student-result-analysis-project

October 29, 2024

[360]:
```
#Python Project On Student Result Analysis
import seaborn as sns
import pandas as pd
from matplotlib import pyplot as plt
```

[362]:
```
stu=pd.read_csv("Student_Scores.csv")
stu.head(10)
```

[362]:

	Unnamed: 0	Gender	EthnicGroup	ParentEduc	LunchType	TestPrep	ParentMaritalStatus	PracticeSport	IsFirstChild	NrSiblings	TransportMeans	WklyStudyHours	MathScore	ReadingScore	WritingScore
0	0	female	NaN	bachelor's degree	standard	none	married	regularly	yes	3.0	school_bus	< 5	71	71	74
1	1	female	group C	some college	standard	NaN	married	sometimes	yes	0.0	NaN	5 - 10	69	90	88
2	2	female	group B	master's degree	standard	none	single	sometimes	yes	4.0	school_bus	< 5	87	93	91
3	3	male	group A	associate's degree	free/reduced	none	married	never	no	1.0	NaN	5 - 10	45	56	42
4	4	male	group C	some college	standard	none	married	sometimes	yes	0.0					
5	5	female	group B	associate's degree	standard	none	married	regularly	yes	1.0					
6	6	female	group B	some college	standard	completed	widowed	never	no	1.0					
7	7	male	group B	some college	free/reduced	none	married	sometimes	yes	1.0					
8	8	male	group D	high school	free/reduced	completed	single	sometimes	no	3.0					
9	9	female	group B	high school	free/reduced	none	married	regularly	yes	NaN					

```
4     school_bus         5 - 10         76            78            75
5     school_bus         5 - 10         73            84            79
6        private         5 - 10         85            93            89
7        private           > 10         41            43            39
8        private           > 10         65            64            68
9        private            < 5         37            59            50
```

[363]:
```
stu=pd.read_csv("Student_Scores.csv")
print(stu.head())
```

```
   Unnamed: 0  Gender EthnicGroup          ParentEduc     LunchType TestPrep  \
0           0  female         NaN   bachelor's degree      standard     none
1           1  female     group C        some college      standard      NaN
2           2  female     group B     master's degree      standard     none
3           3    male     group A  associate's degree  free/reduced     none
4           4    male     group C        some college      standard     none

  ParentMaritalStatus PracticeSport IsFirstChild  NrSiblings TransportMeans  \
0             married     regularly          yes         3.0     school_bus
1             married     sometimes          yes         0.0            NaN
2              single     sometimes          yes         4.0     school_bus
3             married         never           no         1.0            NaN
4             married     sometimes          yes         0.0     school_bus

  WklyStudyHours  MathScore  ReadingScore  WritingScore
0            < 5         71            71            74
1         5 - 10         69            90            88
2            < 5         87            93            91
3         5 - 10         45            56            42
4         5 - 10         76            78            75
```

[366]:
```
#To Check The Null Values
stu.isnull().sum()
```

[366]:
```
Unnamed: 0               0
Gender                   0
EthnicGroup           1840
ParentEduc            1845
LunchType                0
TestPrep              1830
ParentMaritalStatus   1190
PracticeSport          631
IsFirstChild           904
NrSiblings            1572
TransportMeans        3134
WklyStudyHours         955
MathScore                0
```

```
ReadingScore                0
WritingScore                0
dtype: int64
```

[368]:
```
#So Their Is Null Values Present That We Have To Remove
```

[370]:
```
stu=stu.drop("Unnamed: 0",axis=1)
print(stu.head())
```

```
   Gender EthnicGroup          ParentEduc     LunchType TestPrep  \
0  female         NaN   bachelor's degree      standard     none
1  female     group C        some college      standard      NaN
2  female     group B     master's degree      standard     none
3    male     group A  associate's degree  free/reduced     none
4    male     group C        some college      standard     none

  ParentMaritalStatus PracticeSport IsFirstChild  NrSiblings TransportMeans  \
0             married     regularly          yes         3.0     school_bus
1             married     sometimes          yes         0.0            NaN
2              single     sometimes          yes         4.0     school_bus
3             married         never           no         1.0            NaN
4             married     sometimes          yes         0.0     school_bus

  WklyStudyHours  MathScore  ReadingScore  WritingScore
0            < 5         71            71            74
1        5 - 10          69            90            88
2            < 5         87            93            91
3        5 - 10          45            56            42
4        5 - 10          76            78            75
```

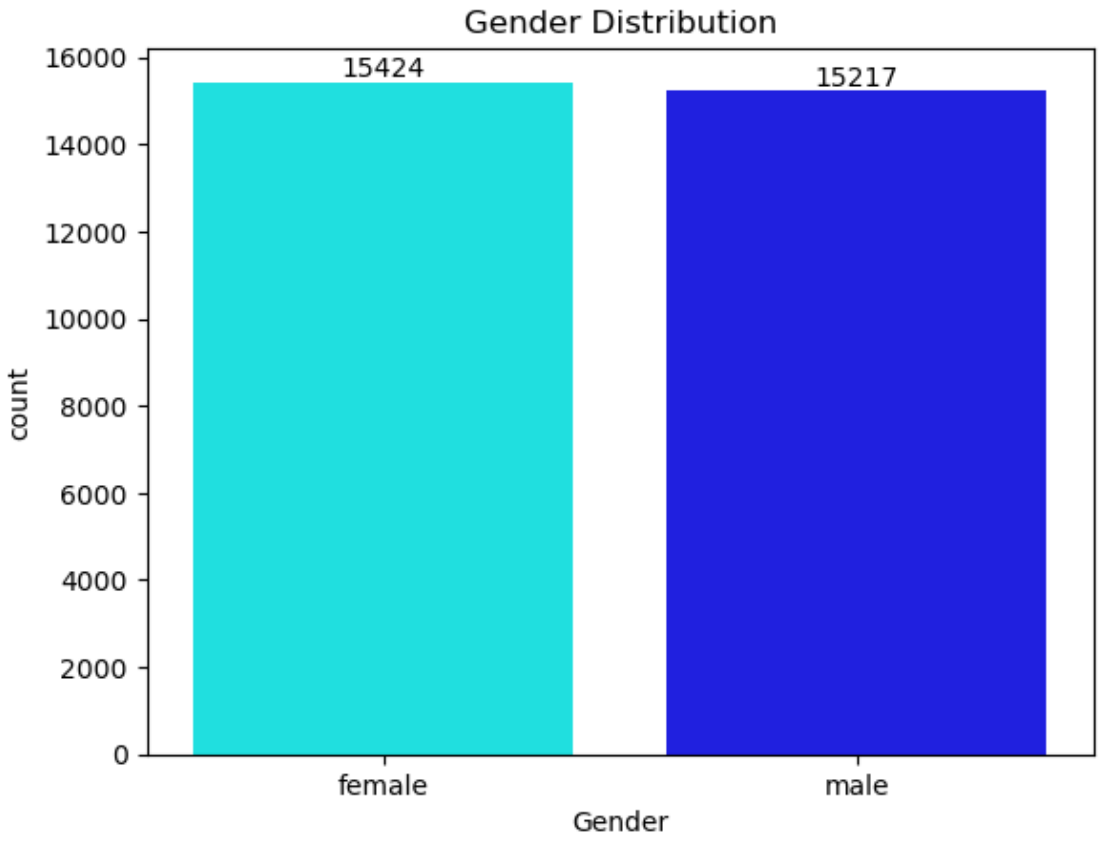
[372]:
```
stu.head(10)
```

[372]:
```
   Gender EthnicGroup          ParentEduc     LunchType   TestPrep  \
0  female         NaN   bachelor's degree      standard       none
1  female     group C        some college      standard        NaN
2  female     group B     master's degree      standard       none
3    male     group A  associate's degree  free/reduced       none
4    male     group C        some college      standard       none
5  female     group B  associate's degree      standard       none
6  female     group B        some college      standard  completed
7    male     group B        some college  free/reduced       none
8    male     group D         high school  free/reduced  completed
9  female     group B         high school  free/reduced       none

  ParentMaritalStatus PracticeSport IsFirstChild  NrSiblings TransportMeans  \
0             married     regularly          yes         3.0     school_bus
1             married     sometimes          yes         0.0            NaN
```

```
2              single     sometimes          yes         4.0     school_bus
3             married        never           no         1.0            NaN
4             married     sometimes          yes         0.0     school_bus
5             married     regularly          yes         1.0     school_bus
6             widowed        never           no         1.0        private
7             married     sometimes          yes         1.0        private
8              single     sometimes           no         3.0        private
9             married     regularly          yes         NaN        private

  WklyStudyHours  MathScore  ReadingScore  WritingScore
0            < 5         71            71            74
1        5 - 10          69            90            88
2            < 5         87            93            91
3        5 - 10          45            56            42
4        5 - 10          76            78            75
5        5 - 10          73            84            79
6        5 - 10          85            93            89
7          > 10          41            43            39
8          > 10          65            64            68
9            < 5         37            59            50
```

[374]:
```
#Here You Can See That Unnamed Column Is Removed
```

[376]:
```
plt.title("Gender Distribution")
cp=sns.countplot(data=stu ,x="Gender",hue="Gender",palette=["cyan","blue"])
cp.bar_label(cp.containers[0])
cp.bar_label(cp.containers[1])
plt.show()
```



[378]:
```
#Student Gender Bar Graph
```

[380]:
```
#Making The Group Of Mean of MathScore,ReadingScore,WritingScore In ParentEduc␣
↪Column
```

[382]:
```
stu1=stu.groupby("ParentEduc").agg({"MathScore":"mean","ReadingScore":
↪"mean","WritingScore":"mean","WritingScore":"mean"})
stu1
```

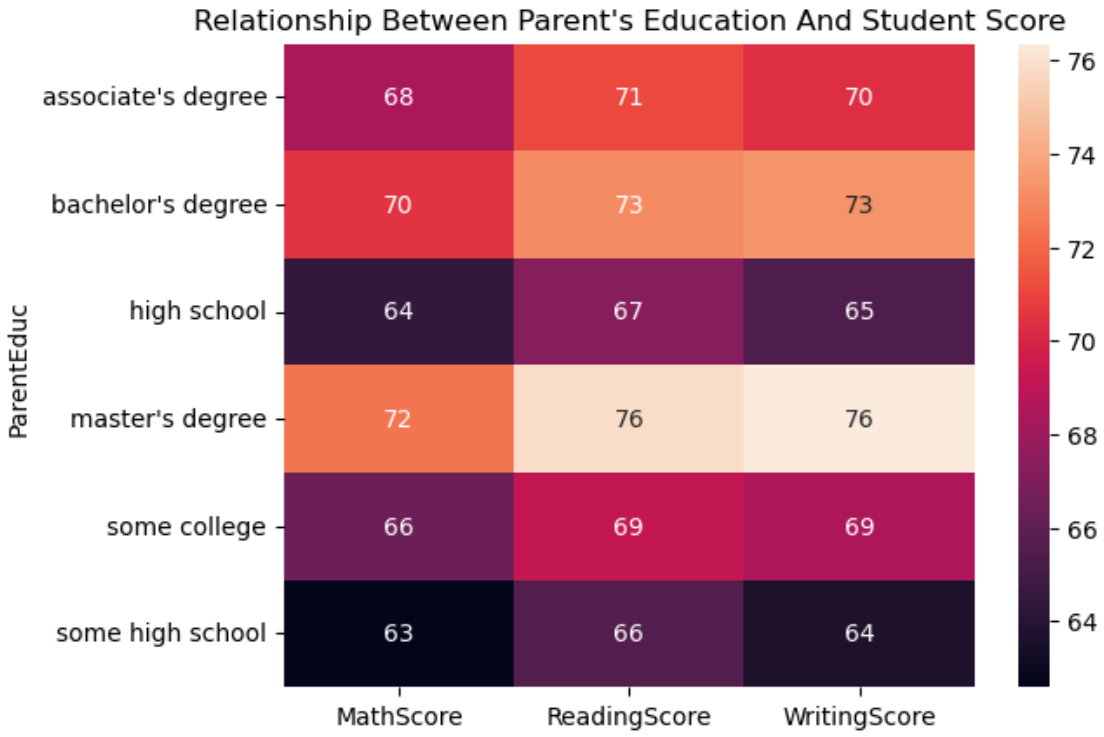
[382]:

ParentEduc	MathScore	ReadingScore	WritingScore
associate's degree	68.365586	71.124324	70.299099
bachelor's degree	70.466627	73.062020	73.331069
high school	64.435731	67.213997	65.421136
master's degree	72.336134	75.832921	76.356896
some college	66.390472	69.179708	68.501432
some high school	62.584013	65.510785	63.632409

[384]:
```
#Here Is The Aggregation
```

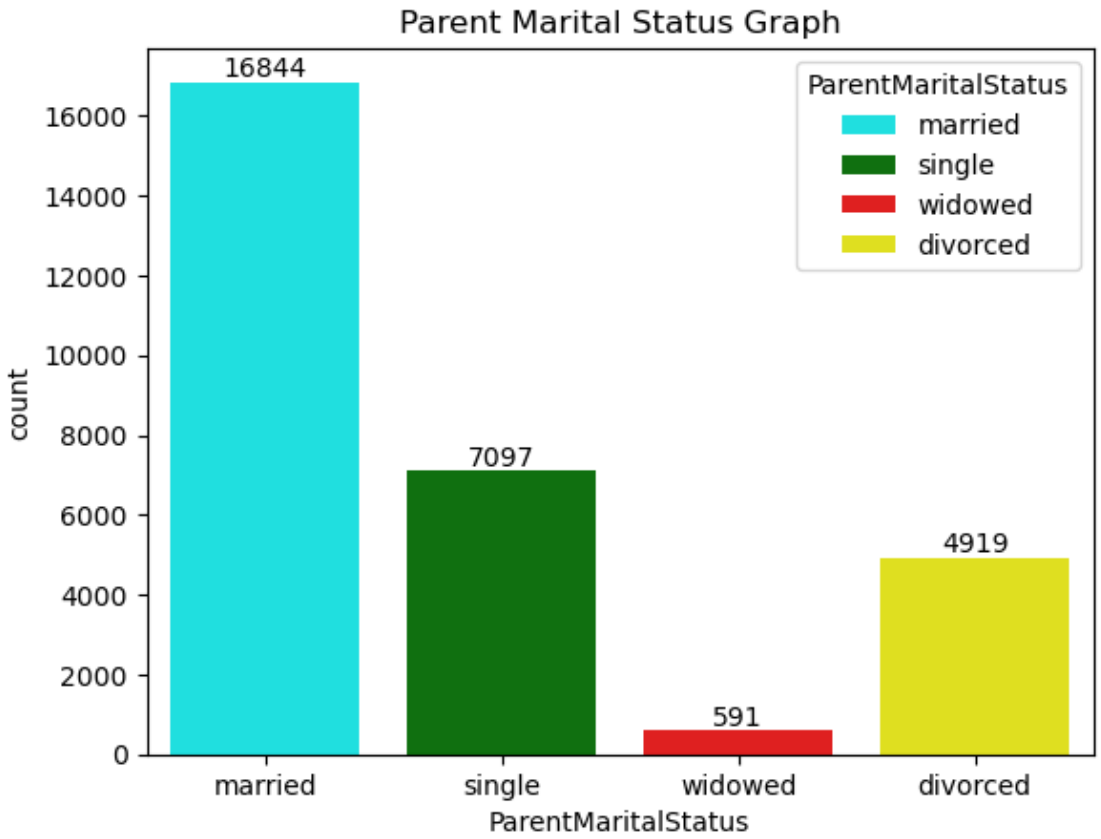
[386]:
```
#Lets Make Heatmap
```

[388]:
```
plt.title("Relationship Between Parent's Education And Student Score")
sns.heatmap(stu1,annot=True)
plt.show()
```



[390]:
```
#By Watching heatmap We Can Say That Education Of Parents Impacting On The␣
↪Child Eduction
```

[392]:
```
#Making The Group Of Mean of MathScore,ReadingScore,WritingScore In␣
↪ParentMaritalStatus Column
plt.title("Parent Marital Status Graph")
ms=sns.
↪countplot(data=stu,x="ParentMaritalStatus",hue="ParentMaritalStatus",palette=["cyan",␣
↪"green", "red", "yellow"])
ms.bar_label(ms.containers[0])
ms.bar_label(ms.containers[1])
ms.bar_label(ms.containers[2])
ms.bar_label(ms.containers[3])
plt.show()
```

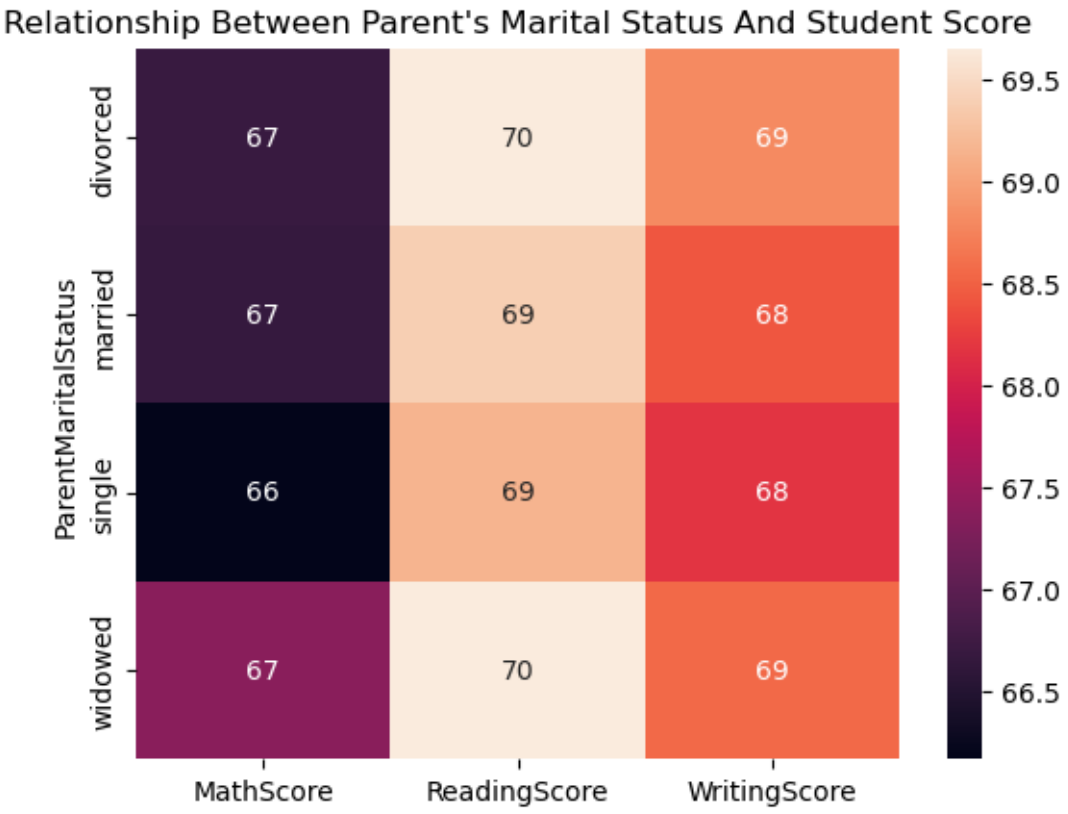


[394]:
```
stu2=stu.groupby("ParentMaritalStatus").agg({"MathScore":"mean","ReadingScore":
  ↪"mean","WritingScore":"mean","WritingScore":"mean"})
stu2
```

[394]:

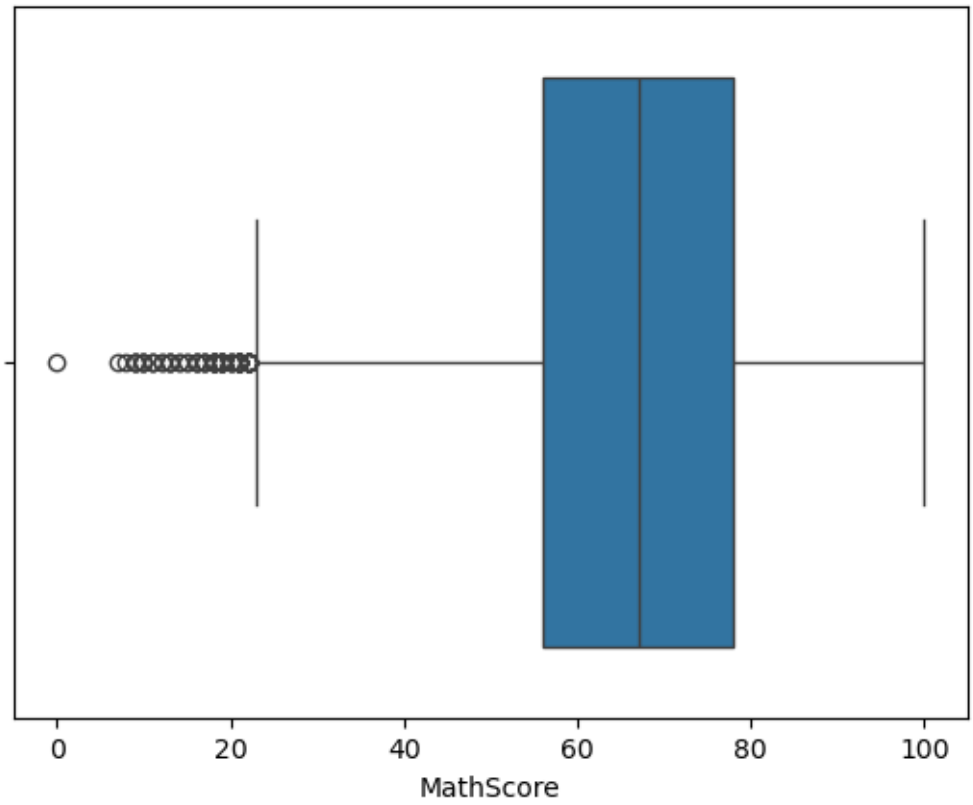
ParentMaritalStatus	MathScore	ReadingScore	WritingScore
divorced	66.691197	69.655011	68.799146
married	66.657326	69.389575	68.420981
single	66.165704	69.157250	68.174440
widowed	67.368866	69.651438	68.563452

[396]:
```
plt.title("Relationship Between Parent's Marital Status And Student Score")
sns.heatmap(stu2,annot=True)
plt.show()
```

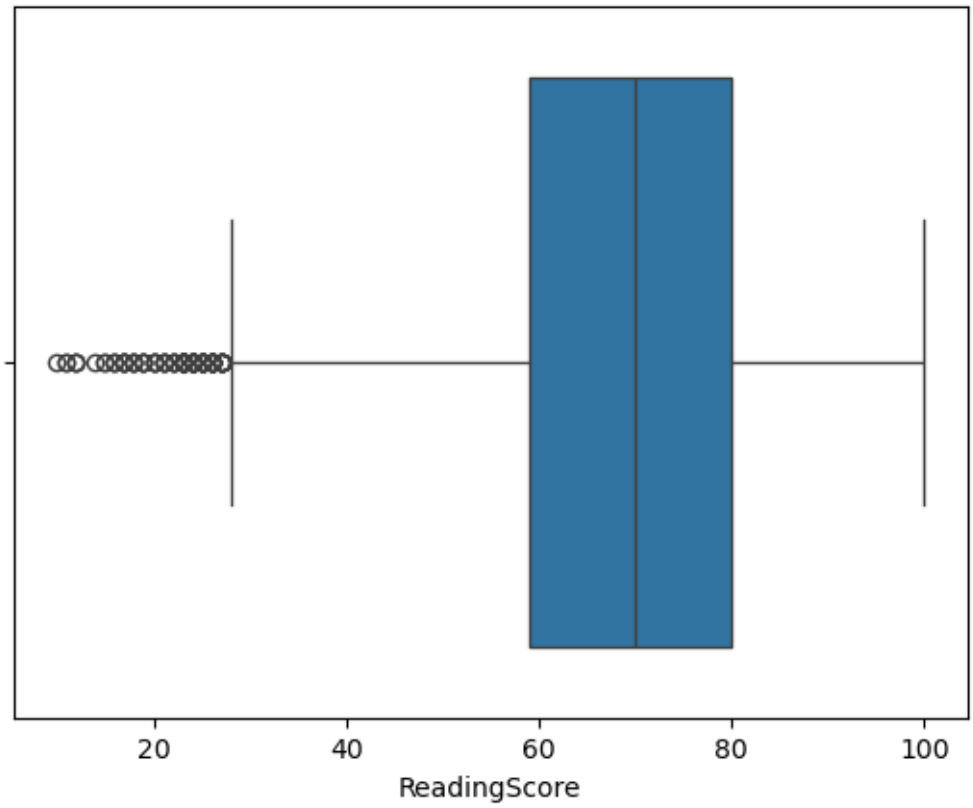


[398]:
```
#By Watching heatmap We Can Say That Education Of MaritalStatusParents␣
↪Impacting On The Child Eduction
```

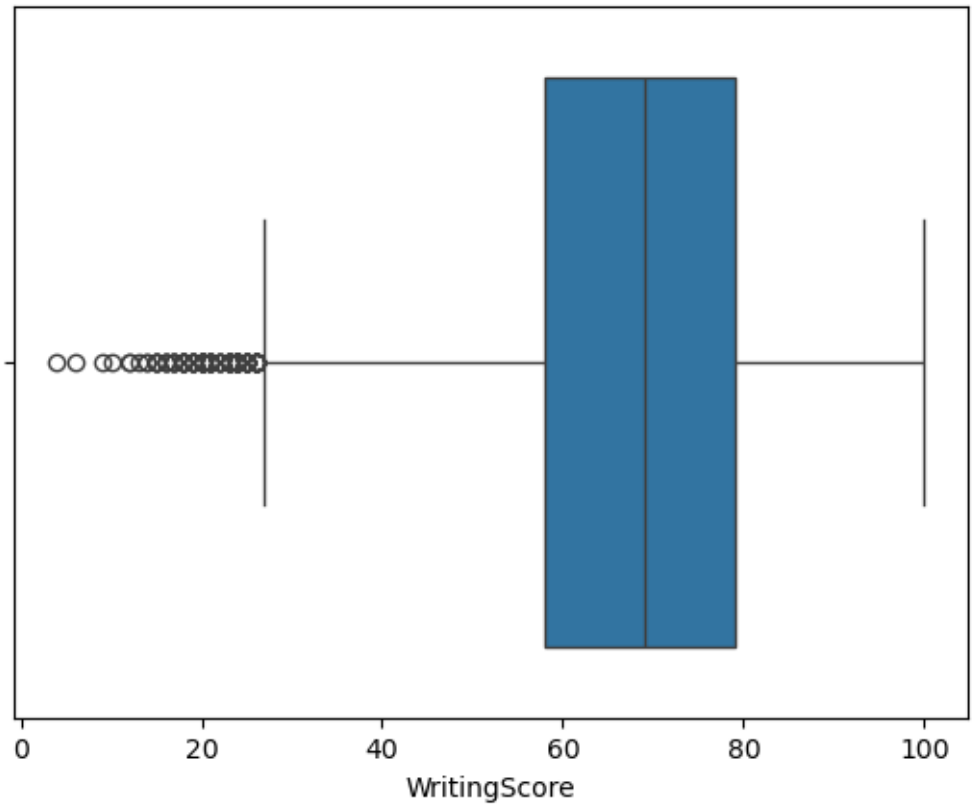
[400]:
```
sns.boxplot(data=stu,x="MathScore")
plt.show()
```



[402]:
```
sns.boxplot(data=stu,x="ReadingScore")
plt.show()
```



[404]:
```
sns.boxplot(data=stu,x="WritingScore")
plt.show()
```



[406]:
```
#Boxplots Of MathScore,ReadingScore And WritingScore
```

[408]:
```
#Now We Have To Check Unique Values Of Ethnic Groups For Distributions
```

[301]:
```
print(stu["EthnicGroup"].unique())
```

```
[nan 'group C' 'group B' 'group A' 'group D' 'group E']
```

[326]:
```
#now to check the students list present only in group A By Iloc Function
grpA=stu.loc[(stu["EthnicGroup"]=="group A")].count()
grpA
```

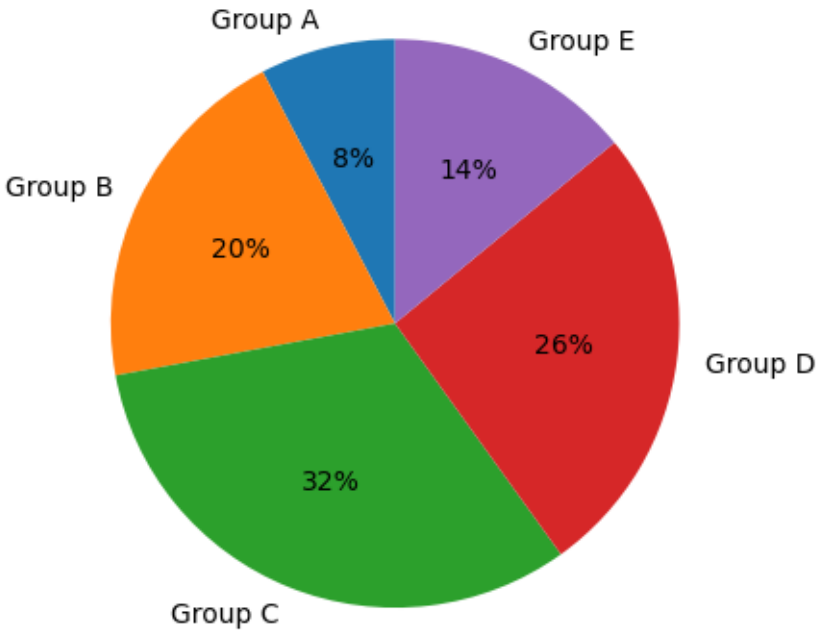
[326]:
```
Gender                 2219
EthnicGroup            2219
ParentEduc             2078
LunchType              2219
TestPrep               2081
ParentMaritalStatus    2121
PracticeSport          2167
IsFirstChild           2168
NrSiblings             2096
```

```
TransportMeans          1999
WklyStudyHours          2146
MathScore               2219
ReadingScore            2219
WritingScore            2219
dtype: int64
```

[321]:
```
#Here Is The Student Info Present In Group A
```

[ ]:
```
#lets Make loc Of All Remaining Groups we only want the "ethnicGroup" in pie␣
 ↪chart so for that we
#merge all the groups in 1 list that makes easy to make a pie chart
```

[358]:
```
grpA=stu.loc[(stu["EthnicGroup"]=="group A")].count()
grpB=stu.loc[(stu["EthnicGroup"]=="group B")].count()
grpC=stu.loc[(stu["EthnicGroup"]=="group C")].count()
grpD=stu.loc[(stu["EthnicGroup"]=="group D")].count()
grpE=stu.loc[(stu["EthnicGroup"]=="group E")].count()

lb=["Group A","Group B","Group C","Group D","Group E"]
mergelist=[grpA["EthnicGroup"],grpB["EthnicGroup"],grpC["EthnicGroup"],grpD["EthnicGroup"],grp
plt.pie(mergelist,labels=lb,autopct="%0.f%%",startangle=90)
plt.show()
```



[ ]:
```
#Here Is The Final Pie Chart Of Ethnic Groups Ob The Basis Of 5 Groups!!!
```