In [24]:
```
import pandas as pd
import selenium
import seaborn as sns
import re
import matplotlib.pyplot as plt
```

In [3]:
```
from selenium import webdriver
from selenium.webdriver.chrome.service import Service
from selenium.webdriver.chrome.options import Options
from webdriver_manager.chrome import ChromeDriverManager
from selenium.webdriver.common.by import By


options = Options()
service = Service(ChromeDriverManager().install())
driver = webdriver.Chrome(service=service, options=options)

driver.get("https://www.cars24.com/buy-used-ford-cars-mumbai/?sort=bestmatch&ser
```

In [4]:
```
Car_Name_year=driver.find_elements(By.CSS_SELECTOR,".sc-braxZu.kjFjan") #Extraci
car_name_year_text= [value.text for value in Car_Name_year]

#Segregating the year and car name from the variable car_name_year_text
Manuf_year=[]
Cars_names=[]

for i in range(0, len(car_name_year_text)):
    details=car_name_year_text[i]
    M_year= re.findall(r"\d{4}", details)
    Manuf_year.append(M_year)

    Car_name=re.findall(r"(\b[^\d{4}]\w+\b)", details)
    NAME = [name.strip() for name in Car_name]
    Cars = ' '.join(NAME)
    Cars_names.append(Cars)
```

In [5]:
```
Price_Car=driver.find_elements(By.CSS_SELECTOR,".sc-braxZu.cyPhJl") #Extracting
car_details=driver.find_elements(By.CSS_SELECTOR,".sc-braxZu.kvfdZL") #Extractin


#Transforming the price details for data analysis

prices=[value.text for value in Price_Car]
prices=[cleaned for cleaned in prices if cleaned.strip() and '₹' in cleaned]


#Extracting kilometres driven, fuel type and transmission from the raw data

Cars_details=[value.text for value in car_details]

Kilometers_Drive=[]
Fuel_Types=[]
Transmissions=[]

chunk_size=4
for i in range(0,len(Cars_details),4):
    chunks=Cars_details[i:i+chunk_size]
```

```
    Kilometers_Driven=chunks[0]
    Kilometers_Drive.append(Kilometers_Driven)
    Fuel_Type = chunks[1]
    Fuel_Types.append(Fuel_Type)
    Transmission=chunks[2]
    Transmissions.append(Transmission)
```

In [6]:
```
#Converting Kilometers Driven and prices into numericals so as to perform data a

Car_kilo=[]
for km in Kilometers_Drive:
    km=km.replace("km",'').strip()
    km=km.lower()
    if km.endswith('k'):
        km=km.replace("k",'').strip()
        km=round(float(km)*1000)
        Car_kilo.append(km)
    elif km.endswith('l'):
        km=km.replace("l",'').strip()
        km=round(float(km)*100000)
        Car_kilo.append(km)

Kilometers_Drive= Car_kilo


car_prices=[]

for price in prices:
    price= price.replace('₹','')
    if 'lakh' in price:
        price= price.replace('lakh','').strip()
        price= round(float(price)*100000)
        car_prices.append(price)

prices=car_prices


YEAR=[]
for y in Manuf_year:
    YR= int(y[0])
    YEAR.append(YR)
```

In [61]:
```
Ford_Car_info={"Name":Cars_names, "Kilometers Driven":Kilometers_Drive,
               "Year of Manufacture":YEAR, "Fuel Type":Fuel_Types,
               "Transmission":Transmissions, "Price":prices }
Ford_Cars= pd.DataFrame(Ford_Car_info)

Ford_Cars
```

Out[61]:

	Name	Kilometers Driven	Year of Manufacture	Fuel Type	Transmission	Price
0	Ford Ecosport	37970	2021	Petrol	Auto	695000
1	Ford Ecosport	27320	2016	Petrol	Auto	421000
2	Ford Ecosport	120000	2017	Diesel	Manual	510000
3	Ford New Figo	25460	2015	Petrol	Manual	240000
4	Ford Ecosport	70760	2020	Diesel	Manual	692000
...	...	...	...	...	...	...
67	Ford Ecosport	71740	2014	Diesel	Manual	507000
68	Ford Ecosport	28820	2016	Petrol	Auto	383000
69	Ford New Figo	62730	2015	Petrol	Manual	249000
70	Ford Ecosport	29370	2019	Petrol	Manual	477000
71	Ford Ecosport	47060	2018	CNG	Manual	490000

72 rows × 6 columns

In [52]:
```
Ford_Cars.to_csv("Ford_cars_data",index=False)
```

In [53]:
```
Data_Ford_Cars= pd.read_csv("Ford_cars_data")
```

In [54]:
```
Data_Ford_Cars
```

Out[54]:

	Name	Kilometers Driven	Year of Manufacture	Fuel Type	Transmission	Price
0	Ford Ecosport	37970	2021	Petrol	Auto	695000
1	Ford Ecosport	27320	2016	Petrol	Auto	421000
2	Ford Ecosport	120000	2017	Diesel	Manual	510000
3	Ford New Figo	25460	2015	Petrol	Manual	240000
4	Ford Ecosport	70760	2020	Diesel	Manual	692000
...	...	...	...	...	...	...
67	Ford Ecosport	71740	2014	Diesel	Manual	507000
68	Ford Ecosport	28820	2016	Petrol	Auto	383000
69	Ford New Figo	62730	2015	Petrol	Manual	249000
70	Ford Ecosport	29370	2019	Petrol	Manual	477000
71	Ford Ecosport	47060	2018	CNG	Manual	490000

72 rows × 6 columns

Data Analysis

Data Cleaning

In [12]:
```
#Checking for missing Values
Data_Ford_Cars.isnull().sum()
```

Out[12]:
```
Name                  0
Kilometers Driven     0
Year of Manufacture   0
Fuel Type             0
Transmission          0
Price                 0
dtype: int64
```

In [13]:
```
#Checking for duplicates
Data_Ford_Cars.duplicated().sum()
```

Out[13]:
```
np.int64(0)
```

In [56]:
```
#Checking if the variables are assigned correct data types.
Data_Ford_Cars.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 72 entries, 0 to 71
Data columns (total 6 columns):
 #   Column               Non-Null Count  Dtype 
---  ------               --------------  ----- 
 0   Name                 72 non-null     object
 1   Kilometers Driven    72 non-null     int64 
 2   Year of Manufacture  72 non-null     int64 
 3   Fuel Type            72 non-null     object
 4   Transmission         72 non-null     object
 5   Price                72 non-null     int64 
dtypes: int64(3), object(3)
memory usage: 3.5+ KB
```

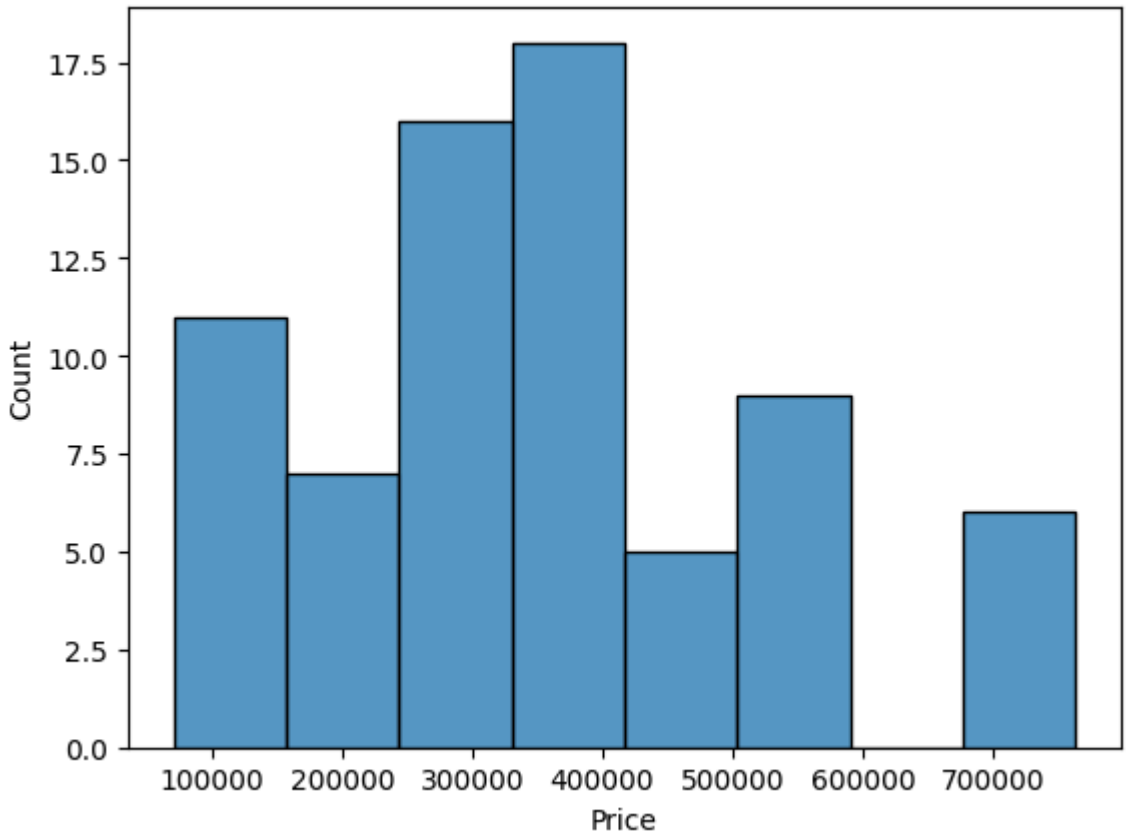
In [15]:
```
Data_Ford_Cars.describe()
```

Out[15]:

	Kilometers Driven	Price
count	72.000000	72.000000
mean	74399.861111	356166.666667
std	39189.018241	169173.134084
min	11550.000000	70000.000000
25%	46715.000000	246750.000000
50%	69170.000000	340500.000000
75%	94257.500000	437500.000000
max	220000.000000	764000.000000

In [16]:
```
sns.histplot(Data_Ford_Cars['Price'])
```

Out[16]:
```
<Axes: xlabel='Price', ylabel='Count'>
```

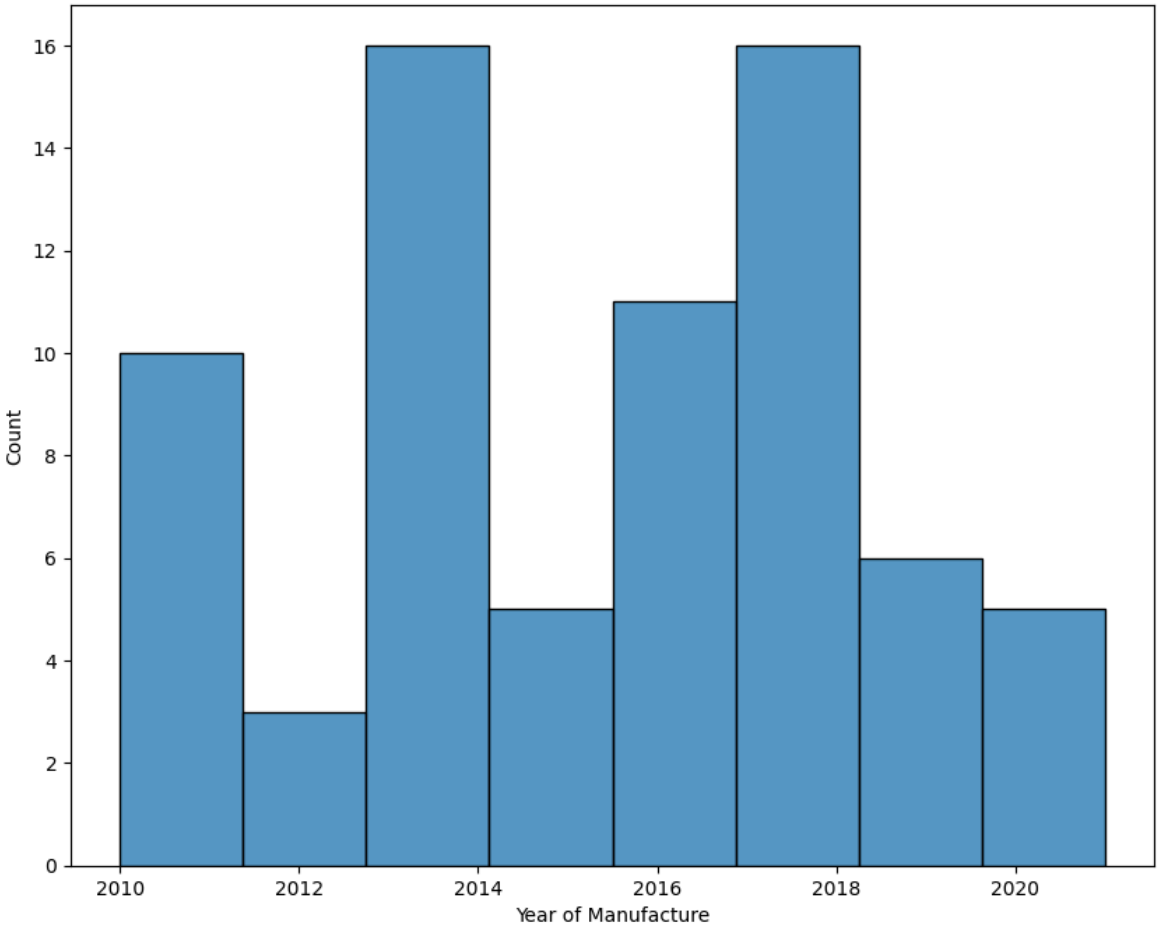


In [29]:
```
Var=["Name","Fuel Type","Transmission"]
for i in Var:
    Maximum_count=Data_Ford_Cars[i].value_counts().idxmax()
    print(i,":",Maximum_count)
```

```
Name : Ford Ecosport
Fuel Type : Petrol
Transmission : Manual
```

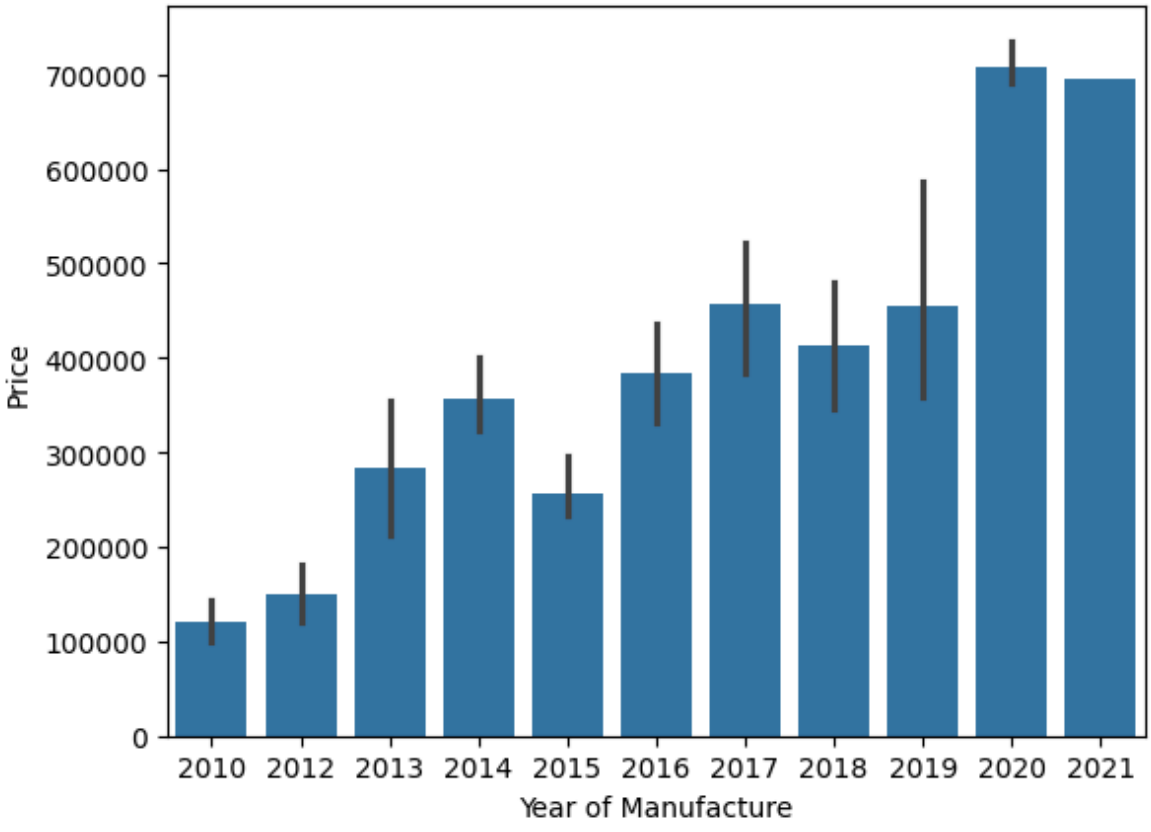
In [62]:
```
plt.figure(figsize=(10,8))
sns.histplot(Data_Ford_Cars['Year of Manufacture'])
```

Out[62]: <Axes: xlabel='Year of Manufacture', ylabel='Count'>



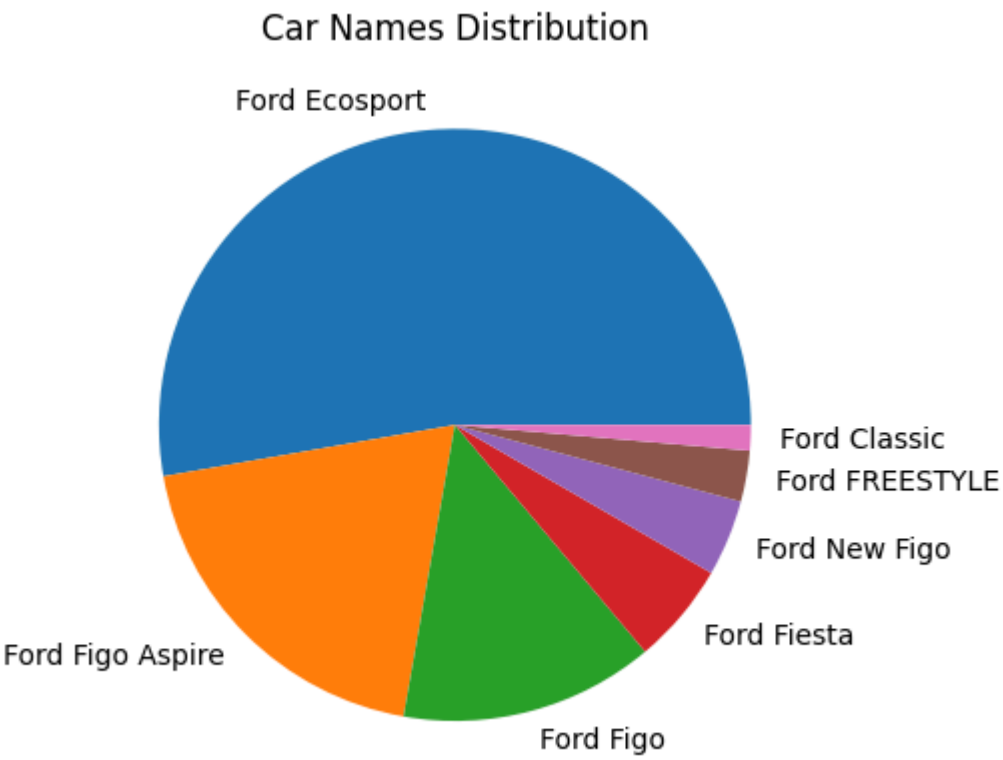
In [63]:
```
sns.barplot(x=Data_Ford_Cars['Year of Manufacture'], y=Data_Ford_Cars['Price'])
```

Out[63]: <Axes: xlabel='Year of Manufacture', ylabel='Price'>



In [68]:
```
Name_count=Data_Ford_Cars["Name"].value_counts()

plt.pie(Name_count, labels=Name_count.index)
plt.title('Car Names Distribution')
plt.show()
```



In [90]:
```
from datetime import datetime

Present_year = datetime.now().year

Data_Ford_Cars['Car_age']= Present_year-Data_Ford_Cars['Year of Manufacture']
```

In [75]:
```
Data_Ford_Cars['Car_age'].corr(Data_Ford_Cars['Price'])
```

Out[75]:
```
np.float64(-0.800353867859351)
```

In [85]:
```
correlation_analysis= Data_Ford_Cars[['Price', 'Year of Manufacture','Car_age']]
```

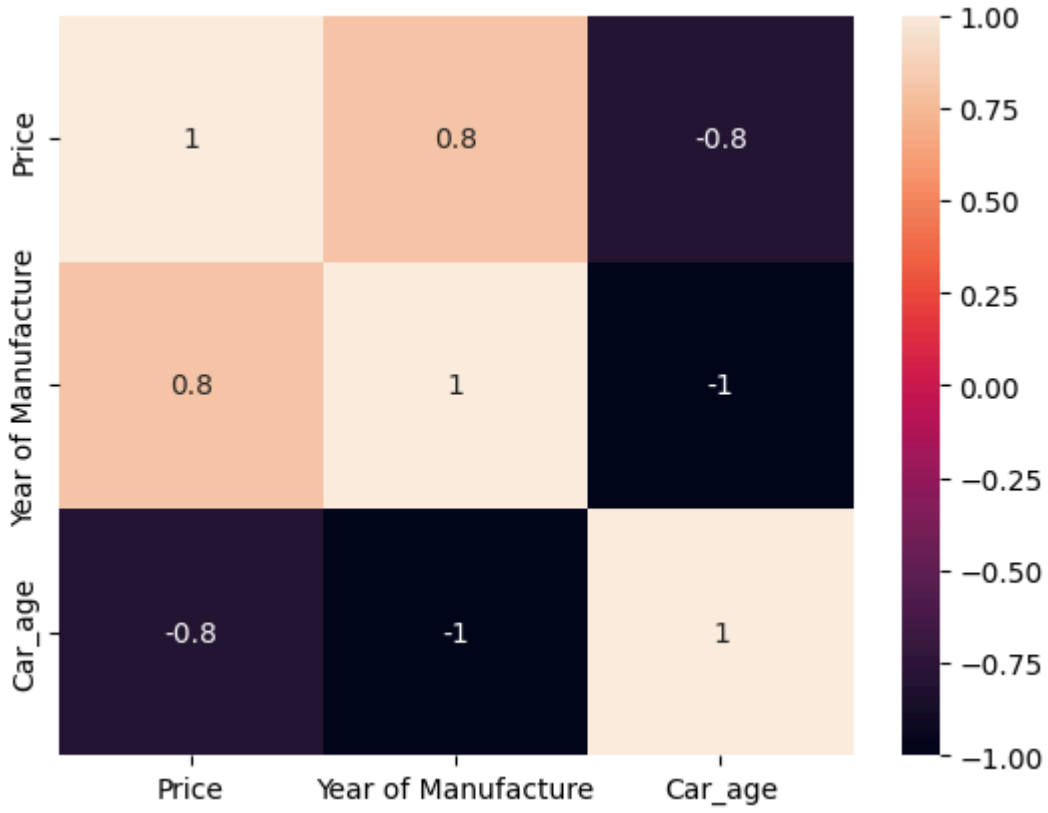
In [86]:
```
correlation_analysis
```

Out[86]:

	Price	Year of Manufacture	Car_age
Price	1.000000	0.800354	-0.800354
Year of Manufacture	0.800354	1.000000	-1.000000
Car_age	-0.800354	-1.000000	1.000000

In [89]:
```
sns.heatmap(correlation_analysis, annot=True)
```

Out[89]:
```
<Axes: >
```


Price
Year of Manufacture
Car_age
1
0.8
-0.8
0.8
1
-1
-0.8
-1
1
Price
Year of Manufacture
Car_age
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00

In [ ]: