DSBDL Assignment 02 - Data Wrangling 2

Create an “Academic performance” dataset of students and perform the following operations using Python.

1. Scan all variables for missing values and inconsistencies. If there are missing values and/or inconsistencies, use any of the suitable techniques to deal with them.
2. Scan all numeric variables for outliers. If there are outliers, use any of the suitable techniques to deal with them.
3. Apply data transformations on at least one of the variables. The purpose of this transformation should be one of the following reasons: to change the scale for better understanding of the variable, to convert a non-linear relation into a linear one, or to decrease the skewness and convert the distribution into a normal distribution. Reason and document your approach properly.

Dataset details: https://www.kaggle.com/datasets/spscientist/students-performance-in-exams

```
from google.colab import drive
drive.mount('/content/drive')
```

```
     Mounted at /content/drive
```

```
import numpy as np
import pandas as pd
import seaborn as sns
```

```
ds = pd.read_csv( '/content/drive/My Drive/DSBDL/Assignment2/student_perfomance.csv' )
ds.head()
```

	gender	race/ethnicity	parental level of education	lunch	test preparation course	math score	reading score	writin scor
0	female	group B	bachelor's degree	standard	none	72	72	7
1	female	group C	some college	standard	completed	69	90	8

Next steps: Generate code with ds View recommended plots

```
ds.dtypes
```

```
     gender                         object
     race/ethnicity                 object
     parental level of education    object
     lunch                          object
     test preparation course        object
     math score                      int64
     reading score                   int64
     writing score                   int64
     dtype: object
```

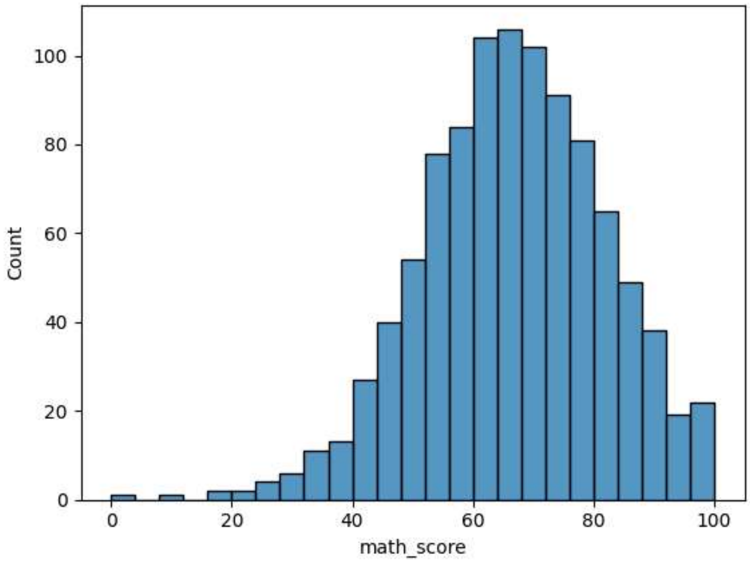
```
ds = ds.rename( columns={
    "race/ethnicity": "race",
    "parental level of education": "parent_edu_level" ,
    "test preparation course": "course" ,
    "math score": "math_score" ,
    "reading score": "reading_score" ,
    "writing score": "writing_score"
} )
ds.head()
```

	gender	race	parent_edu_level	lunch	course	math_score	reading_score
0	female	group B	bachelor's degree	standard	none	72	72
1	female	group C	some college	standard	completed	69	90
2	female	group B	master's degree	standard	none	90	95

Next steps: Generate code with ds View recommended plots

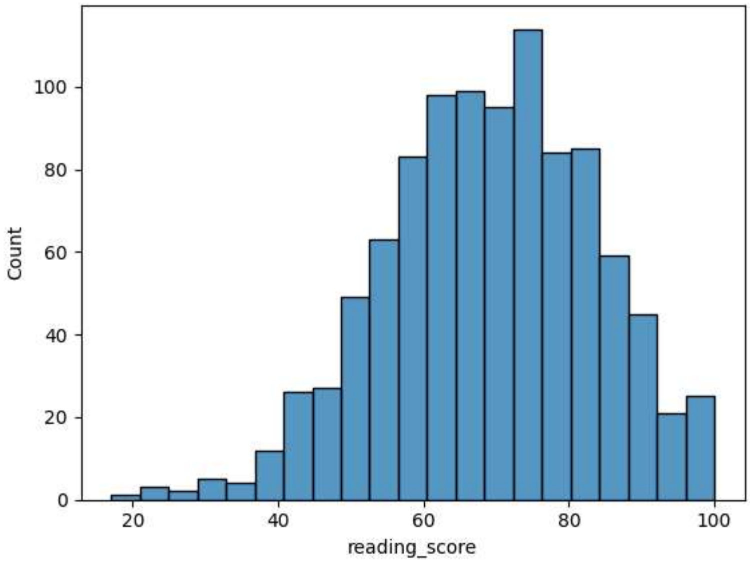
```
sns.histplot(ds.math_score)
```

```
<Axes: xlabel='math_score', ylabel='Count'>
```



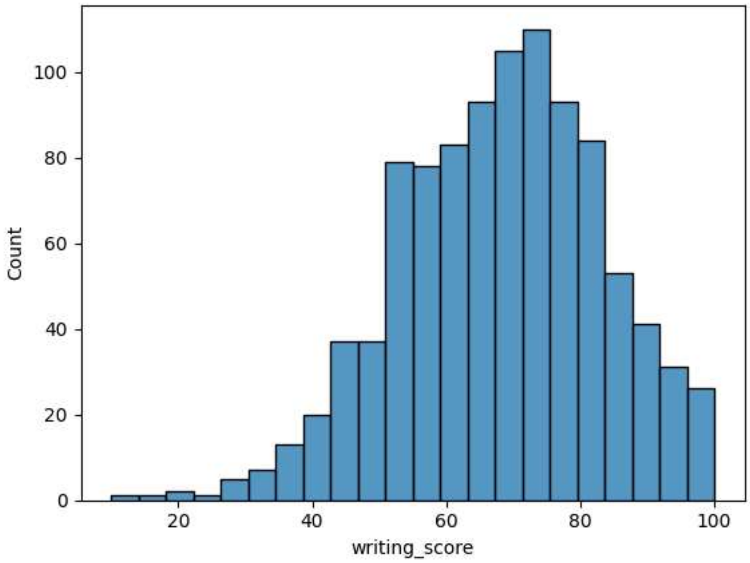
```
sns.histplot(ds.reading_score)
```

```
<Axes: xlabel='reading_score', ylabel='Count'>
```



```
sns.histplot(ds.writing_score)
```

```
<Axes: xlabel='writing_score', ylabel='Count'>
```

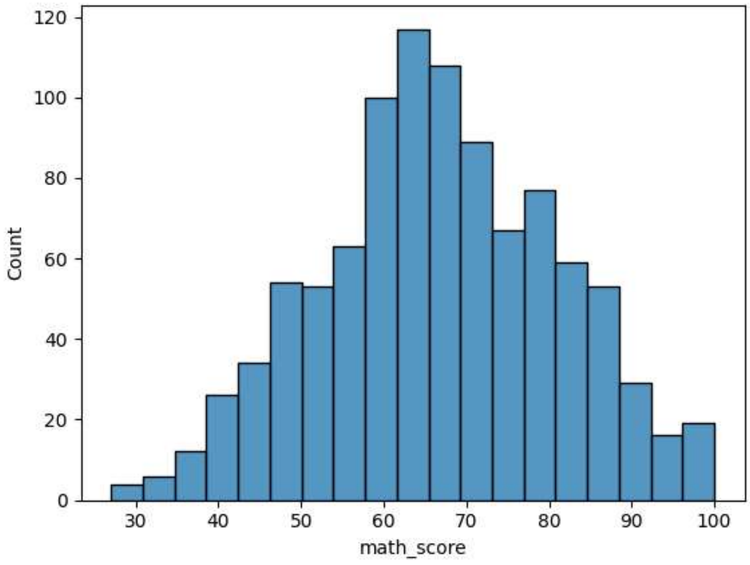


```
def outliers_removal(col_name: str):
  global ds
  q3, q1 = np.percentile(ds[col_name], [75, 25])
  iqr = q3 - q1
  ds = ds[(ds[col_name] >= q1 - 1.5*iqr) & (ds[col_name] <= q3 + 1.5*iqr)]

outliers_removal('math_score')
outliers_removal('reading_score')
outliers_removal('writing_score')
```

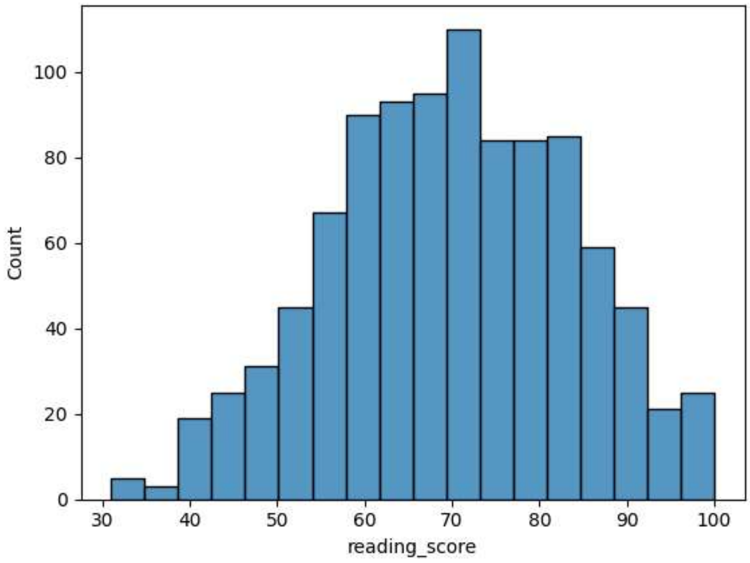
```
sns.histplot(ds.math_score)
```

```
<Axes: xlabel='math_score', ylabel='Count'>
```



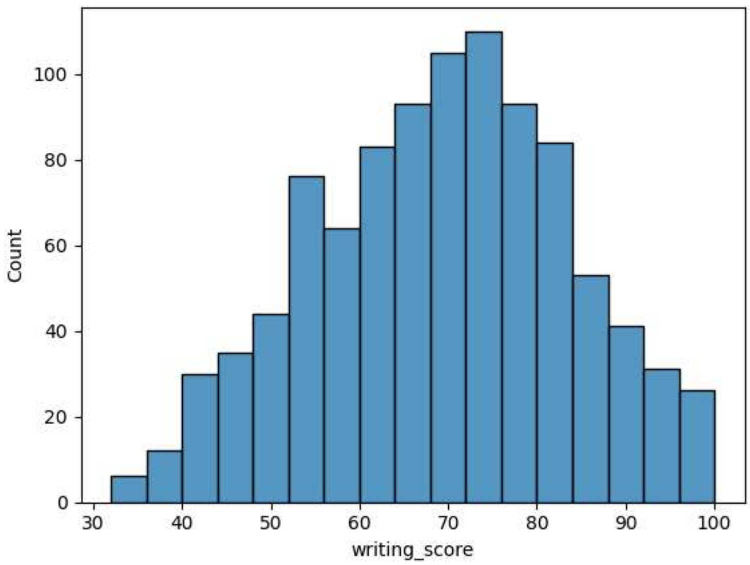
```
sns.histplot(ds.reading_score)
```

```
<Axes: xlabel='reading_score', ylabel='Count'>
```



```
sns.histplot(ds.writing_score)
```

```
<Axes: xlabel='writing_score', ylabel='Count'>
```



Done!