1916 1998 1962 1974 1926 1904 1995 1969 1985 1963
```

```
       1958 1892 2008 1971 1980 1945 1986 1981 1949 1940 1954 1925 1915 1921
 1924 1999 1951 1993 1964 1900 1919 1910 1938 1880 1988 1911 1990 1979
 1927 1983 1994 2009 1928 1917 1898 1997 1984 1973 1952 1939 1987 1890
 1942 1991 1932 1908 1914 1882 1905 1875 1906 1893 1912 1913] unique elements
*********************************************************************************************
This column YearRemodAdd has [1976 1970 1997 1977 2000 2006 1996 1965 1950 2003 1960 1955 2007 2001
 1961 1998 1953 2010 1995 2005 1992 1975 1978 1982 2002 1989 1967 1968
 1959 2004 1966 2008 1987 1981 1969 1985 1963 1991 1993 1971 1990 1956
 1986 1999 1954 1957 1994 1972 1958 1980 1979 1951 1983 2009 1962 1964
 1952 1984 1988 1974 1973] unique elements
*********************************************************************************************
This column RoofStyle has ['Gable' 'Flat' 'Hip' 'Shed' 'Gambrel' 'Mansard'] unique elements
*********************************************************************************************
This column RoofMatl has ['CompShg' 'Tar&Grv' 'WdShngl' 'WdShake' 'Roll' 'ClyTile' 'Metal'
 'Membran'] unique elements
*********************************************************************************************
This column Exterior1st has ['Plywood' 'Wd Sdng' 'MetalSd' 'CemntBd' 'VinylSd' 'HdBoard' 'Stucco'
 'WdShing' 'BrkFace' 'Stone' 'AsbShng' 'AsphShn' 'ImStucc' 'BrkComm'] unique elements
*********************************************************************************************
This column Exterior2nd has ['Plywood' 'Wd Sdng' 'MetalSd' 'CmentBd' 'VinylSd' 'HdBoard' 'Wd Shng'
 'Stucco' 'ImStucc' 'Stone' 'BrkFace' 'AsbShng' 'Brk Cmn' 'AsphShn'
 'Other'] unique elements
*********************************************************************************************
This column MasVnrType has ['None' 'BrkFace' 'Stone' 'BrkCmn' nan] unique elements
*********************************************************************************************
This column MasVnrArea has [0.000e+00 4.800e+02 1.260e+02 1.800e+02 6.700e+01 2.230e+02 6.600e+01
 8.200e+01 1.740e+02 3.040e+02 1.720e+02 1.660e+02 1.840e+02 3.500e+02
 4.120e+02 1.000e+00 1.890e+02 1.120e+02 5.000e+01 2.200e+02 1.600e+01
 6.300e+02 2.810e+02 2.870e+02 3.400e+02 2.160e+02       nan 1.400e+02
 1.830e+02 3.360e+02 3.960e+02 2.320e+02 3.200e+02 8.500e+01 1.620e+02
 1.540e+02 1.760e+02 1.200e+02 1.080e+02 2.520e+02 1.300e+02 3.510e+02
 5.710e+02 5.300e+01 2.040e+02 9.750e+02 6.530e+02 8.000e+01 4.720e+02
 3.400e+01 1.650e+02 2.370e+02 1.130e+02 9.000e+01 1.100e+01 1.470e+02
 1.360e+02 3.760e+02 8.900e+01 4.150e+02 2.000e+02 5.060e+02 2.860e+02
 4.500e+01 2.450e+02 2.470e+02 2.400e+02 7.000e+02 9.800e+01 6.040e+02
 8.600e+02 2.700e+01 1.530e+02 2.120e+02 2.060e+02 7.600e+02 2.960e+02
 5.280e+02 2.990e+02 3.380e+02 1.230e+02 2.330e+02 6.800e+01 3.910e+02
 2.100e+02 7.500e+01 9.600e+02 3.800e+02 3.620e+02 1.560e+02 3.990e+02
 7.400e+01 1.860e+02 4.100e+01 6.500e+01 1.440e+02 8.400e+01 2.080e+02
 2.600e+02 4.810e+02 5.670e+02 1.940e+02 1.250e+02 1.800e+01 2.050e+02
 3.090e+02 6.510e+02 7.200e+01 1.450e+02 7.660e+02 7.880e+02 7.620e+02
 2.720e+02 2.560e+02 4.400e+01 3.000e+02 1.680e+02 2.880e+02 4.660e+02
 2.800e+01 3.660e+02 2.920e+02 9.900e+01 2.240e+02 4.200e+02 1.040e+02
 4.910e+02 2.890e+02 2.680e+02 6.400e+02 6.000e+02 3.020e+02 3.600e+02
 4.240e+02 1.780e+02 1.960e+02 5.000e+02 1.047e+03 2.590e+02 2.540e+02
 1.020e+02 1.370e+02 1.640e+02 4.320e+02 2.980e+02 1.280e+02 4.250e+02
 5.130e+02 2.700e+02 8.100e+01 1.700e+02 5.730e+02 3.100e+02 2.030e+02
 1.820e+02 7.050e+02 1.380e+02 6.300e+01 6.600e+02 6.500e+02 4.420e+02
 2.430e+02 3.000e+01 2.260e+02 1.060e+02 2.200e+01 4.000e+01 3.810e+02
 3.440e+02 2.150e+02 2.380e+02 2.460e+02 1.010e+02 4.280e+02 7.960e+02
 3.240e+02 1.000e+02 8.940e+02 1.160e+02 1.220e+02 3.120e+02 5.600e+01
 4.480e+02 3.330e+02 2.660e+02 2.750e+02 5.760e+02 1.430e+02 2.360e+02
 6.400e+01 1.400e+01 8.800e+01 3.480e+02 4.800e+01 5.640e+02 6.730e+02
 2.800e+02 2.580e+02 1.170e+03 2.340e+02 1.350e+02 1.115e+03 4.380e+02
 2.900e+02 1.050e+02 2.500e+02 1.129e+03 4.260e+02 5.100e+01 4.200e+01
 7.680e+02 9.200e+01 3.420e+02 3.880e+02 1.670e+02 2.950e+02 1.100e+02
 7.720e+02 5.100e+02 9.220e+02 2.440e+02 3.060e+02 4.600e+01 4.560e+02
 2.020e+02 2.780e+02 4.510e+02 1.690e+02 1.570e+02 4.520e+02 4.430e+02
 1.140e+02 2.630e+02 1.378e+03 1.610e+02 1.580e+02 8.700e+02 1.320e+02
 3.150e+02 1.270e+02 4.590e+02 7.310e+02 7.600e+01 2.250e+02 2.250e+02
 4.100e+02 1.920e+02 8.160e+02 4.230e+02 7.480e+02 4.790e+02 1.510e+02
 5.400e+01 1.100e+02 8.600e+02 1.490e+02 5.940e+02 5.700e+01 3.700e+02
 3.350e+02 1.170e+02 1.150e+02 1.500e+02 4.350e+02 2.610e+02 6.000e+01
 3.050e+02 1.630e+02 1.090e+02 2.620e+02 1.600e+03 1.480e+02 2.850e+02
 1.710e+02 9.400e+01 1.190e+02 2.840e+02 9.500e+01 3.600e+02 6.160e+02
 3.650e+02 5.540e+02 4.640e+02 3.100e+01] unique elements
*********************************************************************************************
This column ExterQual has ['TA' 'Gd' 'Ex' 'Fa'] unique elements
*********************************************************************************************
This column ExterCond has ['TA' 'Gd' 'Fa' 'Po' 'Ex'] unique elements
*********************************************************************************************
This column Foundation has ['CBlock' 'PConc' 'BrkTil' 'Slab' 'Stone' 'Wood'] unique elements
*********************************************************************************************
This column BsmtQual has ['Gd' 'TA' 'Ex' nan 'Fa'] unique elements
*********************************************************************************************
This column BsmtCond has ['TA' 'Gd' 'Fa' nan 'Po'] unique elements
*********************************************************************************************
This column BsmtExposure has ['No' 'Gd' 'Av' 'Mn' nan] unique elements
*********************************************************************************************
This column BsmtFinType1 has ['ALQ' 'GLQ' 'BLQ' 'Unf' 'Rec' 'LwQ' nan] unique elements
*********************************************************************************************
This column BsmtFinSF1 has [ 120  351  862  705 1246    0 1302  168  698  442  483  538  724  751
  361  656   49  915  661   35 1445  326  456  498  360  716  477  773
  639  377  595  546  144  374 1274  493  290  860  912  674  285  769
 1024  421  338 1170  234  510 1219  490  312  544 1288  116 1386 1443
  336  600 1071  535  280 1153  562  368   25  567 1196  248  486  936
  432  454  586   24  375  416  774  680  592 1810 1373  637  196  197
  552   16  904  428  189  854 2096  216  504 1218  978  713  784   72
  795  810  633 1148  988  765  697  733  603  572  300  180  471  450
  296  400  969 1039  767  740  419  831  689  998 1070  427  865  626
  922  388  236  297  611  228 1258  852  522  609   20  641 1022  250
 1106  301  746  358  821  560   75  704 2188  958 1124 1361  392   50
  919  846  402  319  605  310  685  588  315  324 1470 1032  763  655
  397  842  672  262  292  284 1369  340 1116  240 1084 1082 1231  787
  630  830  668  832  288  556 1158 1573  220  152  735 1334  616  929
 1126  445  352 1173  714  814  732  507 1447  623 1540  803  894  619
  331 2260  851  980  804 1059 1280 1088  624 1572  738   21  482 1200
  759  976  866  386 1338  867  320  925  575  660 1046  699  191  209
  224  841   48  737  182  390  495    2  547  706  569  762  662  516
  364  622 1324 1513  439  465  282  505  513  956 1016  257  756  895
  578  772  648  378  967  700  602  266  412  650  778  553 1198   56
  885  808  739  678 1220  646  247  219  249  489 1282  863  125  423
  828 1085  816  344  350 1300 1696  593  786 1441 1128  608  932  384
  686 1201  440  643 1002  916  644 1721  994 1285 1270  790  570  747
  659  789  468  975  429 5644  398  651  212  617 1247 1018   80  381
 1000  170  138  256  528 1410 1309  512  167  728  187 1086  812  448
  524  990 1464  129  520  594   36 1163   28 1003 1138  920 1455  485
  900  379 1880  509 1162  836 1079  565  387  503  444  422  938 1406
 1336   63   27  899  464  614  742  226  892 1186  642  970 1013  986
   64  371  788  987  383  162  620  532 1400 1097 1619  690  506  252
  632  410   57 1320  692  156 1480  625  905  664  385  523  210  206
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1606  308  748 1104   81  403  982  239  150  549 1422  108 1387  649
 185  194  460  536 1398 1056  321 1283  781   94  294 1065  223 1036
 548  822  684 1636  568 1110  484   40  943  430  984  437 1904  330
 777  500  663  251 1005  719 1012  334  645 1332 1358  405 1390  902
 365  599  459  806  270  945  540 1040  533  824  415  349 1180 1014
 492 1159  827  903  281  554 1074  353  425 1456  420  564  518  354
1436  712  896  399  551  584  695 1350  480  666  141  573  311  604
 941  776  734 1460  696  380  991  370  539  176  859  708  750  417
 426 1078  462 1249 1154  299  329 1064  165 1165 1314  275  356 1440
 559  694  203  566  457] unique elements
*********************************************************************************
This column BsmtFinType2 has ['Unf' 'Rec' 'BLQ' 'GLQ' nan 'ALQ' 'LwQ'] unique elements
*********************************************************************************
This column BsmtFinSF2 has [   0  823  682   96 1029  869  211  608  532  466  692  539   41  123
 193 1120  872   28  240  239  150  181  180  661  258  486  374  547
  93  230  306  294  108  380   68  396  279  324  791  479  228  110
 690  290  121   40  531  362   80  634  106  128  391  336  472   35
 435  182  132  495  438  287   64  168  764 1031  210  202 1127  469
1080  149  670  468  723  645  411  232 1474  177  768  127  500  620
 144  441   81 1061  344  375  219  612  125  480 1063  906  311  627
 117  208  551  147  173  264 1057  377  630  276  580  712  139  544
 606  972  334   32  163  184  175  841  400  546] unique elements
*********************************************************************************
This column BsmtUnfSF has [ 958 1043  255 1139  356  879   90  284  420  390  780  458 1560 1065
 816  602  278  508  392  630  112    0  135  203  905  411  993  389
1296  651  652  360  253 1090  725  115  742  441  551  600  970  270
 982  172  363  526 1017  132 1777 1035   76  666 1800   95  108  386
 121  292  354 1194  798 1496   30  276  417  660  604  690   39 1498
 295  312  195  155  960  728  912  752  650 1055 1099  440   29  247
 413  813  298  448  434 1107  168  432  314  462 1530  250  409 1290
 424  104  756  400   99 1074   32  221  858  319 1442  844  999  342
1550  893  712  536  884  628 1128  371  300 1686  540  506  163  864
 733 1393 1319  726  586  481  264  721  398  252  180  151 1212  701
 572  765  849  340  294  414  859  230  380  796  804  622  920  148
1428  208  266  184  375  161  773 1470  177  286  468  940 1489  501
 552 1203  866  577  724 1020   74  396  100  574 1094  785 1352 1594
 522 1008  598  134  832  882  239  244  125 1926 1670  299  520  624
 567  142 1603  896   88  768  846  430  801  791  210  594  416  927
 427 1316  700  616  370  546  425  173  606 1390  114 1158  588  431
1082 1097  187  611  490  706  916   70  599 1571  585  476  717  317
 876  524  936  165  774  636 1752   92 1375 1969  305  136  697  336
1200   80  718  248  343 1122  708  200 1573   61 1468  847  732  556
1374 1072  479  138  748  308 1258 1088  403  444  533 1346  530  625
 162  303 1085  435  318  764  878  140 1257  324   75  402  806 1417
 193 1164  188  808  410  971 1286 1234  499  793  868  384   77 1064
 404  349  487  323 1095  638  689  673  320 1566  874  198  422  175
 612 1905  474 1734 1515  224 1753  150  408  102  619  289  554  500
1632  113  288 1694  447  664  227  537  935   36  350   64 1357  103
1380  197  892  220  176  378 1502  383  658  216  486   14  251  178
1304  698 1198 1482   72  762  218  485  463  201  105  279  952 1351
 461  359  758  637 1042  939   81  328 1141 1266  595   82   55 1079
 710  242  834  133 1195 1104  941 1273  709 1450  538 1125 1342  365
 525  326  549  379  460 1143  484 1480  131 2002  969  891  189  747
 381  171 1140  445 1795  925   93  466  778  470  580  504  907  254
1276  571 1063 1652  348  811 1184 1362 1098  542 1221   15 1373  223
1181  741  576  568 1228  111  661  792  124  570  841  482  245  755
 672  160  906 1330   78  309  901  676  374 1030 1656 1176   89  626
 512  684   38  989  186  406  426  141  280   96  449  736 1237  480
 496 1709  310  795  596  961 1191  257  130 1053  192  783  291  273
 166  668 1120  746  833 2153  321 2336  364  978 1013 2042  776  731
 930  153  678  516 1288  770  120 1226  686  357  290 1774  149  268
 367  331  914  899 1092  122  620 1420   23  212 1424  179 1413 1528
 880  543 1163  333 1392  840  240  169  862  438 1869 2121  744  219
1302  503  641  235 1616  794 1588  648  167 1710 1335  924  515  720
 442  734  495 1145  119  894  117  491  387  967  926 1293  196  277
 457 1680  550 1907  452 1012 1584  225  405 1073 1129  428  715  170
 418 1117 1032  456  415  871  126 1249 1050  544  976 1406  322  563
 412 1541  739 1116  702  237 1459 1405  761 1768  948  560   35  968
 297 1494 1372  975  693  799  548  191 1367 1232  217  344  397   50
 964  315  722  635  473   60 1368 1436  589   40 1434  361  281  662
1580 1240 1005  831  293  640  488  510  154  810 1252  366  740  467
 784  735  143  877  316 2046 1010 1121  649] unique elements
*********************************************************************************
This column TotalBsmtSF has [1078 2217 1117 1844 1602  879 1392 1134 1214  832  780  941 1560 1065
 816  602 1232 1143  630  963  768 1050  864 1809 1856  993  715 1752
 651 1361  720    0  969 1090 1202  888  742 1080  928  600  970  985
 982  924 1269 1800 1510  290  992 1777 1947  750  951 1132  807  925
1462  926 2035 1194  798 1496  520 1127  544 1705  660 2076 1482 1498
 672  912 1389  690  960  728 1032  650 1055 1099 1593  784 1488 1144
1008  813 1494  936  920 1107 1104 1048 1554  825 1314 1643 1028  756
 691 1074 1842 1594  858  637  319 1442 1040  644 1196  894 1574  893
1440  608  884 1478 1128 1225 2396 1686 1010 1518 1262  876 1063  795
1393 1319 1536 1219 1505  721 1148 1386 1017  900  848 1337 1212 1304
1486  765  859 1073  796  804  622 1428 1247 1126 1154 1100 1470 1175
1356  559 1062  940 1489 1205  931  616 1568  866 1188  952 1020 1332
1728 1096 1094 1394 1352 1614 1620  384 1241  882  990  483 1926 1670
1120  980 1253  624  572 1271 2330  958 3206  896 1629 1160  846  480
1720  791 1056  996 1742  735  927 1340 1896  700  680 1165 1422 1414
 539 1158  849 1673 1463 1082 1097  828  611 1145 1103  916 1362  861
1571  585 1001 1281  774  636 1992 1176 1391 1453 3200 1092 1256  697
1004 1200 1006 1501 1122 1573 1604 1468  847 1485 1374 1268 1726 1311
1084  802 1114 1258 1088  910 1980  744  530  845 1702 1106 1085 1364
1054  649  764 3138  793  991 1257 1112 1682  806 1417  817 1652 1057
1164 1272 1026 1286 1234 1610  839  360  998 1722  944 1064 1086 1274
1142  983 1095  689 1151 1566  874 1039  794 1905 1734 1517  771 1753
 856  731 1261 1024  907 1360  918 1632 1437 1638 1248 1694 1845  981
 740  965 1522  935 1052 1156  788 1373  855 2136  824 1502 1350  658
1484 1358  844  950  264 1277 1251 1198 1318 1053  880 1660  732  105
 773 1013  625 2633 1324 1192 1181 1042 1190 1475  725  939  588  560
2109  612 1141 1266 1310  868 1079  710 1370  747 1195  686 1541  420
 440 1273 1069 1466  978 1125 1204  525 1242 1193 2077 1650 1500  999
1416  943 2002 1461  698 1561 1140 1108 1795 6110  778 1121  974  617
 504 1276 1228 1398 1732  729 1626  811 1952 1559 1223  741  576 1296
1021  661  655  792  570  841  482 1184  755 1070 1162 1346 1278 1299
 901 2000  536 1029  676 1152 1030 1656  561 1252 1058  684 1291
1408 1533 1138 2444 2158 1306 1617 2223 1588  836 1220 1203  770 1034
1237  938 1902 1709 1932  961 1623 1051  270 1067 1218 1109  872 1136
 783 1477  915 1654  546  663 1405 1347 1216 2153 1530  540 1240 2392
1525 1719 2042  506  776 1153  800  930 1746 1328 1316 1600 1226  954
1822  799  971 1199  673 2524  716 1424 1161  551 1413 1385 1814 1552
 458 1930 1163 1260 1246  709  683  814  840  873  822  862 1848 1606
 803 1869 2121 1302 1430 1284 1157  860 1616 1372  757  648  810 1710
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  712   761 2078   979 1575   908 1264 2216 1019   967 1338 1581 1293 1390
 1098 1680   547   994 1907   945 1012 1584   948   596   911   833   372 1595
 1249 1379 1431   988 1208   976   654 1406 1396   408 1624 1419 1116   892
 2006 1459 1473 1330 1768   883 1344   723   968 1713 1976 1444   975   693
 1075 1367   818   485 1868   777 1041   964 1657 1235 1368 1436 1704 1542
 1298 1454   662 1580 1288 1005   831 1375 1684 1499 1520 1244   853 1383
  702 1565 1986   714 2046 1582] unique elements
***********************************************************************************************
This column Heating has ['GasA' 'GasW' 'Floor' 'OthW' 'Wall' 'Grav'] unique elements
***********************************************************************************************
This column HeatingQC has ['TA' 'Ex' 'Gd' 'Fa' 'Po'] unique elements
***********************************************************************************************
This column CentralAir has ['Y' 'N'] unique elements
***********************************************************************************************
This column Electrical has ['SBrkr' 'FuseA' 'FuseF' 'FuseP' 'Mix'] unique elements
***********************************************************************************************
This column 1stFlrSF has [ 958 2217 1127 1844 1602  879 1392 1803 1214  832  780  941 1560 1065
  872  900  816 1232 1113  630  963  768 1078 1050 1200 2259 1416 1856
 1048  849 1752  707 1361  854 1547  969 1370 2158  912  779 1656  928
  520  970  985 1007 1122  334 1269 1800 1584  438 1306  930 1795 2207
 1061  951  827 1132 1175  925 1462  926  874 2515 1194  798 1496 1165
  774 1718  808  803 2076 1494 1498 1072 1085 1389  698  986 1040  728
 1032 1055 1099 1593 1168 1502 2020 1144 1053  822 1652  936  920 1518
 1130  864 1186 1554 1097 1314  888 1824 1436 1051 1080  691 1088 1842
 1646  897 1035 1442 1196  894 1574  901  600 1476 1319  884  882 1478
 1149 1276 2411 1707  961 1052 1262  964  784 1287 1468 1422 1537 1536
  904 1265 1505  720  841 1148 1569 1026  848 1337 1212 1304  915 1486
  765  899  859 1811  983  796 1699  741  954  820 1428 1247 1126 1154
 1100 1661 1490 1675 1182 1500 1352 1024 1489 2117 1236 1192 1283  616
 2156  866 1217  952  908 1332 1728 1118 1133 1394 1614 1279 1008 1028
 1620 1241 1340  902  990  483 1966 1670  980 1253 1096  624  572 1601
 2364 1629 1172 1686 1156  846  480 1720 1056 1014 1742 1134 1067 1944
 1180  680 1203  858 1771 1414 1158 1075 1082 1054  965  751 1145 1103
  916 1382  861 1571 1140 1001 1694  892 1089 1992 1178 1391  742 1453
 3228 1092 1256 1575 1004 1006  804 1659 1625 1437 1578 1604 1136 1479
  847  764 1464 1557 1268 1726 1216 1325  802 1114 1258  910  756 1980
 1506  752  581  893 1702 1190 1120 1663 1512  679 1060 3138  793 1077
 1266 1137 1128 1229 1188  824 1057 1164 1272 1294 1264 1610 1142  999
 1350 1086 1274 1362 1260 1095  703 1600  875 1226 1039  869  794 1905
 1734 1535  753 1787  856  981  495 1261  907 1432  918 1328 1632 1473
 1872 1940 1548  955 1520  788 1555  855 2136 1022  905  769  658 1484
 1358 1445  950 1363 1682 1277 1251 1482 1173 1680 1664 1440 1660 1012
  672 1166  773 1160 1015  625 2633 1324  813 1516  968 1390  800 1108
 1042 1532  725  939 1138  575 2113 1310 1146 1079 1898 1423 1091 1195
 1104  966  997 1541 1402  708 1456 1069 1466 1125 1377  525 1242 1523
 2097  960 1143 1493 1644  943 1167 2018 1721  996  747  786 1561 1252
 4692  944 1121  974  865 1307 1801 1071 1228 1700 1776 1668  811  876
 1712 2000 1559 1336 1223 1378 1234  977  660  792 1640 1465  661  757
 1224 1222 1221  825  755 1163 1504 1299  536 1339  676 1038  561  626
 1058  684 1553 1291 1679 1533 1181 2444 2196 1867 1225 2223 1588 1220
  770 1334 1170  880 1112 1521 1117  988 1902 1717  729 1932 1636 1218
 1155  992  783 1098 1839  933 1654 1184  546  663 1573 1372 1526 2069
 1530 1044 2392  833 1525 1110 1013 1719 2042 1153  956 1746  810 1316
  778 1766 1828  887  971 1074  935  896 1429 1199 1152  673 2524  716
 1141 1381  551 1430 1826 1552  835 1831 1288 1246  979  913  840
 1020 1848 1651 1869 2121  948 1302 1647  612  860 1616 1472  932  885
  734  694 1710  976  924 2084 1296  927 1282 2234 1094 1309 1342 1412
 1357  993  851  909 1327 1301 1701 1036 1959 1696 1073  998 1281 1207
  576 1622 1383 1431 1029 1249 1210 1208  686  664 1454 1407 1624  697
 1419 1063 1131 1116 1459 1405 1542 1768  929 1344  767 1713 1976  806
 1444 1733 1005  693  975  799  689 1507 1375  818 1248 2028  838  845
 1041 1338 1235 1034 1687 1368 1689 1187 1107 1704 2073 1298 1434  814
 1580 1320 1124  831 1062 1566 1002 1360 1684 1619 1520 1244 1549  596
 1240  735 1617 2898 1987 2046 1010  949  989  649  807] unique elements
***********************************************************************************************
This column 2ndFlrSF has [   0  886  984  384  596  888  521  602  672  829  811  682 1259  720
  600  739  793 1208  862  807  762  842  704  213  649  728  514  220
  581  800  843  866 1518 1054  896  676  884  788  439  371  678  547
  900  809  677 1151 1141 1336 2065  756  864  795 1177  981  983  595
  319  813  748  622  527 1304 1818 1142  940  872  403 1182  495  913
 1020  192 1349  656  504 1174  539  741  623  846  857  730  924  472
  796  790 1323  685 1218  336 1063 1523 1122  871  611 1053  684  568
 1001  546  840 1194  628  464  661  876  742  626  848  744 1370  992
  358  883 1101  783  941  432 1093  709  475  378  530  850  764 1538
  325 1112  903  590  441  806  561 1070  928  665  918 1357 1312 1017
  729  780 1040  368 1540  767 1031  844  689  592  887 1215  349 1088
  854  787  524  564 1427  914  653  769 1254 1066  702  467 1038  881
  804  526  664 1203 1092  977  778  885  966  625  651  408  304  534
  797  754  858 1120  560 1611 1098  636 1080  898  456  644  686  473
  670  567 1330  695 1392 1288  390  989  925  950  545  445  316 1051
  576 1440  540  574  904 1140  755  688  348  915  589  826  725  960
  698  691  240  902  573  713  808  455 1106 1060  668 1097  591  512
 1872  870 1306  812 1028 1175  556  582  571  873  868  939  765  701
  880  975 1332 1426  252 1121 1274  833 1157  878  523  930 1200  798
  518  648 1134  834 1129  448 1103  551  548 1032 1796  511  224  832
  650  908  831  208  980  612  882 1100 1037  550  920  855  332  901
 1111  979  988 1414  892 1000 1081 1168  639  936  457  370 1320 1196
  533 1015 1347 1242  745  732  482  985  640  716  587  517  929  520
  438  766  700 1286  772  660  601  717  406  634 1243  679  954  860
 1116 1072  454 1360  167  910  687 1178  299 1152  912 1257  272  584
  978] unique elements
***********************************************************************************************
This column LowQualFinSF has [  0 528  53 156  80 390 234 144 572 360 514 120 384 515 481 513 232 371
 473 420 392] unique elements
***********************************************************************************************
This column GrLivArea has [ 958 2217 2013 1844 1602 1863 1392 1803 1214 1216 1376 1829 1560 1065
 1393 1502  816 1232 1113 1302 1792  768 1078 1050 1200 2259 1416 1856
 1048 1660 1752 1389 2620 1382 2320  969 1370 2158  912  935 1656  928
 1709  985 1800 1122  334 1269 2792  438 1306  930 1795 2207 1923  951
  827  900 1132 1982  925 2224 1316  874 2515 1194 1640 1496  754 1165
  774 1718  803 2076 1494 1498 1285 1734 1426  986 1040 1456 1252 1539
 2263 1099 1593 1968 2020 1144 1053 1665 1652  936 1786 3608 2184  864
 1986 1554 1993 1314 1564 1824 1839 1080 1088 1842 1646  872 1364 1406
 1442 1846 1355 1196  894 1574 1801 1641 2153 1319 2035  882 1478 2290
 2612 4476 1707 1717 1052 1518 1262  964 1728  784 1287 2599 1537 1536
  904 1265 1505  720  841 1148 1569 2007  848 1337 1212 1635 1375
 1486 1365  899 1178 1811 1796  796 2447 1363  954 1347 1428 1247 1126
 1154 1100 1661 2794 3493 2324 1500 1352 1964 1489 2117 2108 1595 1283
 2094 1111 2156 1779 1217  952 1928 1524 1118 2482 1054 1279 1008
 1028 1620 1430 1241  854 1340 1176  902  990  987 3140 1670 1130  980
 1253 1096 1344 1601 2364 1629 1913 2448 2022 1223 1692  480 1720 2093
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     1056 1744 1742 2058 1032 1944 1180 1412 1470 2526  858 1422 1771 1414
     1725 2376 1248 2138 3222 2622 1953 1097 1054  965 1362 2198 1103 1600
      861 1571 1868 1716 2002 1458 1694  892 1776 1348 1750 2868 1391 1484
     1453 3228 1092  970 1256 2201 1852 1006 1548 1659 2504 1625 1920 1208
     1437 1578 1604 2019 1479 1948 1547 1464 1557  616 1522 1268 1726 2157
     2418 1511 1114 1258 1959 1385 1134 1980 1506  752  893 1702 1190 1970
     1663 2654 1183 4676 1077 1266 1137 2031 1229 2332 1529 1647 1869 1894
     1929 1164 2200 1691 1820 2810 1294 2576 2097 1610 1935 1812 2046 1644
     2296  999  968 1350 1086 1274 2715 2291 1939 2060  875 1818 1761 1039
     2127 1218 1905  630 1611 2822 1535 1787 1710 1768 1284 1922 1261  907
     1432 1981 1632 1473 1872 1026 1520 1236  981 1775 3194 2614 1490 1555
     1322 2136 1573 1328 1184 1861 1358  788 2134  950 1682 1277 1251 2531
     2574 1173 1680 2034 1664 1440 1790 1400 1166  910 1658 2126 1015 1250
     2633 1324  813 2167  800 1108 1576 2090 2329 1797 2240 1138  672 1135
     2113 2601 1310 1188 1146 2132 1919 2978 2624 2555 1989 1230 1788 1541
     1402  708  869 1626 1474 1069 1466 1699 1125 2183 1242 1523  960 2473
     1493 1638 2784 1167 2018 2285 1721  996  747 1561 1140 1553 1889 5642
     1121  974 2358 2080 1264 2172 1228 1700 1471 1668 1387 3395 2082 1513
     1712 2704 1559 2119 2374 1732 2380 1224 1517 1128 2142 1675 1912  825
     1510 1020 1163 1504  901 2000 1469 1112 1339 1131 2270 1977 2098 2365
     1904 2730 1291 1679 1533 1181 4316 2196 1867 1225 2223 1588 1220 2520
     1582 1095 1845 1334 2078 2345 2775 1117  988 1902 2230 1932 1636  729
     1067 1155 1962 1865 1756 1992 1683 1136 1978 1908 2468 1654 2610  924
     2243 1082 2646 1526 2643 1530 1044 2392 1666 1525 1110 1719 1961 2042
     1441  780 1740 1343 1886 1746 2353 1482 1468 1226 1686 2414 1828 2021
      971 1074 2295 1429 1120 1199 1152  832 2524 1556  778 1141 1381 1102
     2210 1501 1826 1552 1724  835 3627 1674 1288 1739 1240 1203  913 1605
     1851 1158 2728 1651 2121 2450 1487 2062 1960 1616 2057 1472 1475 2462
     1895 1308 1802 1603 1271 2084 2087 1958  943 1575 1296 1915 2696 1784
     2234 1094 1309 1342 1357 1327 1301 1701 1098 2112  694 1072 1855 1696
     1012 1584 1073 1145  948 1762 1738  833 2452 2403 1109 1622 2398 1431
     1029 2596 1708 1936 1419 1624 1558  860 1445 1063 1116 1459 1405 2872
     1346 1369 2229  767 2054 1368 1713 1976 1550 1572 2144 1840 1733 1372
      693 1950 1378 1507 2069 1320 1446 2028  838  845 1911 2110 1041 2236
     1774 1338 1276 1235  884 1034 1639 1687 1689 2260 1704 2073 1298 1434
     2337 1580 2640 2417 1005 1124 2192 2008 1949 1057 1566 1688 3112 1684
     1567 1244 2727 1192 1383 1240 1743 1617 2898 1987 2340 1690 2267 2161
     1221 1983 1317 1509] unique elements
*********************************************************************************************
This column BsmtFullBath has [0 1 2 3] unique elements
*********************************************************************************************
This column BsmtHalfBath has [0 1 2] unique elements
*********************************************************************************************
This column FullBath has [2 1 3 0] unique elements
*********************************************************************************************
This column HalfBath has [0 1 2] unique elements
*********************************************************************************************
This column BedroomAbvGr has [2 4 3 1 5 0 6 8] unique elements
*********************************************************************************************
This column KitchenAbvGr has [1 2 3 0] unique elements
*********************************************************************************************
This column KitchenQual has ['TA' 'Gd' 'Ex' 'Fa'] unique elements
*********************************************************************************************
This column TotRmsAbvGrd has [ 5  8  7  9  6 12  4  2  3 10 11 14] unique elements
*********************************************************************************************
This column Functional has ['Typ' 'Mod' 'Maj1' 'Min1' 'Min2' 'Sev' 'Maj2'] unique elements
*********************************************************************************************
This column Fireplaces has [1 0 2 3] unique elements
*********************************************************************************************
This column FireplaceQu has ['TA' 'Gd' nan 'Fa' 'Ex' 'Po'] unique elements
*********************************************************************************************
This column GarageType has ['Attchd' 'BuiltIn' 'Detchd' 'Basment' nan '2Types' 'CarPort'] unique elements
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This column GarageYrBlt has [1977. 1970. 1997. 2006. 1957. 1965. 1947. 1937. 2003. 1974. 1955. 1923.
 2002. 2007. 1987. 2001. 1988. 1950. 1961. 1953. 2010. 1922. 1939. 2005.
 1991. 1979. 1975. 1976. 1978. 1960. 1956. 2004. 1982. 2000. 1948.   nan
 1964. 1920. 1930. 1968. 1946. 1992. 1936. 1967. 1989. 1959. 1966. 1916.
 1941. 1998. 1962. 1926. 1925. 1983. 1999. 1969. 1985. 1993. 2008. 1971.
 1980. 1945. 1995. 1981. 1994. 1949. 1996. 1921. 1963. 1938. 1958. 1935.
 1940. 1990. 1910. 1954. 1927. 2009. 1986. 1929. 1984. 1973. 1924. 1942.
 1900. 1931. 1951. 1934. 1972. 1932. 1928. 1918. 1908. 1933. 1906. 1914.
 1952. 1915.] unique elements
*********************************************************************************************
This column GarageFinish has ['RFn' 'Unf' 'Fin' nan] unique elements
*********************************************************************************************
This column GarageCars has [2 3 1 0 4] unique elements
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This column GarageArea has [ 440  621  455  546  529  660  528  484  461  336  198  613  573  300
  180  432  632  504  564  396  240  368  884  450  576  834  280  600
  672  479  470  308  252  480  380  328  264  463    0  765  520  246
  756  534  327  702  392  288  451  575  429  738  312  474  490  826
  360  850  514  675  418  625  390  216  686  905  352  682  530  630
  750  562  499  608  840  836  486  286  627  495  476  739  442  409
  894  482  570  420  615  315  400  824  800  736  270  434  294  779
  676  813  511  642  588  460  572  539  462  532  502  505  287  812
  667  456  544  384  483  550  377  810  870  648  492  506  200
  508  497  283  586  574  358  466  865  473  275  912  569  820  690
  720  299  513  478  880  342  711  650  527  542  457  708  338  844
  494  853  160  594  712 1043  722  477  281  871  330  636  408  680
  716  439  445  624  276  656  538  577  614  754  205  786  487  983
  413 1025  770 1052  552  753  619  776  410  453  551  284  846  554
  510  662  666  678  398  620  842  831  423 1053  531  521  890  578
  833  388  788  626 1020  213  748  548  433  452  818  604  425  364
  430  684  644  441  526  752  868  645  467  500  414  431  804  518
  225  639  816  234  839  438  612  685  864  301  305  304  416  610
 1134  583  852  498  472  746  220  260  556  895 1418  297  282  947
  447  256  375  525  924  271  596  424  509  601  296  437  496  888
  671  878  856  832  701  303  516  192  721  320  567  908  774  459
  436  422  393  493  872  558  900  468  694  968  228  541  602  560
 1390  595  186  758  397  898  740  210  405  590  923  796  605  782
  366  807  254  379  208  706  616  617  732 1069  454  825  427  603
 1220  444  792  481 1166  512  670  611  325  766  349  326  566
  475  691 1356  261  683  628  426  402  757  843  515  606  784  367
  936  373  389  622  523  404  406  255  290  471  582  350  533  772
 1248  403  673  663  830  230  795  164  719  189  354  665  789  250] unique elements
*********************************************************************************************
This column GarageQual has ['TA' 'Fa' nan 'Gd' 'Ex' 'Po'] unique elements
*********************************************************************************************
This column GarageCond has ['TA' 'Fa' 'Gd' nan 'Po' 'Ex'] unique elements
*********************************************************************************************
This column PavedDrive has ['Y' 'N' 'P'] unique elements
*********************************************************************************************
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This column WoodDeckSF has [   0   81  180  240  100  158  192   74  121   96  132  370   58  366  166  113  196  155
  237  120  210  261  168  270  171  301  288  175  252  184   33  138   53  208  216  402
  351   70  278  305  156  380  224  315  857  128  371  140  144  253   66  114  250  574
  185  298  187  364  668  143  222  149  356   64   68  272   85  355  302  147  161  325
  182   48  198  268   40  203  238  228  116  112  164  229  517  232  309  276  367  186
  160  392  421  255  214   36  264  736  586  212  123  304  509  169  173  105   95  194
  142  353  256  177   38  125   92  404   60  500  324  344  165  320  382  245   72   88
  172  328   52  241  431  176  197  234  260  146   55   98  292  576  322  148  486  314
  220  342  219  154  236  183  349  199   80   78  110  409  335  104  257  263   49  418
  280   24  269  188  108  242  201   57   12   26  150  179  307  200   84  170  476  352
  300  635  136  290  243  426  379  127  340  414  289  248  303  122  206   89  162  384
  153   86  474  361  115  218  239  124  233  133   42  215  265  135  209  333   44  436
   56   35  227  439  207  190  468   45  365  550  390  394  326  117  296  235  181  262
  103  403  495  670  312  416  511  178  321   87] unique elements
**********************************************************************************************
This column OpenPorchSF has [205 207 130 122   0  17  39 150  30  96 319  64 120  82  24 144  29  62
 166  40  63  36  78 547 159  28 136  84  45 129  44 229  25  33  38 128
 240 189  54  88  80  48  42 260 102  20  73  66  22  50 124  74  72  53
  47 104 116 172 142  35 140  56 250  92  52  32  21 162  58 146  12 192
 182  27  60  76 241  59  83 112 213  67 117 114  70 175 105 154 156  57
  75 108 158  68 236 106  23 110 135 160 138  16  46  18 137  65 176 406
   4 211 134 235  55 100 187 113 274  98 204  51 228 191 170  61   8 180
 312 243 151  91 148 121 123  81 267 132  26 288  49 292 238 111 265 169
 103  11 291 341 502 188  90 184  43  87 133 364 195 131 199  34 155  69
 126 234  94 168 152 523 282 198  77  10 262 244  93  15] unique elements
**********************************************************************************************
This column EnclosedPorch has [  0 184 102 112  96 192 116 126 145  39 156 200 120 286 244  68  80 216
 137 234 272  44 105  24  70 114  98 280 100  42 148 202 294 108 130 176
 154 259  67  84 252 208 293 291 228 129 138 158 144 185 136 242  40 224
 264 128 177  56  34 189 268  99 150 205 301 275 196 164 168 180 194 230
  81 212 239  64 134 162 115 218  36 254  60  77 248 236 240 210  52 169
 221 220 318  30 160 123  90 170  50 386 190 552  91 174  54 172] unique elements
**********************************************************************************************
This column 3SsnPorch has [  0 245 196 140 180  96 162 168 144 290 238 216 182 130 304  23 153 508] unique elements
**********************************************************************************************
This column ScreenPorch has [  0 224  95 265  53 192 480 128 189 140 160 410 204 155 216 182 126 116
 168 178  90 185 147 184 153 266 222 271 273  99 176 288  60 122 180  80
 225 120 144  63 156 165 440 175 161 145 143 252 190 142  40 100 200 260
 259 154 322 291 287 197 163 385 170 198 130] unique elements
**********************************************************************************************
This column PoolArea has [  0 555 576 738 519 480 648 512] unique elements
**********************************************************************************************
This column PoolQC has [nan 'Ex' 'Gd' 'Fa'] unique elements
**********************************************************************************************
This column Fence has [nan 'MnPrv' 'GdPrv' 'GdWo' 'MnWw'] unique elements
**********************************************************************************************
This column MiscFeature has [nan 'Shed' 'Gar2' 'TenC' 'Othr'] unique elements
**********************************************************************************************
This column MiscVal has [    0   400  8300   600  1150   500  1200   480  1300  1400  2000   700
   620 15500   450   800    54   350   560  2500] unique elements
**********************************************************************************************
This column MoSold has [ 2 10  6  1 11  5  4  7  8  3  9 12] unique elements
**********************************************************************************************
This column YrSold has [2007 2010 2009 2006 2008] unique elements
**********************************************************************************************
This column SaleType has ['WD' 'COD' 'New' 'ConLI' 'ConLw' 'Con' 'ConLD' 'Oth' 'CWD'] unique elements
**********************************************************************************************
This column SaleCondition has ['Normal' 'Partial' 'Abnorml' 'Family' 'Alloca' 'AdjLand'] unique elements
**********************************************************************************************
This column SalePrice has [128000 268000 269790 190000 215000 219100 121500 155000 140000 118500
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 231500 133000 142125 136500 146000 217000 112000 394432 113000 188700
 319900 135000 128500 169000 122000 152000 243000 156000  79500 132000
 144152 130000 149900 124500 179000 147000  39300 312500 256000  60000
 153000  84900 230000 180000 106500 239000 107500 123000 176000 228500
 117500 350000 200624 173000 225000  84500 174900  79000 297000  87000
 465000 204900 127000 159000 170000 159500 102000 109500 163990 189950
 119000 157500 287000 144000 286000 172000 212000 124000 150000 205950
 251000 129000 223500 475000 335000 115000 205000 209500 176432 171000
 302000 259500 141000 187500 385000 275000 108000  89500 109900 185000
 143000 127500 110000 232000 239900 151000 178000 313000 222500 156500
 255900 336000 745000 228000 274000 181500 163500 162000 235000 333168
 174000 214000 179900 149500 111250  72500  82000 132500 175900 310000
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 185750 237500 145000 263000  95000 262500 197900 135750 137000 260000
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 325300 320000 325000 252000 119900 250000 110500  82500  97500 307000
 192500 269500 160000 117000 556581 196000 430000 147500 274970 142000
  80000 278000 103000 168000 287090 220000 167500 191000 195000 215200
 282922 234000  89000 143500 311872 226000 130500 341000 134000 172500
 270000 166000 126000 315000 213490 101000 367294 281000 180500 232600
 184750 118000 426000 124900 227680 214900 145900 201800 193879 361919
 172785 193000 257000 221000 146500 451950 178400  37900 144900 203000
 163000 299800 133900 266000 211000 256300 105000 169500 227875 131500
 238000  81000 207500 167900 582933 177500 208500 142500 198500 159950
 109008 194000 293077 168500 318000 241500 159434 143250 213000 359100
 176500 138500 184000 137900 222000 204750 233170 200000 224000 100000
 214500 164900 108959 276000 132250 219500 182900 165150 116000 188000
  88000 164700 466500 254000 294000 139400 149000 262280 213500 142953
 189000 258000 159895 164990 157900 316600 233230 242000 255000  92000
 121600 161500 194201  85500  85000 194700 134500 229000 423000 213250
 151500 108500 317000 378500 248000 245350 277500 186500 274300 139500
  93500 289000 280000 283463 285000  93000 112500  76500 153900 179540
 153500 271000 158000  96500 149350 153337 193500 181000 116050  94000
  91500 134450  97000 126175 179200 261500 107900 305900  66500 275500
  94750 131400 186000 337000 301000 755000 271900 128950 244000 121000
 185900  85400 339750 107000 255500 394617  67000  52000 208300 239799
 204000 101800 178900 257500 354000 303477  75000 122900 227000 119200
 144500 380000 259000  55993 386250 161000 150500 139900 324000 253293
 183000 154900 377500 169990 244600 392500 198900 155835 314813 274725
 135900 149700 181900 158500 105500 263435 197500 148800 187100  75500
 179400  87500 319000 212900  83000 625000 245500 162500  61000 162900
 171900  62383 107400 187000 437154 318061 415298 123500 176485 217500
 340000 173733 277000 216500 252678 106250 200100 226700  92900 223000
 135960  90000 383970 138887 501837 202900  83500 272000 150750 187750
 202500 206900  90350 136905 136900 145500 183500 143900 155900 118400
  34900 108480 160200 104900 309000 244400 236500 315750 342643 267000
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 195400 179665 230500 348000 184100 188500 262000 249700 165600 392000
  89471 128200 402861 171750 103600 104000 133500 206300 114504 274900
 440000 241000 279500 139600 200500 250580  52500 118858 167240 369900
 116500  84000 239500  98600 169900 200141 328000 306000 129900 216000
 235128 265979 179500 178740 236000 136000  80500 228950 264561 118964
  78000  76000 109000 301500 372500 325624  58500 148500  40000
 183200] unique elements
*********************************************************************************
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
This column Id has [ 337 1018  929 1148 1227  650 1453  152  427  776   30 1425  423 1185
  775  391 1408  513 1266  173 1150  797  137  706 1377 1177 1456  369
 1421  999 1217  937  769  831  678  574  921 1292 1277  676  108  424
  823 1455  377 1256 1120  265 1158  725 1378 1139  122  515  518 1214
  443  903   53  469   76 1142 1222  851  334 1008   19  339 1118  834
 1176  945 1415  911  388  747  620  386  818  539  535 1399  571   38
  850 1032 1433 1354 1072  371 1242  681  290  973  989  484 1240 1125
 1143 1340 1343  936 1151 1380 1190  635   47  729 1434  472 1156 1352
  717  385 1334  243   39 1168  214  647  490  512 1181 1451 1428  767
 1250  855 1001   49   25 1058   24  758 1060 1110 1057  491  378 1429
   55  770  737   59   29  788    9 1371  260  249   88  893  803  901
 1124  223 1278 1174  312  624 1445  296  753 1320  432 1362 1069 1255
   50  454  881  500  807  766  866  162 1193  798 1400    6   58 1435
  867  960  441  481  219  128  858  215 1030 1204  531  529  346  621
 1194 1000  761 1351 1442  233  360  886   11  572 1375  328 1417 1089
  242 1198  492  743 1258 1350  722  442   90 1007 1241  144 1317 1080
 1160  482   33 1280  541  994 1385  792 1002  420  354  447  883  578
 1251  671 1017  780 1269 1145  486  134 1282  693 1119  408 1288  159
  577 1014  226  140  109  988  633 1221 1431  365  495  165  816  181
  107  125 1218  938  372   45  995  314  948  217  781 1293 1005  528
   44  645  340 1116  358   72   56   83 1048   17  523 1379] unique elements
*********************************************************************************
This column MSSubClass has [ 20 120  70  60 180  80  30  50 160 190  90  85  45  75  40] unique elements
*********************************************************************************
This column MSZoning has ['RL' 'RM' 'FV' 'C (all)'] unique elements
*********************************************************************************
This column LotFrontage has [ 86.  nan  75.  21.  35. 107.  32.  60. 100.  50. 110.  70.  44.  71.
  52.  37.  62.  78.  90.  68.  67.  80.  76.  24.  57.  30.  34.  55.
  79.  63.  98.  36.  59.  66.  91.  85.  64.  72.  43.  74. 102.  56.
  83.  77. 120.  73.  48.  93.  92.  58.  40.  33.  47.  51. 138. 124.
  42.  89. 105.  65.  45.  61. 137.  96. 150.  69.] unique elements
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This column LotArea has [ 14157   5814  11838  12000  14598   1936   3675  13891  12800   4500
   6324   9503  21750  35133  14226   8405   8780   9100   3735   5306
   9000   8197  10355   5600   6292   6951   7917   7800  11700   9786
   8930  10083  11900   9022   9967   8462   1680  12936   2289   6000
   9200  12394   7500   8846   6240   7560   5232   5001  13286  10998
   9819   6060  10594  10208  10246   7875   8472  11428   1596  10304
   8250   4435   8198   2217  13695  14145   9764  10004  10678  14375
  13053  11600   7200   8795  12244   3182  13265  11553   9056  13101
   8532   9600  15863  10800  14720   8121   9849   8012   8730   7892
  12046   9037   9125   9965   9560   9375   5825   8280   9735   6979
  12822  11475  10261  11952  10768   9247  53107   5000   7922  10852
  13568   1526   6792  11170  10930  10421  17920  10206   4456   8246
  29959   4224  11616  11275  11362   7052   2665  11143   7134  53504
   8544  13682  16321  10142   6120   5400  12702  11317   3951   8414
   8199   7340   9405  17871  18030   8000   2117   8500   7937   9236
  10215   5586  16158   3964   6931   7742   7024   7535   9750  14587
   8750  13688   7677   6171  14115  11645  17400  10656   2572  15431
  16033  15660   4388   8125  10900  10200   9098   6435   8248   6762
  11643   4426  12011   5119  11200   7332  10625  11340   2522   3880
   8850   9490   8450   4060   5250  12108   8070  12155   8158  10335
  10226   8775   9120  11846  11049  14601   9060  11333   8520  16492
   9636  11777  11160   8633  11883  10530  14100  12180   6853   8049
  26178  13825  15576  36500  12552  15426  10159  21930  18800   5784
  12137  17043   8640   9675  17120   7945  12456 215241  14536   6600
  14948   9187  12400  12085   7599  10175   9245  11241   1953] unique elements
*********************************************************************************
This column Street has ['Pave' 'Grvl'] unique elements
*********************************************************************************
This column Alley has [nan 'Grvl' 'Pave'] unique elements
*********************************************************************************
This column LotShape has ['IR1' 'Reg' 'IR3' 'IR2'] unique elements
*********************************************************************************
This column LandContour has ['HLS' 'Lvl' 'Bnk' 'Low'] unique elements
*********************************************************************************
This column Utilities has ['AllPub' 'NoSeWa'] unique elements
*********************************************************************************
This column LotConfig has ['Corner' 'CulDSac' 'Inside' 'FR2' 'FR3'] unique elements
*********************************************************************************
This column LandSlope has ['Gtl' 'Mod' 'Sev'] unique elements
*********************************************************************************
This column Neighborhood has ['StoneBr' 'CollgCr' 'Crawfor' 'Somerst' 'MeadowV' 'Edwards' 'NridgHt'
 'SawyerW' 'Mitchel' 'BrkSide' 'NAmes' 'Timber' 'OldTown' 'Sawyer'
 'IDOTRR' 'SWISU' 'Gilbert' 'NWAmes' 'BrDale' 'NPkVill' 'NoRidge'
 'Blmngtn' 'Veenker' 'ClearCr'] unique elements
*********************************************************************************
This column Condition1 has ['Norm' 'Feedr' 'Artery' 'RRAe' 'RRNn' 'PosN' 'RRAn' 'PosA'] unique elements
*********************************************************************************
This column Condition2 has ['Norm' 'RRNn'] unique elements
*********************************************************************************
This column BldgType has ['1Fam' 'TwnhsE' 'Twnhs' '2fmCon' 'Duplex'] unique elements
*********************************************************************************
This column HouseStyle has ['1Story' '2Story' 'SFoyer' 'SLvl' '1.5Fin' '1.5Unf' '2.5Fin' '2.5Unf'] unique elements
*********************************************************************************
This column OverallQual has [ 9  8  7  6  4  5  3 10] unique elements
*********************************************************************************
This column OverallCond has [5 7 6 4 8 9 3] unique elements
*********************************************************************************
This column YearBuilt has [2005 1984 2001 1941 2007 1970 1989 1998 1927 1958 1954 1963 2006 1900
 1985 1999 1987 1920 1977 1967 1930 1968 1922 1978 2003 2004 1951 1924
 2000 1994 1972 1948 1996 1931 1959 1925 1939 1926 1965 1973 1976 1964
 1992 1923 1960 2002 1950 1995 1980 1915 1979 1962 1890 1938 1953 1990
 1974 1945 1988 1955 1952 1932 1940 1956 2009 1971 1907 1885 1916 1872 1928 1935 1910 1919 1892 1982] unique elements
*********************************************************************************
This column YearRemodAdd has [2006 1984 2001 1950 2007 1970 2005 2008 1989 1998 1983 1954 1963 1985
 1958 1999 1987 1988 1977 1967 2000 1968 1978 2003 1957 1994 1972 1996
 1959 2004 1960 1997 1992 1973 1976 1964 2002 1982 1965 1990 1980 1979
```

```
  1953 1962 1995 1991 1974 1952 1955 1956 2009 1971 1975 1966 1969 1993
 2010] unique elements
********************************************************************************
This column RoofStyle has ['Hip' 'Gable' 'Gambrel' 'Mansard' 'Flat'] unique elements
********************************************************************************
This column RoofMatl has ['CompShg' 'WdShake' 'Tar&Grv'] unique elements
********************************************************************************
This column Exterior1st has ['VinylSd' 'HdBoard' 'MetalSd' 'CemntBd' 'Wd Sdng' 'Plywood' 'BrkFace'
 'AsbShng' 'WdShing' 'BrkComm' 'Stucco' 'CBlock'] unique elements
********************************************************************************
This column Exterior2nd has ['VinylSd' 'HdBoard' 'MetalSd' 'CmentBd' 'Wd Sdng' 'Plywood' 'Wd Shng'
 'Brk Cmn' 'ImStucc' 'AsbShng' 'BrkFace' 'Stone' 'CBlock' 'Stucco'] unique elements
********************************************************************************
This column MasVnrType has ['Stone' 'None' 'BrkFace' nan 'BrkCmn'] unique elements
********************************************************************************
This column MasVnrArea has [ 200.    0.   74.   80.  436.  145.  320.  226.  375.  218.  148.  196.
  420.   nan  387.  105.  268.  473.  166.  340.  921.  248.   44.  170.
  146.  180.  337.  541.  361.  255.   16.  188.  108.  650.  360.  579.
  298.  116.   32.  149.   95.  318.   94.   42.  328.  480.  240.  294.
  603. 1031.  101.   76.  359.  513.  106.  132.   92.  284.  664.  274.
  378.  312.  153.  281.  171.  219.  425.   24.  368.  147.  297.  530.
   60.  207.  175.   50.  169.  270.  252.  183.  562.  584.   97.   90.
  632.  136.   54.  293.  621.  142.  450.  209.  120.  442.  456.   72.
  230.  236.  266.   38.  162.  176.  272.  468.  408.] unique elements
********************************************************************************
This column ExterQual has ['Gd' 'TA' 'Fa' 'Ex'] unique elements
********************************************************************************
This column ExterCond has ['TA' 'Gd' 'Fa' 'Ex'] unique elements
********************************************************************************
This column Foundation has ['PConc' 'CBlock' 'BrkTil' 'Slab' 'Wood' 'Stone'] unique elements
********************************************************************************
This column BsmtQual has ['Ex' 'Gd' 'TA' nan 'Fa'] unique elements
********************************************************************************
This column BsmtCond has ['TA' 'Gd' nan 'Fa'] unique elements
********************************************************************************
This column BsmtExposure has ['Gd' 'Av' 'No' 'Mn' nan] unique elements
********************************************************************************
This column BsmtFinType1 has ['GLQ' 'Unf' 'Rec' 'BLQ' 'ALQ' nan 'LwQ'] unique elements
********************************************************************************
This column BsmtFinSF1 has [1249 1036    0  275  131  547 1400 1518  866  457 1159  241  625  521
  450  495  624  695  384  658  540  404  833   24 1040  814  231  593
  311  104  986  410  298  425  369  904 1234  408 1567  648  462  381
  250  659  720  273  646  213  702  196  700  111  443  631  300  871
 1218  673  180 1213  523  816  543  156  897  428 1150  360 1056 1351
 1157  319  985  731  786  716  515 1216  580  394  534  306  188  595
  840  438  297 1039  510 1416 1277  656  315  663  322  550  528  152
  680  420  819 1200  492 1274  837  763  980  400  828 1016  570  264
  732  936  604 1767 1261  341  116  378  317  783  348   41  883  686
  612  500  697  956 1238  906  414  565  329  403  259  662  133  588
 1237  679  442 1260  204  539  775  247  328 1065  193  690  975  192
  607 1005 1053  965  812  222  821 1646  822  312  712  370  436  179
 1172 1236 1300  946   16 1330  280 1121  585 1004  874  490   33  578
  399  309] unique elements
********************************************************************************
This column BsmtFinType2 has ['Unf' 'GLQ' 'Rec' 'BLQ' 'LwQ' nan 'ALQ'] unique elements
********************************************************************************
This column BsmtFinSF2 has [   0  499  374  391  174  215  169  420  712  492  273  345  354  352
  119   96 1085  668  557  105  469  279  480  539  165  713  551  465
  600  506  820  491] unique elements
********************************************************************************
This column BsmtUnfSF has [ 673  184 1753  429  894    0  310  338  520  193  988  413 1935  229
  208  169  241  354   26  660  519  384  218  953  728  304 1007  343
 1836  352  768  114  399  130  544  516  484  847  811  572  459  671
  680  410  464  156  732 1264 1078  783 1626  210  189  638  468  995
  192  975  983  833  662  652  611 1232  350  378  707  676 1497   84
  528  301  656 1217 1689  261  698  918  692  319 1048  316  504 1284
  600  932  994   83 1584  936  808  280  539  718  595  803  540  326
  173  274  115 1368  896  333  586  246  372  736  204  200  234  797
  705  264 1580  278 1410  207  300  952  420  840  612  396   80  536
  163 1152  977  292  336 1422  279  901  256  105  746  110  522  100
 1498  174  556  702  203  712   64  860  190 1638   92  788  457  311
  355 1630  678  180  972  823  341  501  252  748  151  483  460  134
  450 1026  818  777  970  357  815  238 1349  864  425  186 1307  402
  334 1622  495  225 1234  578  750  356  490  691  281  624  557  285
 1045  545  814  324  506  262  245  533  812  769  861  630  107  793
  284  564  779 1649  320  641 1362  364  772  465 1237 1330  122  167
  645  730  268  935 1530  426  605] unique elements
********************************************************************************
This column TotalBsmtSF has [1922 1220 1753  704  894  630  547 1710 1518 1204  520 1024  988 1572
 1935  861  833  864  691 1064  650  660 1214    0  768  876  953 1268
  708 1007 1176 1860 1392  384  928  723  855  789 1470  847 1221  870
  884 1040  680 1314 1698  984 1567  732 1264  648 1078  783  816 1626
  462  780  952  848 1358  546 1114 1208 1516 1683  819 1105 1041 1482
 1256 1568 1051  707 1728 1297  528  824  656 2033  727 1689  923  698
  918 1216 1476 1466 1284  600  932  994 1056 1434 1584  936  808 1437
  858  718 1580  803  540 1057  959  990 1368  896  913  980 1763  736
 1060  973  672  854 1836 1364  264  788 1650 1410 1484  956  840  612
 1059  728  713 1680 1598  972  756 1422 1003 1479  901 1530  942  746
  955 1090  912 1498 1002  702  773  976  796  860 1126 1638  696 3094
 1833  798  689 1630 1461 1224 1187 1248  483 1086 1026 1383  777  970
  686  815  806 1349  684 1440 1657 1490 1622 1792 1234 1838  750  560
 1029  624 1517 1164 2110  738 1504  975 1113 1267 1309 1210  533 1624
  991 1022  793 1930 1386  190 1149 1649  641 1362 1300 1150 1700 2136
 1616 1436 1237 1346 1452  938 1766 1215 1734 1142  845 1425 1563 1004] unique elements
********************************************************************************
This column Heating has ['GasA' 'Grav' 'GasW' 'OthW'] unique elements
********************************************************************************
This column HeatingQC has ['Ex' 'Gd' 'Fa' 'TA'] unique elements
********************************************************************************
This column CentralAir has ['Y' 'N'] unique elements
********************************************************************************
This column Electrical has ['SBrkr' 'FuseA' 'FuseP' nan 'FuseF'] unique elements
********************************************************************************
This column 1stFlrSF has [1922 1360 1788  860  894  630 1072 1710 1644 1204  520 1344  988 1572
 1973  961  833  864  713 1064  832 1285 1214  372  790  923  953 1268
  708 1077 1318 1200 1836 1392  792  774  936  735  855  789 1470  847
 1221  914  959 1040  764 1314 1698  984 1567  772 1277  960 1128  807
  816 1634  526 1088 1211  848 1358  546 1114 1621 1536 2129 1053 1105
 1125  980 1482 1269 1689 1159  707 1136 1728 1297 1094 1687  968 2053
  829  698  918 1118 1216 1484  812 1466 1284  747  932  754 1028 1056
 1518 1776  962 1161 1437  858 1576 1079  803  889 1057  990 1048 1368
 1298  896 1779  944  736 1060  979  672 1096 1364  616 1580  804 1690
```

```
                   ...       ...
 1426 1600  956 1022  840  882  612 1068  728  811 1724 1636  972  756
 1422 1003 1494  948 1530 1291  760  955  786 1090  912 1506 1002  842
  773 1160  796 1126 1646  696 2402 1850 1137  702  689 1630  509  605
 1224 1208 1338  483 1086 1709 1026 1383 1246  970  866  815  958 1349
  938 1440 1657  884 1501  943 1792 1234 1838  750 1062  691  720 1888
  808 1320 2110  738 1504 1004 1968 1113 1296 1339 1238 1021 1582  991
  877  928  997 1940 1411  734  886 1149 1661  769 1047 1586 1120 1150
 1718 2036 1629 1436 1253 1378 1476 1766 1215 1734 1142  845 1425 1563] unique elements
****************************************************************************************
This column 2ndFlrSF has [   0  704 1039  406  739  703  650  720  694  708  584  656  785  672
  660  586 1160  886  408  620  351 1067  445  702  462  780  546  743
  795 1169 1276  707  768  761  998 1185  727  711  698  912  670 1362
  885  640  776  631  830  808  858  978  874  557  551  712 1216  896
  510  734  716  871  714  895  688 1589 1519 1128  752  534  828  612
  728  741  971  756  110 1230  804 1096  630  448  566  860  817  779
  605 1296  504  838  932 1044  875 1215  884  933  430  750  560  738
 1479  252 1281  580  840  956  600  836  520 1104  784  467  468  994
 1237] unique elements
****************************************************************************************
This column LowQualFinSF has [  0 397 479 205] unique elements
****************************************************************************************
This column GrLivArea has [1922 1360 1788 1564 1933  630 1072 1710 1644 1204  520 1344  988 1572
 1973 1367  833  864 1452 1767 1482 1285 1214 1092  790  923 1647 1268
 1416 1077 1902 1200 1836 1392  792 1430 1721 1302 1395 1441  789 2630
 1733 1221  914 1040  764 1314 1698 1604 1567 1123 2344  960 1573 1509
  816 1634 1868 1211  848 1358 1114 1621  894 1516 2872 1848 2274 1125
 2256 2262 1269 1689 1159 1414 1904 1728 1297 1855 3082  968 3238 1556
 1664 1396  918 2030 1216 1484 2828 2169  747  932 1394 1804 1056 2149
 1776 1792 1969 1437 1716 2554 1953 1440 1057 1671  990 1048 1368 2514
 1558 1714 1779  944 1060 1850 1386 1991 1364 1304 2466  804 3279 2945
 1600 2084 1774 1374  882 1668 1224 1068 1456  858  698 1552 1724 3086
  972 1512 1422 1003 1494  948 1198 1530 2521 1656  955 1590 1090  912
  980 1506 1002 2668 1472  773 1608 1362 1720 1126 1646 2402 1954  840
 1481 1218 1630  605 1577 1208 2634  987 1924 1709 1958 1383 2290  866
 1690 1578 1349 2358 1657 1768 1501 1876 1234 1128 1838 1500 1258 1062
  691  720 1888 1593 1320 2110 1476 1504 1004 3447  924 1113 1296 1339
 2519 1601 1680 1582 1947 1477 1022 1764 1517 1940 1411 1574  886 1616
 1661 1525 1047 1586 1971 1588 1150 1718 2036 1629 1436 1253 2372 2713
  938 1766 1215 1734 1142  845 1425 1563] unique elements
****************************************************************************************
This column BsmtFullBath has [1 0 2] unique elements
****************************************************************************************
This column BsmtHalfBath has [0 1] unique elements
****************************************************************************************
This column FullBath has [2 1 0 3] unique elements
****************************************************************************************
This column HalfBath has [0 1 2] unique elements
****************************************************************************************
This column BedroomAbvGr has [3 1 4 2 0 5 6] unique elements
****************************************************************************************
This column KitchenAbvGr has [1 2 3] unique elements
****************************************************************************************
This column KitchenQual has ['Gd' 'Ex' 'Fa' 'TA'] unique elements
****************************************************************************************
This column TotRmsAbvGrd has [ 8  4  7  9  3  5  6 12 10 11] unique elements
****************************************************************************************
This column Functional has ['Typ' 'Min1' 'Mod' 'Min2' 'Maj1' 'Maj2'] unique elements
****************************************************************************************
This column Fireplaces has [1 0 2] unique elements
****************************************************************************************
This column FireplaceQu has ['Gd' 'Ex' 'TA' nan 'Fa' 'Po'] unique elements
****************************************************************************************
This column GarageType has ['Attchd' 'BuiltIn' nan 'Basment' 'Detchd' '2Types' 'CarPort'] unique elements
****************************************************************************************
This column GarageYrBlt has [2005. 1984. 2001. 1941. 2007.   nan 1989. 1998. 1920. 1970. 1954. 1963.
 2006. 1978. 1964. 1999. 1987. 1930. 1977. 1967. 1925. 1968. 1922. 2003.
 2004. 1957. 1924. 2000. 1994. 1972. 1948. 1959. 1965. 2008. 1979. 1926.
 1996. 1973. 1976. 1992. 1958. 1960. 2002. 1950. 1928. 1980. 1953. 1962.
 1951. 1940. 1990. 1988. 1955. 1956. 1949. 1931. 2009. 1975. 1997. 1966.
 1993. 1939. 1969. 1971. 1916. 1974. 1982. 1991. 2010. 1938. 1995. 1985.] unique elements
****************************************************************************************
This column GarageFinish has ['Fin' 'RFn' 'Unf' nan] unique elements
****************************************************************************************
This column GarageCars has [3 2 1 0 4] unique elements
****************************************************************************************
This column GarageArea has [ 676  565  522  234  668    0  525  866  569  412  240  484  520  995
  895  384  624  506  504  324  528  318  160  264  460  244  776  210
  539  555  458  400  471  497  440  250  696  433  576  560  286  626
  768  660  714  200  889  364  360  393  516  297  322  420  450  472
  541  370  480  352  554  749  430  857  336  403  498  512  672  216
  666  441  954  551  402  392 1052  288  647  306  442  670  888  451
  534  490  704  501  246  474  693  496  276  454  270  467  572  432
  862  610  841  641  319  618  468  338  308  500  410  684  434  588
  248  397  386  592  902  726  870  772  431  343  299  600  312  632
  300  968  936  292  380  225  543  577  860  540  874  765  564  280
  304  578  389  478 1014  628  390  678  470  606  544  372  566  273
  598  435  552  689  680  786  513  808  457  858  928  758] unique elements
****************************************************************************************
This column GarageQual has ['TA' nan 'Fa' 'Gd' 'Po' 'Ex'] unique elements
****************************************************************************************
This column GarageCond has ['TA' nan 'Fa' 'Po' 'Ex' 'Gd'] unique elements
****************************************************************************************
This column PavedDrive has ['Y' 'N' 'P'] unique elements
****************************************************************************************
This column WoodDeckSF has [178  63 202   0 100  80  49 316 315 441 138 362 120 300 185 294  28 140
 172 327 264 220  88 106 448 192 238 108 296 224 168 146 150 466 113 136
 283 125 216 132  32 228 406 335 141 159 503 288  90 144  36 209 122 728
  12  68 400 147  40 295 519  74 105 149 208  97 154  58 160 206  30 270
 342 115 314 320 280 276 306 135 139 156 126 145 195 536  72] unique elements
****************************************************************************************
This column OpenPorchSF has [ 51   0 151  18  28 102 247 263  45 130  34  35 111 141  40  98 169 100
  41  33  87 116  66  48 113  62  64  68  32  75  44 101  96  63  30 118
  54  20  59  86  56 224 125  25 144  60  43  21  84 231  65  52  38  27
  80 418  90 110 185  36  24 214  50 258 234 200 208 128  49 285 174  16
  70  72 112 119 304  61 210  42  55  29  69  85  12  58 198 136  99  95
 252 287] unique elements
****************************************************************************************
This column EnclosedPorch has [  0  87 112  48 120 252 140 168  32 214 143 190  77 156 102  19 154  37
 205 198  84 150 144 100 114 330  20 164  94 184 240 160 226  80 183  36] unique elements
****************************************************************************************
This column 3SsnPorch has [  0 320 407] unique elements
```

```
****************************************************************************************
This column ScreenPorch has [  0 396 263 119 192 120 152 233 220 144 259 198 276 180 312 210 170 374
 147  90 234] unique elements
****************************************************************************************
This column PoolArea has [0] unique elements
****************************************************************************************
This column PoolQC has [nan] unique elements
****************************************************************************************
This column Fence has [nan 'MnPrv' 'GdWo' 'GdPrv' 'MnWw'] unique elements
****************************************************************************************
This column MiscFeature has [nan 'Othr' 'Shed'] unique elements
****************************************************************************************
This column MiscVal has [   0 3500  400  600  500  480  700  450] unique elements
****************************************************************************************
This column MoSold has [ 7  8  6  1 12  5  2  4  3 10 11  9] unique elements
****************************************************************************************
This column YrSold has [2007 2009 2008 2006 2010] unique elements
****************************************************************************************
This column SaleType has ['WD' 'COD' 'New' 'ConLD' 'CWD' 'ConLw'] unique elements
****************************************************************************************
This column SaleCondition has ['Normal' 'Abnorml' 'Partial' 'Family'] unique elements
****************************************************************************************
```

In [131… `sns.heatmap(dt1.isnull(), yticklabels = False, cbar = False, cmap ='viridis')`
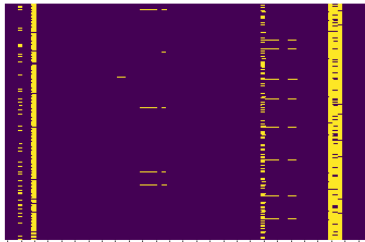
Out[131… `<AxesSubplot:>`

In [131… `sns.heatmap(dt.isnull(), yticklabels = False, cbar = False, cmap ='viridis')`

Out[131… `<AxesSubplot:>`
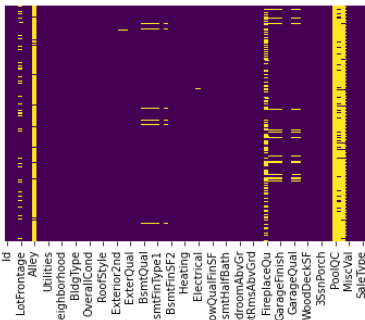
In [131…
```python
# Getting information on the dataset
print ('The training dataset consists of', dt1.info())
print('*'*100)
print ('The testing dataset consists of',dt.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1168 entries, 0 to 1167
Data columns (total 81 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   Id            1168 non-null   int64
 1   MSSubClass    1168 non-null   int64
 2   MSZoning      1168 non-null   object
 3   LotFrontage   954 non-null    float64
 4   LotArea       1168 non-null   int64
 5   Street        1168 non-null   object
 6   Alley         77 non-null     object
 7   LotShape      1168 non-null   object
 8   LandContour   1168 non-null   object
 9   Utilities     1168 non-null   object
 10  LotConfig     1168 non-null   object
 11  LandSlope     1168 non-null   object
 12  Neighborhood  1168 non-null   object
 13  Condition1    1168 non-null   object
 14  Condition2    1168 non-null   object
 15  BldgType      1168 non-null   object
 16  HouseStyle    1168 non-null   object
 17  OverallQual   1168 non-null   int64
 18  OverallCond   1168 non-null   int64
 19  YearBuilt     1168 non-null   int64
 20  YearRemodAdd  1168 non-null   int64
 21  RoofStyle     1168 non-null   object
 22  RoofMatl      1168 non-null   object
 23  Exterior1st   1168 non-null   object
 24  Exterior2nd   1168 non-null   object
 25  MasVnrType    1161 non-null   object
 26  MasVnrArea    1161 non-null   float64
 27  ExterQual     1168 non-null   object
```

```
 28   ExterCond      1168 non-null   object
 29   Foundation     1168 non-null   object
 30   BsmtQual       1138 non-null   object
 31   BsmtCond       1138 non-null   object
 32   BsmtExposure   1137 non-null   object
 33   BsmtFinType1   1138 non-null   object
 34   BsmtFinSF1     1168 non-null   int64
 35   BsmtFinType2   1137 non-null   object
 36   BsmtFinSF2     1168 non-null   int64
 37   BsmtUnfSF      1168 non-null   int64
 38   TotalBsmtSF    1168 non-null   int64
 39   Heating        1168 non-null   object
 40   HeatingQC      1168 non-null   object
 41   CentralAir     1168 non-null   object
 42   Electrical     1168 non-null   object
 43   1stFlrSF       1168 non-null   int64
 44   2ndFlrSF       1168 non-null   int64
 45   LowQualFinSF   1168 non-null   int64
 46   GrLivArea      1168 non-null   int64
 47   BsmtFullBath   1168 non-null   int64
 48   BsmtHalfBath   1168 non-null   int64
 49   FullBath       1168 non-null   int64
 50   HalfBath       1168 non-null   int64
 51   BedroomAbvGr   1168 non-null   int64
 52   KitchenAbvGr   1168 non-null   int64
 53   KitchenQual    1168 non-null   object
 54   TotRmsAbvGrd   1168 non-null   int64
 55   Functional     1168 non-null   object
 56   Fireplaces     1168 non-null   int64
 57   FireplaceQu    617 non-null    object
 58   GarageType     1104 non-null   object
 59   GarageYrBlt    1104 non-null   float64
 60   GarageFinish   1104 non-null   object
 61   GarageCars     1168 non-null   int64
 62   GarageArea     1168 non-null   int64
 63   GarageQual     1104 non-null   object
 64   GarageCond     1104 non-null   object
 65   PavedDrive     1168 non-null   object
 66   WoodDeckSF     1168 non-null   int64
 67   OpenPorchSF    1168 non-null   int64
 68   EnclosedPorch  1168 non-null   int64
 69   3SsnPorch      1168 non-null   int64
 70   ScreenPorch    1168 non-null   int64
 71   PoolArea       1168 non-null   int64
 72   PoolQC         7 non-null      object
 73   Fence          237 non-null    object
 74   MiscFeature    44 non-null     object
 75   MiscVal        1168 non-null   int64
 76   MoSold         1168 non-null   int64
 77   YrSold         1168 non-null   int64
 78   SaleType       1168 non-null   object
 79   SaleCondition  1168 non-null   object
 80   SalePrice      1168 non-null   int64
dtypes: float64(3), int64(35), object(43)
memory usage: 739.2+ KB
The training dataset consists of None
********************************************************************************************************
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 292 entries, 0 to 291
Data columns (total 80 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Id             292 non-null    int64
 1   MSSubClass     292 non-null    int64
 2   MSZoning       292 non-null    object
 3   LotFrontage    247 non-null    float64
 4   LotArea        292 non-null    int64
 5   Street         292 non-null    object
 6   Alley          14 non-null     object
 7   LotShape       292 non-null    object
 8   LandContour    292 non-null    object
 9   Utilities      292 non-null    object
 10  LotConfig      292 non-null    object
 11  LandSlope      292 non-null    object
 12  Neighborhood   292 non-null    object
 13  Condition1     292 non-null    object
 14  Condition2     292 non-null    object
 15  BldgType       292 non-null    object
 16  HouseStyle     292 non-null    object
 17  OverallQual    292 non-null    int64
 18  OverallCond    292 non-null    int64
 19  YearBuilt      292 non-null    int64
 20  YearRemodAdd   292 non-null    int64
 21  RoofStyle      292 non-null    object
 22  RoofMatl       292 non-null    object
 23  Exterior1st    292 non-null    object
 24  Exterior2nd    292 non-null    object
 25  MasVnrType     291 non-null    object
 26  MasVnrArea     291 non-null    float64
 27  ExterQual      292 non-null    object
 28  ExterCond      292 non-null    object
 29  Foundation     292 non-null    object
 30  BsmtQual       285 non-null    object
 31  BsmtCond       285 non-null    object
 32  BsmtExposure   285 non-null    object
 33  BsmtFinType1   285 non-null    object
 34  BsmtFinSF1     292 non-null    int64
 35  BsmtFinType2   285 non-null    object
 36  BsmtFinSF2     292 non-null    int64
 37  BsmtUnfSF      292 non-null    int64
 38  TotalBsmtSF    292 non-null    int64
 39  Heating        292 non-null    object
 40  HeatingQC      292 non-null    object
 41  CentralAir     292 non-null    object
 42  Electrical     291 non-null    object
 43  1stFlrSF       292 non-null    int64
 44  2ndFlrSF       292 non-null    int64
 45  LowQualFinSF   292 non-null    int64
 46  GrLivArea      292 non-null    int64
 47  BsmtFullBath   292 non-null    int64
 48  BsmtHalfBath   292 non-null    int64
```

```
 49  FullBath       292 non-null    int64
 50  HalfBath       292 non-null    int64
 51  BedroomAbvGr   292 non-null    int64
 52  KitchenAbvGr   292 non-null    int64
 53  KitchenQual    292 non-null    object
 54  TotRmsAbvGrd   292 non-null    int64
 55  Functional     292 non-null    object
 56  Fireplaces     292 non-null    int64
 57  FireplaceQu    153 non-null    object
 58  GarageType     275 non-null    object
 59  GarageYrBlt    275 non-null    float64
 60  GarageFinish   275 non-null    object
 61  GarageCars     292 non-null    int64
 62  GarageArea     292 non-null    int64
 63  GarageQual     275 non-null    object
 64  GarageCond     275 non-null    object
 65  PavedDrive     292 non-null    object
 66  WoodDeckSF     292 non-null    int64
 67  OpenPorchSF    292 non-null    int64
 68  EnclosedPorch  292 non-null    int64
 69  3SsnPorch      292 non-null    int64
 70  ScreenPorch    292 non-null    int64
 71  PoolArea       292 non-null    int64
 72  PoolQC         0 non-null      float64
 73  Fence          44 non-null     object
 74  MiscFeature    10 non-null     object
 75  MiscVal        292 non-null    int64
 76  MoSold         292 non-null    int64
 77  YrSold         292 non-null    int64
 78  SaleType       292 non-null    object
 79  SaleCondition  292 non-null    object
dtypes: float64(4), int64(34), object(42)
memory usage: 182.6+ KB
The testing dataset consists of None
```

```python
# To find the NAN of the dataset
for col in dt1:
    print ('This column', col ,'has', dt1[col].isna().sum(),'NAN elements')
    print ('*'*100)
print('-+-'*166)
for col in dt:
    print ('This column', col ,'has', dt[col].isna().sum(),'NAN elements')
    print ('*'*100)
```

```
This column Id has 0 NAN elements
****************************************************************************************************
This column MSSubClass has 0 NAN elements
****************************************************************************************************
This column MSZoning has 0 NAN elements
****************************************************************************************************
This column LotFrontage has 214 NAN elements
****************************************************************************************************
This column LotArea has 0 NAN elements
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This column Street has 0 NAN elements
****************************************************************************************************
This column Alley has 1091 NAN elements
****************************************************************************************************
This column LotShape has 0 NAN elements
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This column LandContour has 0 NAN elements
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This column Utilities has 0 NAN elements
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This column LotConfig has 0 NAN elements
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This column LandSlope has 0 NAN elements
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This column Neighborhood has 0 NAN elements
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This column Condition1 has 0 NAN elements
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This column Condition2 has 0 NAN elements
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This column BldgType has 0 NAN elements
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This column HouseStyle has 0 NAN elements
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This column OverallQual has 0 NAN elements
****************************************************************************************************
This column OverallCond has 0 NAN elements
****************************************************************************************************
This column YearBuilt has 0 NAN elements
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This column YearRemodAdd has 0 NAN elements
****************************************************************************************************
This column RoofStyle has 0 NAN elements
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This column RoofMatl has 0 NAN elements
****************************************************************************************************
This column Exterior1st has 0 NAN elements
****************************************************************************************************
This column Exterior2nd has 0 NAN elements
****************************************************************************************************
This column MasVnrType has 7 NAN elements
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This column MasVnrArea has 7 NAN elements
****************************************************************************************************
This column ExterQual has 0 NAN elements
****************************************************************************************************
This column ExterCond has 0 NAN elements
****************************************************************************************************
This column Foundation has 0 NAN elements
****************************************************************************************************
This column BsmtQual has 30 NAN elements
****************************************************************************************************
This column BsmtCond has 30 NAN elements
****************************************************************************************************
This column BsmtExposure has 31 NAN elements
****************************************************************************************************
This column BsmtFinType1 has 30 NAN elements
```

```
********************************************************************************
This column BsmtFinSF1 has 0 NAN elements
********************************************************************************
This column BsmtFinType2 has 31 NAN elements
********************************************************************************
This column BsmtFinSF2 has 0 NAN elements
********************************************************************************
This column BsmtUnfSF has 0 NAN elements
********************************************************************************
This column TotalBsmtSF has 0 NAN elements
********************************************************************************
This column Heating has 0 NAN elements
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This column HeatingQC has 0 NAN elements
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This column CentralAir has 0 NAN elements
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This column Electrical has 0 NAN elements
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This column 1stFlrSF has 0 NAN elements
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This column 2ndFlrSF has 0 NAN elements
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This column LowQualFinSF has 0 NAN elements
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This column GrLivArea has 0 NAN elements
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This column BsmtFullBath has 0 NAN elements
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This column BsmtHalfBath has 0 NAN elements
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This column FullBath has 0 NAN elements
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This column HalfBath has 0 NAN elements
********************************************************************************
This column BedroomAbvGr has 0 NAN elements
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This column KitchenAbvGr has 0 NAN elements
********************************************************************************
This column KitchenQual has 0 NAN elements
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This column TotRmsAbvGrd has 0 NAN elements
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This column Functional has 0 NAN elements
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This column Fireplaces has 0 NAN elements
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This column FireplaceQu has 551 NAN elements
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This column GarageType has 64 NAN elements
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This column GarageYrBlt has 64 NAN elements
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This column GarageFinish has 64 NAN elements
********************************************************************************
This column GarageCars has 0 NAN elements
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This column GarageArea has 0 NAN elements
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This column GarageQual has 64 NAN elements
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This column GarageCond has 64 NAN elements
********************************************************************************
This column PavedDrive has 0 NAN elements
********************************************************************************
This column WoodDeckSF has 0 NAN elements
********************************************************************************
This column OpenPorchSF has 0 NAN elements
********************************************************************************
This column EnclosedPorch has 0 NAN elements
********************************************************************************
This column 3SsnPorch has 0 NAN elements
********************************************************************************
This column ScreenPorch has 0 NAN elements
********************************************************************************
This column PoolArea has 0 NAN elements
********************************************************************************
This column PoolQC has 1161 NAN elements
********************************************************************************
This column Fence has 931 NAN elements
********************************************************************************
This column MiscFeature has 1124 NAN elements
********************************************************************************
This column MiscVal has 0 NAN elements
********************************************************************************
This column MoSold has 0 NAN elements
********************************************************************************
This column YrSold has 0 NAN elements
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This column SaleType has 0 NAN elements
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This column SaleCondition has 0 NAN elements
********************************************************************************
This column SalePrice has 0 NAN elements
********************************************************************************
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
-+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-
This column Id has 0 NAN elements
********************************************************************************
This column MSSubClass has 0 NAN elements
********************************************************************************
This column MSZoning has 0 NAN elements
********************************************************************************
This column LotFrontage has 45 NAN elements
********************************************************************************
This column LotArea has 0 NAN elements
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This column Street has 0 NAN elements
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This column Alley has 278 NAN elements
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This column LotShape has 0 NAN elements
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This column LandContour has 0 NAN elements
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This column Utilities has 0 NAN elements
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This column LotConfig has 0 NAN elements
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This column LandSlope has 0 NAN elements
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This column Neighborhood has 0 NAN elements
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This column Condition1 has 0 NAN elements
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This column Condition2 has 0 NAN elements
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This column BldgType has 0 NAN elements
****************************************************************************************************
This column HouseStyle has 0 NAN elements
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This column OverallQual has 0 NAN elements
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This column OverallCond has 0 NAN elements
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This column YearBuilt has 0 NAN elements
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This column YearRemodAdd has 0 NAN elements
****************************************************************************************************
This column RoofStyle has 0 NAN elements
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This column RoofMatl has 0 NAN elements
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This column Exterior1st has 0 NAN elements
****************************************************************************************************
This column Exterior2nd has 0 NAN elements
****************************************************************************************************
This column MasVnrType has 1 NAN elements
****************************************************************************************************
This column MasVnrArea has 1 NAN elements
****************************************************************************************************
This column ExterQual has 0 NAN elements
****************************************************************************************************
This column ExterCond has 0 NAN elements
****************************************************************************************************
This column Foundation has 0 NAN elements
****************************************************************************************************
This column BsmtQual has 7 NAN elements
****************************************************************************************************
This column BsmtCond has 7 NAN elements
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This column BsmtExposure has 7 NAN elements
****************************************************************************************************
This column BsmtFinType1 has 7 NAN elements
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This column BsmtFinSF1 has 0 NAN elements
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This column BsmtFinType2 has 7 NAN elements
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This column BsmtFinSF2 has 0 NAN elements
****************************************************************************************************
This column BsmtUnfSF has 0 NAN elements
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This column TotalBsmtSF has 0 NAN elements
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This column Heating has 0 NAN elements
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This column HeatingQC has 0 NAN elements
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This column CentralAir has 0 NAN elements
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This column Electrical has 1 NAN elements
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This column 1stFlrSF has 0 NAN elements
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This column 2ndFlrSF has 0 NAN elements
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This column LowQualFinSF has 0 NAN elements
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This column GrLivArea has 0 NAN elements
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This column BsmtFullBath has 0 NAN elements
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This column BsmtHalfBath has 0 NAN elements
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This column FullBath has 0 NAN elements
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This column HalfBath has 0 NAN elements
****************************************************************************************************
This column BedroomAbvGr has 0 NAN elements
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This column KitchenAbvGr has 0 NAN elements
****************************************************************************************************
This column KitchenQual has 0 NAN elements
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This column TotRmsAbvGrd has 0 NAN elements
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This column Functional has 0 NAN elements
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This column Fireplaces has 0 NAN elements
****************************************************************************************************
This column FireplaceQu has 139 NAN elements
****************************************************************************************************
This column GarageType has 17 NAN elements
****************************************************************************************************
This column GarageYrBlt has 17 NAN elements
****************************************************************************************************
This column GarageFinish has 17 NAN elements
****************************************************************************************************
This column GarageCars has 0 NAN elements
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This column GarageArea has 0 NAN elements
***************************************************************************************
This column GarageQual has 17 NAN elements
***************************************************************************************
This column GarageCond has 17 NAN elements
***************************************************************************************
This column PavedDrive has 0 NAN elements
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This column WoodDeckSF has 0 NAN elements
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This column OpenPorchSF has 0 NAN elements
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This column EnclosedPorch has 0 NAN elements
***************************************************************************************
This column 3SsnPorch has 0 NAN elements
***************************************************************************************
This column ScreenPorch has 0 NAN elements
***************************************************************************************
This column PoolArea has 0 NAN elements
***************************************************************************************
This column PoolQC has 292 NAN elements
***************************************************************************************
This column Fence has 248 NAN elements
***************************************************************************************
This column MiscFeature has 282 NAN elements
***************************************************************************************
This column MiscVal has 0 NAN elements
***************************************************************************************
This column MoSold has 0 NAN elements
***************************************************************************************
This column YrSold has 0 NAN elements
***************************************************************************************
This column SaleType has 0 NAN elements
***************************************************************************************
This column SaleCondition has 0 NAN elements
***************************************************************************************
```

In [131…
```python
# To find the correlection in the dataset
dt1.corr()
```

Out[131…

	Id	MSSubClass	LotFrontage	LotArea	OverallQual	OverallCond	YearBuilt	YearRemodAdd	MasVnrArea	BsmtFinSF1	BsmtFinSF2	BsmtUnfSF	To
Id	1.000000	0.004259	-0.006629	-0.029212	-0.036965	0.039761	-0.016942	-0.018590	-0.060652	0.003868	0.005269	-0.019494	
MSSubClass	0.004259	1.000000	-0.365220	-0.124151	0.070462	-0.056978	0.023988	0.056618	0.027868	-0.052236	-0.062403	-0.134170	
LotFrontage	-0.006629	-0.365220	1.000000	0.557257	0.247809	-0.053345	0.118554	0.096050	0.202225	0.247780	0.002514	0.123943	
LotArea	-0.029212	-0.124151	0.557257	1.000000	0.107188	0.017513	0.005506	0.027228	0.121448	0.221851	0.056656	0.006600	
OverallQual	-0.036965	0.070462	0.247809	0.107188	1.000000	-0.083167	0.575800	0.555945	0.409163	0.219643	-0.040893	0.308676	
OverallCond	0.039761	-0.056978	-0.053345	0.017513	-0.083167	1.000000	-0.377731	0.080669	-0.137882	-0.028810	0.044336	-0.146384	
YearBuilt	-0.016942	0.023988	0.118554	0.005506	0.575800	-0.377731	1.000000	0.592829	0.323006	0.227933	-0.027682	0.155559	
YearRemodAdd	-0.018590	0.056618	0.096050	0.027228	0.555945	0.080669	0.592829	1.000000	0.181869	0.114430	-0.044694	0.174732	
MasVnrArea	-0.060652	0.027868	0.202225	0.121448	0.409163	-0.137882	0.323006	0.181869	1.000000	0.267066	-0.065723	0.109850	
BsmtFinSF1	0.003868	-0.052236	0.247780	0.221851	0.219643	-0.028810	0.227933	0.114430	0.267066	1.000000	-0.052145	-0.499861	
BsmtFinSF2	0.005269	-0.062403	0.002514	0.056656	-0.040893	0.044336	-0.027682	-0.044694	-0.065723	-0.052145	1.000000	-0.213580	
BsmtUnfSF	-0.019494	-0.134170	0.123943	0.006600	0.308676	-0.146384	0.155559	0.174732	0.109850	-0.499861	-0.213580	1.000000	
TotalBsmtSF	-0.013812	-0.214042	0.386261	0.259733	0.528285	-0.162481	0.386265	0.280720	0.366833	0.518940	0.098167	0.414186	
1stFlrSF	0.009647	-0.227927	0.448186	0.312843	0.458758	-0.134420	0.279450	0.233384	0.339938	0.445876	0.093442	0.307437	
2ndFlrSF	-0.029671	0.300366	0.099250	0.059803	0.316624	0.036668	0.011834	0.155102	0.173358	-0.127656	-0.092049	0.002736	
LowQualFinSF	-0.070180	0.053737	0.007885	-0.001915	-0.039295	0.041877	-0.189044	-0.072526	-0.070518	-0.070932	-0.000577	0.030088	
GrLivArea	-0.024325	0.086448	0.410414	0.281360	0.599700	-0.065006	0.198644	0.295048	0.387891	0.217160	-0.007484	0.232920	
BsmtFullBath	0.023027	0.004556	0.104255	0.142387	0.101732	-0.039680	0.164983	0.104643	0.086720	0.645126	0.163518	-0.431740	
BsmtHalfBath	-0.043572	0.008207	0.001528	0.059282	-0.030702	0.091016	-0.028161	-0.011375	0.014198	0.063895	0.093692	-0.090372	
FullBath	-0.015187	0.140807	0.189321	0.123197	0.548824	-0.171931	0.471264	0.444446	0.268545	0.054511	-0.060773	0.272193	
HalfBath	-0.028512	0.168423	0.053168	0.007271	0.296134	-0.052125	0.243227	0.194943	0.200926	0.015767	-0.023734	-0.044025	
BedroomAbvGr	0.009376	-0.013283	0.264010	0.117351	0.099639	0.028393	-0.080639	-0.035847	0.091717	-0.114888	-0.005788	0.156056	
KitchenAbvGr	0.001216	0.283506	-0.002890	-0.013075	-0.178220	-0.076047	-0.167869	-0.139943	-0.038281	-0.065450	-0.034411	0.015532	
TotRmsAbvGrd	-0.001613	0.051179	0.351969	0.184546	0.432579	-0.039952	0.095476	0.206923	0.279391	0.043499	-0.033702	0.237043	
Fireplaces	-0.024175	-0.035792	0.262076	0.285983	0.390067	-0.013632	0.134313	0.118378	0.243812	0.257482	0.047945	0.040509	
GarageYrBlt	-0.000469	0.077630	0.061101	-0.034981	0.541719	-0.318278	0.826366	0.639153	0.254547	0.135558	-0.071691	0.192237	
GarageCars	0.007549	-0.027639	0.276798	0.158313	0.596322	-0.161996	0.525346	0.428325	0.342553	0.197529	-0.020806	0.221097	
GarageArea	0.010048	-0.092408	0.344908	0.195162	0.566782	-0.126021	0.473216	0.387744	0.365849	0.286290	-0.002051	0.191177	
WoodDeckSF	-0.027498	-0.022609	0.101751	0.216720	0.227137	0.012290	0.204830	0.197410	0.151978	0.192939	0.094690	-0.001966	
OpenPorchSF	-0.013642	0.017468	0.167092	0.093080	0.341030	-0.024899	0.191069	0.238755	0.131850	0.108802	-0.014103	0.138456	
EnclosedPorch	0.004885	-0.004252	0.023118	-0.007446	-0.098374	0.056074	-0.373544	-0.193574	-0.102321	-0.082351	0.032081	-0.013251	
3SsnPorch	-0.021773	-0.043210	0.059508	0.025794	0.045919	0.040476	0.037079	0.064763	0.018721	0.025485	-0.031263	0.025779	
ScreenPorch	0.005169	-0.013291	0.033111	0.025256	0.059387	0.069463	-0.058760	-0.046220	0.046509	0.033490	0.076561	0.001076	
PoolArea	0.065832	0.009583	0.223429	0.097107	0.072247	-0.003603	0.006408	0.006874	0.013590	0.154769	0.045990	-0.039029	
MiscVal	0.001304	-0.023503	-0.004559	0.051679	-0.025786	0.075178	-0.030008	-0.001199	-0.027583	0.008314	0.007915	-0.017266	
MoSold	0.023479	-0.016015	0.025046	0.015141	0.090638	0.005519	0.031754	0.024663	0.013432	0.007482	-0.014605	0.030011	
YrSold	-0.008853	-0.038595	-0.004296	-0.035399	-0.048759	0.055517	-0.013976	0.033265	-0.013493	0.005614	0.038438	-0.049734	
SalePrice	-0.023897	-0.060775	0.341294	0.249499	0.789185	-0.065642	0.514408	0.507831	0.466386	0.362874	-0.010151	0.215724	

In [131…
```python
dt.corr()
```

Out[131…

	Id	MSSubClass	LotFrontage	LotArea	OverallQual	OverallCond	YearBuilt	YearRemodAdd	MasVnrArea	BsmtFinSF1	BsmtFinSF2	BsmtUnfSF	To
Id	1.000000	0.035247	-0.017848	-0.045497	0.005823	-0.089945	-0.000174	-0.036955	-0.012331	-0.040462	-0.051283	0.041345	

MSSubClass	0.035247	1.000000	-0.487565	-0.186654	-0.116077	-0.068113	0.041932	-0.023317	0.002761	-0.142908	-0.079328	-0.169129
LotFrontage	-0.017848	-0.487565	1.000000	0.383137	0.267153	-0.108327	0.152067	0.059014	0.151632	0.165505	0.268758	0.173770
LotArea	-0.045497	-0.186654	0.383137	1.000000	0.109161	-0.071113	0.037757	-0.022957	0.062943	0.209632	0.277855	-0.029717
OverallQual	0.005823	-0.116077	0.267153	0.109161	1.000000	-0.131891	0.560092	0.528983	0.424314	0.328421	-0.139583	0.306051
OverallCond	-0.089945	-0.068113	-0.108327	-0.071113	-0.131891	1.000000	-0.366830	0.045747	-0.082467	-0.126968	0.021459	-0.095575
YearBuilt	-0.000174	0.041932	0.152067	0.037757	0.560092	-0.366830	1.000000	0.593138	0.284734	0.343374	-0.140391	0.122930
YearRemodAdd	-0.036955	-0.023317	0.059014	-0.022957	0.528983	0.045747	0.593138	1.000000	0.169188	0.191460	-0.170299	0.211142
MasVnrArea	-0.012331	0.002761	0.151632	0.062943	0.424314	-0.082467	0.284734	0.169188	1.000000	0.254935	-0.101817	0.136442
BsmtFinSF1	-0.040462	-0.142908	0.165505	0.209632	0.328421	-0.126968	0.343374	0.191460	0.254935	1.000000	-0.040759	-0.474047
BsmtFinSF2	-0.051283	-0.079328	0.268758	0.277855	-0.139583	0.021459	-0.140391	-0.170299	-0.101817	-0.040759	1.000000	-0.189330
BsmtUnfSF	0.041345	-0.169129	0.173770	-0.029717	0.306051	-0.095575	0.122930	0.211142	0.136442	-0.474047	-0.189330	1.000000
TotalBsmtSF	-0.019326	-0.336822	0.420828	0.283111	0.578468	-0.213289	0.416016	0.336976	0.353100	0.538182	0.134576	0.420542
1stFlrSF	0.019726	-0.350270	0.496136	0.286714	0.553431	-0.197177	0.299125	0.274479	0.369103	0.446604	0.114096	0.366371
2ndFlrSF	0.144675	0.338926	-0.016069	0.030128	0.205253	-0.006572	0.005011	0.075768	0.180463	-0.179595	-0.131528	0.011827
LowQualFinSF	0.087688	0.012343	0.202904	0.030371	0.016101	-0.071717	-0.160248	-0.006942	-0.060730	-0.029585	0.103056	0.015782
GrLivArea	0.139969	0.030615	0.360840	0.231721	0.565494	-0.151462	0.205685	0.257875	0.407814	0.168317	-0.019446	0.272381
BsmtFullBath	-0.077773	-0.000676	0.092577	0.212162	0.150559	-0.121640	0.280054	0.182556	0.079406	0.667976	0.137469	-0.384076
BsmtHalfBath	0.062190	-0.041577	-0.055672	0.020883	-0.076885	0.230622	-0.077984	-0.017015	0.075530	0.082806	-0.022258	-0.118465
FullBath	0.083174	0.095903	0.250443	0.141118	0.558577	-0.288175	0.455999	0.416337	0.311178	0.076450	-0.144421	0.364134
HalfBath	0.146049	0.213601	0.040245	0.034980	0.177858	-0.103079	0.243680	0.135780	0.205684	-0.047032	-0.069309	-0.029688
BedroomAbvGr	0.152676	-0.061750	0.249869	0.134990	0.108994	-0.061694	-0.026005	-0.058289	0.153659	-0.076283	-0.059396	0.212273
KitchenAbvGr	0.007486	0.275461	-0.011250	-0.030264	-0.205815	-0.128606	-0.201801	-0.187750	-0.036277	-0.143169	-0.066078	0.089538
TotRmsAbvGrd	0.132171	0.002973	0.356616	0.211624	0.409677	-0.133094	0.099718	0.136495	0.290170	0.047362	-0.041869	0.307557
Fireplaces	-0.000541	-0.084663	0.283172	0.250416	0.425392	-0.071834	0.205425	0.088244	0.273130	0.271326	0.042250	0.101629
GarageYrBlt	-0.001975	0.114308	0.121317	0.000674	0.576102	-0.347568	0.822532	0.656544	0.242928	0.234465	-0.162433	0.186893
GarageCars	0.053864	-0.086798	0.319441	0.154919	0.618763	-0.291486	0.591190	0.391542	0.456609	0.337705	-0.112796	0.183997
GarageArea	0.052191	-0.122536	0.334838	0.152737	0.542729	-0.269860	0.508563	0.306892	0.408157	0.344441	-0.089337	0.147058
WoodDeckSF	-0.033619	0.028190	0.007567	0.059117	0.288506	-0.078167	0.311878	0.243722	0.196125	0.254996	-0.051351	-0.022492
OpenPorchSF	0.049117	-0.097449	0.084421	0.067269	0.175569	-0.065010	0.179072	0.174213	0.099761	0.124929	0.077654	0.087825
EnclosedPorch	-0.000275	-0.047570	-0.061468	-0.055667	-0.195240	0.137325	-0.457897	-0.196420	-0.148557	-0.209330	0.060038	0.052157
3SsnPorch	-0.134738	-0.045672	0.111592	0.007832	-0.031605	-0.038308	0.011253	-0.031424	0.020375	0.030231	-0.025005	-0.001145
ScreenPorch	-0.012348	-0.072139	0.077651	0.090367	0.086383	-0.003167	-0.019113	-0.009695	0.120597	0.178546	0.139342	-0.069060
PoolArea	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
PoolQC	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
MiscVal	-0.073024	0.137542	0.032309	-0.020398	-0.099852	0.019495	-0.085967	-0.103391	-0.059927	-0.045842	-0.024744	-0.103006
MoSold	0.015132	-0.004079	-0.048399	-0.034709	-0.008545	-0.043722	-0.060201	0.009670	-0.082810	-0.113279	-0.017910	0.054866
YrSold	0.034579	0.044441	0.064554	0.041735	0.061736	-0.001908	-0.014054	0.045230	0.012790	0.052788	0.002785	-0.003066

In [131…

```python
# Analysing the data
dt1.describe().T
```

Out[131…

	count	mean	std	min	25%	50%	75%	max
Id	1168.0	724.136130	416.159877	1.0	360.50	714.5	1079.5	1460.0
MSSubClass	1168.0	56.767979	41.940650	20.0	20.00	50.0	70.0	190.0
LotFrontage	954.0	70.988470	24.828750	21.0	60.00	70.0	80.0	313.0
LotArea	1168.0	10484.749144	8957.442311	1300.0	7621.50	9522.5	11515.5	164660.0
OverallQual	1168.0	6.104452	1.390153	1.0	5.00	6.0	7.0	10.0
OverallCond	1168.0	5.595890	1.124343	1.0	5.00	5.0	6.0	9.0
YearBuilt	1168.0	1970.930651	30.145255	1875.0	1954.00	1972.0	2000.0	2010.0
YearRemodAdd	1168.0	1984.758562	20.785185	1950.0	1966.00	1993.0	2004.0	2010.0
MasVnrArea	1161.0	102.310078	182.595606	0.0	0.00	0.0	160.0	1600.0
BsmtFinSF1	1168.0	444.726027	462.664785	0.0	0.00	385.5	714.5	5644.0
BsmtFinSF2	1168.0	46.647260	163.520016	0.0	0.00	0.0	0.0	1474.0
BsmtUnfSF	1168.0	569.721747	449.375525	0.0	216.00	474.0	816.0	2336.0
TotalBsmtSF	1168.0	1061.095034	442.272249	0.0	799.00	1005.5	1291.5	6110.0
1stFlrSF	1168.0	1169.860445	391.161983	334.0	892.00	1096.5	1392.0	4692.0
2ndFlrSF	1168.0	348.826199	439.696370	0.0	0.00	0.0	729.0	2065.0
LowQualFinSF	1168.0	6.380137	50.892844	0.0	0.00	0.0	0.0	572.0
GrLivArea	1168.0	1525.066781	528.042957	334.0	1143.25	1468.5	1795.0	5642.0
BsmtFullBath	1168.0	0.425514	0.521615	0.0	0.00	0.0	1.0	3.0
BsmtHalfBath	1168.0	0.055651	0.236699	0.0	0.00	0.0	0.0	2.0
FullBath	1168.0	1.562500	0.551882	0.0	1.00	2.0	2.0	3.0
HalfBath	1168.0	0.388699	0.504929	0.0	0.00	0.0	1.0	2.0
BedroomAbvGr	1168.0	2.884418	0.817229	0.0	2.00	3.0	3.0	8.0
KitchenAbvGr	1168.0	1.045377	0.216292	0.0	1.00	1.0	1.0	3.0
TotRmsAbvGrd	1168.0	6.542808	1.598484	2.0	5.00	6.0	7.0	14.0
Fireplaces	1168.0	0.617295	0.650575	0.0	0.00	1.0	1.0	3.0
GarageYrBlt	1104.0	1978.193841	24.890704	1900.0	1961.00	1980.0	2002.0	2010.0
GarageCars	1168.0	1.776541	0.745554	0.0	1.00	2.0	2.0	4.0
GarageArea	1168.0	476.860445	214.466769	0.0	338.00	480.0	576.0	1418.0

	count							
WoodDeckSF	1168.0	96.206336	126.158988	0.0	0.00	0.0	171.0	857.0
OpenPorchSF	1168.0	46.559932	66.381023	0.0	0.00	24.0	70.0	547.0
EnclosedPorch	1168.0	23.015411	63.191089	0.0	0.00	0.0	0.0	552.0
3SsnPorch	1168.0	3.639555	29.088867	0.0	0.00	0.0	0.0	508.0
ScreenPorch	1168.0	15.051370	55.080816	0.0	0.00	0.0	0.0	480.0
PoolArea	1168.0	3.448630	44.896939	0.0	0.00	0.0	0.0	738.0
MiscVal	1168.0	47.315068	543.264432	0.0	0.00	0.0	0.0	15500.0
MoSold	1168.0	6.344178	2.686352	1.0	5.00	6.0	8.0	12.0
YrSold	1168.0	2007.804795	1.329738	2006.0	2007.00	2008.0	2009.0	2010.0
SalePrice	1168.0	181477.005993	79105.586863	34900.0	130375.00	163995.0	215000.0	755000.0

In [131…
```python
dt.describe().T
```

Out[131…

	count	mean	std	min	25%	50%	75%	max
Id	292.0	755.955479	442.565228	6.0	377.75	778.0	1152.25	1456.0
MSSubClass	292.0	57.414384	43.780649	20.0	20.00	50.0	70.00	190.0
LotFrontage	247.0	66.425101	21.726343	21.0	53.50	65.0	79.00	150.0
LotArea	292.0	10645.143836	13330.669795	1526.0	7200.00	9200.0	11658.75	215245.0
OverallQual	292.0	6.078767	1.356147	3.0	5.00	6.0	7.00	10.0
OverallCond	292.0	5.493151	1.063267	3.0	5.00	5.0	6.00	9.0
YearBuilt	292.0	1972.616438	30.447016	1872.0	1954.00	1976.0	2001.00	2009.0
YearRemodAdd	292.0	1985.294521	20.105792	1950.0	1968.00	1994.0	2003.25	2010.0
MasVnrArea	291.0	109.171821	175.030021	0.0	0.00	0.0	180.00	1031.0
BsmtFinSF1	292.0	439.294521	429.559675	0.0	0.00	369.5	700.50	1767.0
BsmtFinSF2	292.0	46.157534	152.467119	0.0	0.00	0.0	0.00	1085.0
BsmtUnfSF	292.0	557.315068	411.043768	0.0	255.00	487.0	780.00	1935.0
TotalBsmtSF	292.0	1042.767123	424.561153	0.0	771.75	971.0	1322.00	3094.0
1stFlrSF	292.0	1133.691781	366.941919	372.0	858.00	1047.5	1370.50	2402.0
2ndFlrSF	292.0	339.657534	424.278825	0.0	0.00	0.0	717.00	1589.0
LowQualFinSF	292.0	3.702055	38.219527	0.0	0.00	0.0	0.00	479.0
GrLivArea	292.0	1477.051370	514.199429	520.0	1061.50	1440.0	1720.25	3447.0
BsmtFullBath	292.0	0.424658	0.508831	0.0	0.00	0.0	1.00	2.0
BsmtHalfBath	292.0	0.065068	0.247070	0.0	0.00	0.0	0.00	1.0
FullBath	292.0	1.575342	0.547856	0.0	1.00	2.0	2.00	3.0
HalfBath	292.0	0.359589	0.494795	0.0	0.00	0.0	1.00	2.0
BedroomAbvGr	292.0	2.794521	0.807336	0.0	2.00	3.0	3.00	6.0
KitchenAbvGr	292.0	1.051370	0.236160	1.0	1.00	1.0	1.00	3.0
TotRmsAbvGrd	292.0	6.417808	1.728105	3.0	5.00	6.0	7.00	12.0
Fireplaces	292.0	0.595890	0.621259	0.0	0.00	1.0	1.00	2.0
GarageYrBlt	275.0	1979.760000	23.868875	1916.0	1964.00	1979.0	2003.00	2010.0
GarageCars	292.0	1.729452	0.754430	0.0	1.00	2.0	2.00	4.0
GarageArea	292.0	457.458904	210.785591	0.0	300.00	467.5	569.75	1052.0
WoodDeckSF	292.0	86.397260	121.898836	0.0	0.00	0.0	149.25	728.0
OpenPorchSF	292.0	47.061644	65.865449	0.0	0.00	28.5	66.00	418.0
EnclosedPorch	292.0	17.708904	51.892906	0.0	0.00	0.0	0.00	330.0
3SsnPorch	292.0	2.489726	30.247488	0.0	0.00	0.0	0.00	407.0
ScreenPorch	292.0	15.099315	58.483473	0.0	0.00	0.0	0.00	396.0
PoolArea	292.0	0.000000	0.000000	0.0	0.00	0.0	0.00	0.0
PoolQC	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN
MiscVal	292.0	28.184932	224.036218	0.0	0.00	0.0	0.00	3500.0
MoSold	292.0	6.232877	2.774556	1.0	4.00	6.0	8.00	12.0
YrSold	292.0	2007.859589	1.322867	2006.0	2007.00	2008.0	2009.00	2010.0

In [131…
```python
e=dt1.corr()
# Ploting the heatmap for better understanding
plt.subplots(figsize=(30,30))
sns.heatmap(e,annot=True)
```

Out[131… `<AxesSubplot:>`