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

In [ ]:
```
# Load the diamonds dataset
diamonds = sns.load_dataset('diamonds')
```

In [ ]:
```
# Display first few rows of the dataset
print(diamonds.head())
```

```
   carat      cut color clarity  depth  table  price     x     y     z
0   0.23    Ideal     E     SI2   61.5   55.0    326  3.95  3.98  2.43
1   0.21  Premium     E     SI1   59.8   61.0    326  3.89  3.84  2.31
2   0.23     Good     E     VS1   56.9   65.0    327  4.05  4.07  2.31
3   0.29  Premium     I     VS2   62.4   58.0    334  4.20  4.23  2.63
4   0.31     Good     J     SI2   63.3   58.0    335  4.34  4.35  2.75
```

In [ ]:
```
#statistics
print(diamonds.describe())
```

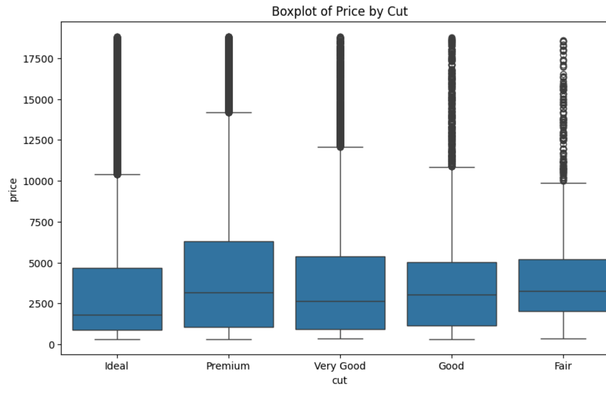
```
              carat          depth          table          price             x  \
count  53940.000000  53940.000000  53940.000000  53940.000000  53940.000000
mean       0.797940     61.749405     57.457184   3932.799722      5.731157
std        0.474011      1.432621      2.234491   3989.439738      1.121761
min        0.200000     43.000000     43.000000    326.000000      0.000000
25%        0.400000     61.000000     56.000000    950.000000      4.710000
50%        0.700000     61.800000     57.000000   2401.000000      5.700000
75%        1.040000     62.500000     59.000000   5324.250000      6.540000
max        5.010000     79.000000     95.000000  18823.000000     10.740000

                 y             z
count  53940.000000  53940.000000
mean       5.734526      3.538734
std        1.142135      0.705699
min        0.000000      0.000000
25%        4.720000      2.910000
50%        5.710000      3.530000
75%        6.540000      4.040000
max       58.900000     31.800000
```

In [ ]:
```
# Check for missing values
print(diamonds.isnull().sum())
```

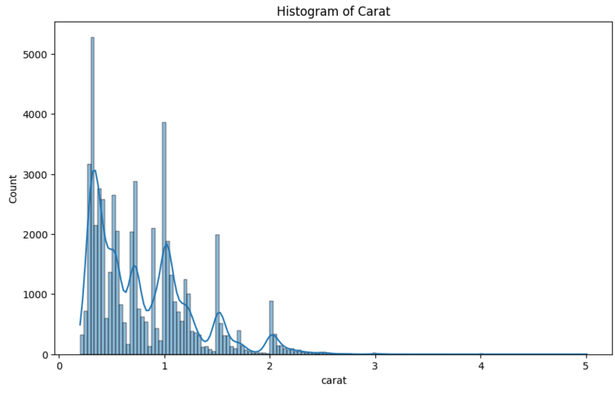
```
carat      0
cut        0
color      0
clarity    0
depth      0
table      0
price      0
x          0
y          0
z          0
dtype: int64
```

In [ ]:
```
# Data Visualization
```

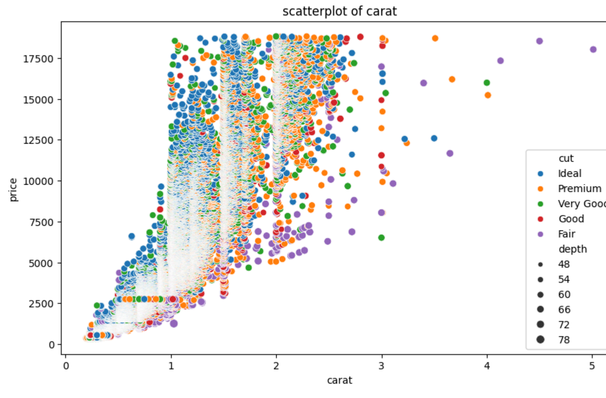
In [ ]:
```
# Boxplot of Price by Cut
plt.figure(figsize=(10, 6))
sns.boxplot(data=diamonds, x='cut', y='price')
plt.title('Boxplot of Price by Cut')
plt.show()
```



In [ ]:
```
# Histogram of Carat
plt.figure(figsize=(10, 6))
sns.histplot(data=diamonds, x='carat', kde=True)
plt.title('Histogram of Carat')
plt.show()
```



In [ ]:
```
plt.figure(figsize=(10, 6))
sns.scatterplot(data=diamonds, x="carat", y="price", hue="cut", size = 'depth')
plt.title('scatterplot of carat')
plt.show()
```



In [ ]:
```
plt.figure(figsize=(10, 6))
sns.barplot(data=diamonds, x="cut", y="price",)
plt.title('barplot of carat')
plt.show()
```