

In [3]: `pip install pandas`

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pandas in c:\users\ritesh kolte\appdata\roaming\python\python312\site-packages (2.2.3)
Requirement already satisfied: numpy>=1.26.0 in c:\users\ritesh kolte\appdata\roaming\python\python312\site-packages (from pandas) (2.2.4)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\ritesh kolte\appdata\roaming\python\python312\site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\ritesh kolte\appdata\roaming\python\python312\site-packages (from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\ritesh kolte\appdata\roaming\python\python312\site-packages (from pandas) (2025.2)
Requirement already satisfied: six>=1.5 in c:\users\ritesh kolte\appdata\roaming\python\python312\site-packages (from python-dateutil>=2.8.2->pandas) (1.17.0)
Note: you may need to restart the kernel to use updated packages.

In [5]: `# 1
import pandas as pd`

In [6]: `# 2,3
df = pd.read_csv("StudentsPerformance.csv")`

In [7]: `print(df)`

```
   gender race/ethnicity parental level of education    lunch  \
0  female      group B      bachelor's degree    standard
1  female      group C      some college    standard
2  female      group B      master's degree    standard
3   male      group A  associate's degree  free/reduced
4   male      group C      some college    standard
..   ...             ...                   ...         ...
995 female      group E      master's degree    standard
996  male      group C      high school  free/reduced
997 female      group C      high school  free/reduced
998 female      group D      some college    standard
999 female      group D      some college  free/reduced

   test preparation course  math score  reading score  writing score
0             none          72          72          NaN
1      completed          69          90          88.0
2             none          90          95          93.0
3             none          47          57          44.0
4             none          76          78          75.0
..             ...             ...             ...         ...
995      completed          88          99          95.0
996             none          62          55          55.0
997      completed          59          71          65.0
998      completed          68          78          77.0
999             none          77          86          86.0

[1000 rows x 8 columns]
```

In [8]: `df.head(5)`

Out[8]:

	gender	race/ethnicity	parental level of education	lunch	test preparation course	math score	reading score	writing score
0	female	group B	bachelor's degree	standard	none	72	72	NaN
1	female	group C	some college	standard	completed	69	90	88.0
2	female	group B	master's degree	standard	none	90	95	93.0
3	male	group A	associate's degree	free/reduced	none	47	57	44.0
4	male	group C	some college	standard	none	76	78	75.0

In [9]: `# 4
df.isnull().sum()`

Out[9]:

gender	0
race/ethnicity	0
parental level of education	0
lunch	0
test preparation course	0
math score	0
reading score	0
writing score	1

dtype: int64

In [10]: `df.describe()`

Out[10]:

	math score	reading score	writing score
count	1000.00000	1000.000000	999.000000
mean	66.08900	69.169000	68.048048
std	15.16308	14.600192	15.202102
min	0.00000	17.000000	10.000000
25%	57.00000	59.000000	57.500000
50%	66.00000	70.000000	69.000000
75%	77.00000	79.000000	79.000000
max	100.00000	100.000000	100.000000

In [11]: `df.shape`

Out[11]: (1000, 8)

In [12]: `# 5
df.dtypes`

Out[12]:

gender	object
race/ethnicity	object
parental level of education	object
lunch	object
test preparation course	object
math score	int64
reading score	int64
writing score	float64

dtype: object

In [13]: `# convert categorical variable into quantative variables 6
df = pd.get_dummies(df, drop_first=True)`

In [14]: `print(df)`

```
   math score  reading score  writing score  gender_male  \
0          72          72          72          NaN    False
1          69          90          88.0          False
2          90          95          93.0          False
3          47          57          44.0           True
4          76          78          75.0           True
..         ...             ...             ...         ...
995         88          99          95.0          False
996         62          55          55.0           True
997         59          71          65.0          False
998         68          78          77.0          False
999         77          86          86.0          False

   race/ethnicity_group B  race/ethnicity_group C  race/ethnicity_group D  \
0                      True                     False                     False
1                      False                     True                     False
2                      True                     False                     False
3                      False                     True                     False
4                      False                     True                     False
..                      ...                     ...                     ...
995                     False                     False                     False
996                     False                     True                     False
997                     False                     True                     False
998                     False                     False                     True
999                     False                     False                     True

   race/ethnicity_group E  parental level of education_bachelor's degree  \
0                      False                                             True
1                      False                                             False
2                      False                                             False
3                      False                                             False
4                      False                                             False
..                      ...                                             ...
995                     True                                             False
996                     False                                             False
997                     False                                             False
998                     False                                             False
999                     False                                             False

   parental level of education_high school  \
0                      False
1                      False
2                      False
3                      False
4                      False
..                      ...
995                     False
996                      True
997                      True
998                     False
999                     False

   parental level of education_master's degree  \
0                      False
1                      False
2                      True
3                      False
4                      False
..                      ...
995                     True
996                     False
997                     False
998                     False
999                     False

   parental level of education_some college  \
0                      False
1                      True
2                      False
3                      False
4                      True
..                      ...
995                     False
996                     False
997                     False
998                      True
999                      True

   parental level of education_some high school  lunch_standard  \
0                      False                                True
1                      False                                True
2                      False                                True
3                      False                                False
4                      False                                True
..                      ...                                ...
995                     False                                True
996                     False                                False
997                     False                                False
998                     False                                True
999                     False                                False

   test preparation course_none
0                      True
1                      False
2                      True
3                      True
4                      True
..                      ...
995                     False
996                      True
997                     False
998                     False
999                      True

[1000 rows x 15 columns]
```

