FEATURE GENERATION-WORKSHOP

AIM:

To read the given data and perform Feature Generation process and save the data to a file.

EXPLANATION:

Feature Generation (also known as feature construction, feature extraction or feature engineering) is the process of transforming features into new features that better relate to the target.

ALGORITHM:

STEP-1:

Read the given Data.

STEP-2:

Clean the Data Set using Data Cleaning Process.

STEP-3:

Apply Feature Generation techniques to all the feature of the data set.

STEP-4:

Save the data to the file.

CODE:

ORDINAL ENCODER:

```
import pandas as pd
import seaborn as sns
from sklearn.preprocessing import LabelEncoder,OrdinalEncoder
```

```
df = pd.read_excel("Workshop_feature Engg.csv.xlsx")
carbody=['convertible','wagon','hatchback','sedan','hardtop']
enc=OrdinalEncoder(categories=[carbody])
enc.fit_transform(df[['carbody']])
df['Carbody']=enc.fit_transform(df[['carbody']])
df

fuelsystem=['mpfi','mfi','1bbl','2bbl','idi']
enc=OrdinalEncoder(categories=[fuelsystem])
enc.fit_transform(df[['fuelsystem']])
df['Fuelsystem']=enc.fit_transform(df[['fuelsystem']])
df

enginetype=['dohc','ohc','ohcv']
enc=OrdinalEncoder(categories=[enginetype])
enc.fit_transform(df[['enginetype']])
df['Enginetype']=enc.fit_transform(df[['enginetype']])
df
```

LABEL ENCODER:

```
import pandas as pd
import seaborn as sns
from sklearn.preprocessing import LabelEncoder,OrdinalEncoder
from google.colab import files
uploaded = files.upload()
df = pd.read_excel("Workshop_feature Engg.csv.xlsx")
```

```
le=LabelEncoder()
df['Carname']=le.fit_transform(df['CarName'])
df

le=LabelEncoder()
df['Carbody']=le.fit_transform(df['carbody'])
df

le=LabelEncoder()
df['CarID']=le.fit_transform(df['car_ID'])
df

le=LabelEncoder()
df['Carwidth']=le.fit_transform(df['carwidth'])
df

le=LabelEncoder()
df['Enginesize']=le.fit_transform(df['enginesize'])
df
```

ONE HOT ENCODER:

```
import pandas as pd
import seaborn as sns
from sklearn.preprocessing import OneHotEncoder
from google.colab import files
uploaded = files.upload()
```

```
df = pd.read_excel("Workshop_feature Engg.csv.xlsx")
ohe=OneHotEncoder(sparse=False)
enc=pd.DataFrame(ohe.fit_transform(df[['enginetype']]))
df=pd.concat([df,enc],axis=1)
df

ohe=OneHotEncoder(sparse=False)
enc=pd.DataFrame(ohe.fit_transform(df[['fuelsystem']]))
df=pd.concat([df,enc],axis=1)
df

ohe=OneHotEncoder(sparse=False)
enc=pd.DataFrame(ohe.fit_transform(df[['carbody']]))
df=pd.concat([df,enc],axis=1)
df
```

BINARY ENCODER:

```
import pandas as pd
import seaborn as sns
!pip install category_encoders
from category_encoders import BinaryEncoder
from google.colab import files
uploaded = files.upload()
df = pd.read_excel("Workshop_feature Engg.csv.xlsx")
be=BinaryEncoder()
newdata=be.fit_transform(df['drivewheel'])
```

```
df1=pd.concat([df,newdata],axis=1)
df1

be=BinaryEncoder()
newdata=be.fit_transform(df['fueltype'])
df1=pd.concat([df,newdata],axis=1)
df1

be=BinaryEncoder()
newdata=be.fit_transform(df['aspiration'])
df1=pd.concat([df,newdata],axis=1)
df1

be=BinaryEncoder()
newdata=be.fit_transform(df['doornumber'])
df1=pd.concat([df,newdata],axis=1)
df1

be=BinaryEncoder()
newdata=be.fit_transform(df['drivewheel'])
df1=pd.concat([df,newdata],axis=1)
df1
```

OUPUT:

ORDINAL ENCODER:

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Carbody
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0.0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0.0
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	3.0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	1.0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	2.0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	2.0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	3.0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	2.0
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	3.0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	3.0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	2.0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	3.0
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	3.0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	3.0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	1.0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	4.0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	3.0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	3.0
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0.0

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Fuelsystem
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0.0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0.0
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	0.0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	3.0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	1.0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	2.0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	3.0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	3.0
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	3.0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	4.0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	3.0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	0.0
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	4.0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	4.0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	4.0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	4.0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	4.0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	0.0
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0.0

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Enginetype
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0.0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0.0
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	1.0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	1.0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	1.0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	1.0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	1.0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	1.0
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	1.0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	1.0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	1.0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	1.0
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	1.0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	1.0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	1.0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	1.0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	1.0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	2.0
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	2.0

LABEL ENCODER:

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Carname
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	1
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	8
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	10
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	9
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	11
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	15
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	14
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	17
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	16
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	12
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	13
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	18
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	4
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	3
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	2
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	6
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	5
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	7

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Carbody
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	3
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	4
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	2
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	2
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	3
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	2
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	3
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	3
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	2
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	3
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	3
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	3
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	4
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	1
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	3
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	3
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	CarID
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	1
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	2
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	3
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	4
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	5
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	6
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	7
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	8
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	9
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	10
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	11
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	12
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	13
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	14
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	15
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	16
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	17
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	18

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Carwidth
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	2
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	2
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	3
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	5
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	1
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	6
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	6
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	6
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	6
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	6
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	4
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	4
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	7
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	7
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	7
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	9
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	9
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	8

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	Enginesize
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	3
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	3
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	1
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	2
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	6
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	2
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	2
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	2
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	2
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	2
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	5
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	4
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	7
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	7
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	7
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	7
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	8
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	8

ONE HOT ENCODER:

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	0	1	2
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	1.0	0.0	0.0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	1.0	0.0	0.0
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	0.0	1.0	0.0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	0.0	1.0	0.0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	0.0	1.0	0.0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	0.0	1.0	0.0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	0.0	1.0	0.0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	0.0	1.0	0.0
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	0.0	1.0	0.0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	0.0	1.0	0.0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	0.0	1.0	0.0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	0.0	1.0	0.0
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	0.0	1.0	0.0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	0.0	1.0	0.0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	0.0	1.0	0.0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	0.0	1.0	0.0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	0.0	1.0	0.0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	0.0	0.0	1.0
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0.0	0.0	1.0

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	...	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	0	1	2	3	4
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	...	2548	dohc	four	130	mpfi	0.0	0.0	0.0	0.0	1.0
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	...	2548	dohc	four	130	mpfi	0.0	0.0	0.0	0.0	1.0
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	...	2191	ohc	four	98	mpfi	0.0	0.0	0.0	0.0	1.0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	...	2535	ohc	four	122	2bbl	0.0	1.0	0.0	0.0	0.0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	...	2811	ohc	four	156	mfi	0.0	0.0	0.0	1.0	0.0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	...	1956	ohc	four	92	1bbl	1.0	0.0	0.0	0.0	0.0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	...	2410	ohc	four	122	2bbl	0.0	1.0	0.0	0.0	0.0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	...	2385	ohc	four	122	2bbl	0.0	1.0	0.0	0.0	0.0
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	...	2410	ohc	four	122	2bbl	0.0	1.0	0.0	0.0	0.0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	...	2443	ohc	four	122	idi	0.0	0.0	1.0	0.0	0.0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	...	2425	ohc	four	122	2bbl	0.0	1.0	0.0	0.0	0.0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	...	2670	ohc	four	140	mpfi	0.0	0.0	0.0	0.0	1.0
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	...	2700	ohc	four	134	idi	0.0	0.0	1.0	0.0	0.0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	...	3515	ohc	five	183	idi	0.0	0.0	1.0	0.0	0.0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	...	3750	ohc	five	183	idi	0.0	0.0	1.0	0.0	0.0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	...	3495	ohc	five	183	idi	0.0	0.0	1.0	0.0	0.0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	...	3770	ohc	five	183	idi	0.0	0.0	1.0	0.0	0.0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	...	3740	ohcv	eight	234	mpfi	0.0	0.0	0.0	0.0	1.0
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	...	3685	ohcv	eight	234	mpfi	0.0	0.0	0.0	0.0	1.0

19 rows × 22 columns

ar_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	...	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	0	1	2	3	4
1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	...	2548	dohc	four	130	mpfi	1.0	0.0	0.0	0.0	0.0
2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	...	2548	dohc	four	130	mpfi	1.0	0.0	0.0	0.0	0.0
28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	...	2191	ohc	four	98	mpfi	0.0	0.0	0.0	1.0	0.0
29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	...	2535	ohc	four	122	2bbl	0.0	0.0	0.0	0.0	1.0
30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	...	2811	ohc	four	156	mfi	0.0	0.0	1.0	0.0	0.0
35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	...	1956	ohc	four	92	1bbl	0.0	0.0	1.0	0.0	0.0
61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	...	2410	ohc	four	122	2bbl	0.0	0.0	0.0	1.0	0.0
62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	...	2385	ohc	four	122	2bbl	0.0	0.0	1.0	0.0	0.0
63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	...	2410	ohc	four	122	2bbl	0.0	0.0	0.0	1.0	0.0
64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	...	2443	ohc	four	122	idi	0.0	0.0	0.0	1.0	0.0
65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	...	2425	ohc	four	122	2bbl	0.0	0.0	1.0	0.0	0.0
66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	...	2670	ohc	four	140	mpfi	0.0	0.0	0.0	1.0	0.0
67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	...	2700	ohc	four	134	idi	0.0	0.0	0.0	1.0	0.0
68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	...	3515	ohc	five	183	idi	0.0	0.0	0.0	1.0	0.0
69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	...	3750	ohc	five	183	idi	0.0	0.0	0.0	0.0	1.0
70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	...	3495	ohc	five	183	idi	0.0	1.0	0.0	0.0	0.0
71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	...	3770	ohc	five	183	idi	0.0	0.0	0.0	1.0	0.0
72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	...	3740	ohcv	eight	234	mpfi	0.0	0.0	0.0	1.0	0.0
73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	...	3685	ohcv	eight	234	mpfi	1.0	0.0	0.0	0.0	0.0

s × 22 columns

BINARY ENCODER:

Saving Workshop_feature Engg.csv.xlsx to Workshop_feature Engg.csv (18).xlsx

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	drivewheel_0	drivewheel_1
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	1	0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	1	0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	1	0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	1	0
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	1	0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	1	0
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	1	0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	1	0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	1	0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	0	1
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	0	1
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	0	1
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	0	1
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	0	1
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	0	1
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	0	1
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0	1

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Saving Workshop_feature Engg.csv.xlsx to Workshop_feature Engg.csv (15).xlsx

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	fueltype_0	fueltype_1
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	0	1
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	0	1
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	0	1
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	0	1
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	0	1
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	0	1
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	0	1
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	1	0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	0	1
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	0	1
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	1	0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	1	0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	1	0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	1	0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	1	0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	0	1
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0	1

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Saving Workshop_feature Engg.csv.xlsx to Workshop_feature Engg.csv (16).xlsx

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	aspiration_0	aspiration_1
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	1	0
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	0	1
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	1	0
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	0	1
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	0	1
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	0	1
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	0	1
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	0	1
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	0	1
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	0	1
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	0	1
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	1	0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	1	0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	1	0
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	1	0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	0	1
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0	1

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Saving Workshop_feature Engg.csv.xlsx to Workshop_feature Engg.csv (17).xlsx

	car_ID	CarName	fueltype	aspiration	doornumber	carbody	drivewheel	enginelocation	wheelbase	carlength	carwidth	carheight	curbweight	enginetype	cylindernumber	enginesize	fuelsystem	doornumber_0	doornumber_1
0	1	alfa-romero giulia	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
1	2	alfa-romero stelvio	gas	std	two	convertible	rwd	front	88.6	168.8	64.1	48.8	2548	dohc	four	130	mpfi	0	1
2	28	dodge coronet custom	gas	turbo	two	sedan	fwd	front	93.7	157.3	63.8	50.6	2191	ohc	four	98	mpfi	0	1
3	29	dodge dart custom	gas	std	four	wagon	fwd	front	103.3	174.6	64.6	59.8	2535	ohc	four	122	2bbl	1	0
4	30	dodge coronet custom (sw)	gas	turbo	two	hatchback	fwd	front	95.9	173.2	66.3	50.2	2811	ohc	four	156	mfi	0	1
5	35	honda civic cvcc	gas	std	two	hatchback	fwd	front	93.7	150.0	64.0	52.6	1956	ohc	four	92	1bbl	0	1
6	61	mazda glc custom l	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	1	0
7	62	mazda glc custom	gas	std	two	hatchback	fwd	front	98.8	177.8	66.5	53.7	2385	ohc	four	122	2bbl	0	1
8	63	mazda rx-4	gas	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2410	ohc	four	122	2bbl	1	0
9	64	mazda glc deluxe	diesel	std	four	sedan	fwd	front	98.8	177.8	66.5	55.5	2443	ohc	four	122	idi	1	0
10	65	mazda 626	gas	std	four	hatchback	fwd	front	98.8	177.8	66.5	55.5	2425	ohc	four	122	2bbl	1	0
11	66	mazda glc	gas	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2670	ohc	four	140	mpfi	1	0
12	67	mazda rx-7 gs	diesel	std	four	sedan	rwd	front	104.9	175.0	66.1	54.4	2700	ohc	four	134	idi	1	0
13	68	buick electra 225 custom	diesel	turbo	four	sedan	rwd	front	110.0	190.9	70.3	56.5	3515	ohc	five	183	idi	1	0
14	69	buick century luxus (sw)	diesel	turbo	four	wagon	rwd	front	110.0	190.9	70.3	58.7	3750	ohc	five	183	idi	1	0
15	70	buick century	diesel	turbo	two	hardtop	rwd	front	106.7	187.5	70.3	54.9	3495	ohc	five	183	idi	0	1
16	71	buick skyhawk	diesel	turbo	four	sedan	rwd	front	115.6	202.6	71.7	56.3	3770	ohc	five	183	idi	1	0
17	72	buick opel isuzu deluxe	gas	std	four	sedan	rwd	front	115.6	202.6	71.7	56.5	3740	ohcv	eight	234	mpfi	1	0
18	73	buick skylark	gas	std	two	convertible	rwd	front	96.6	180.3	70.5	50.8	3685	ohcv	eight	234	mpfi	0	1

RESULT:

Thus the Feature Generation process was performed and output was verified successfully.