

```
In [1]: import pandas as pd # Veri işleme ve analiz için Pandas kütüphanesini içe aktarıyoruz.

file_path = 'OZTURK_DS.csv' # Yüklenecek olan CSV dosyasının yolunu tanımlıyoruz.
DATA = pd.read_csv(file_path) # CSV dosyasını Pandas ile bir DataFrame olarak yüklüyoruz
# Bu kod, CSV formatında saklanan veriyi Pandas DataFrame'e yükler.
# Bu işlem veriyi tablo formatında düzenleyerek veri analizi için kullanır.
```

```
In [2]: DATA.describe(include='all') # Veri setinin özet istatistiklerini gösterir.

# Bu kod, veri setindeki tüm sütunlar için özet istatistikleri döndürür.
# Sayısal sütunlar için ortalama, standart sapma, minimum, maksimum gibi değerleri;
# kategorik sütunlar için benzersiz değer sayısı, en sık görülen değer ve frekansı gibi
```

```
Out[2]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities
count	6607.000000	6607.000000	6607	6607	6607
unique	NaN	NaN	3	3	2
top	NaN	NaN	Medium	Medium	Yes
freq	NaN	NaN	3362	3319	3938
mean	19.975329	79.977448	NaN	NaN	NaN
std	5.990594	11.547475	NaN	NaN	NaN
min	1.000000	60.000000	NaN	NaN	NaN
25%	16.000000	70.000000	NaN	NaN	NaN
50%	20.000000	80.000000	NaN	NaN	NaN
75%	24.000000	90.000000	NaN	NaN	NaN
max	44.000000	100.000000	NaN	NaN	NaN

```
In [3]: pd.__version__ # Pandas kütüphanesinin şu anda kullanılan versiyonunu döndürür.
```

```
Out[3]: '2.2.3'
```

```
In [4]: !pip list # Sistemde yüklü olan tüm Python paketlerini ve sürümlerini listeler.
```

Package	Version

absl-py	2.1.0
alabaster	0.7.12
anaconda-client	1.11.0
anaconda-navigator	2.3.1
anaconda-project	0.11.1
annotated-types	0.7.0
anyio	3.5.0
aplus	0.11.0
appdirs	1.4.4
argon2-cffi	21.3.0
argon2-cffi-bindings	21.2.0
arrow	1.2.2
astroid	2.11.7
astropy	5.1
astunparse	1.6.3
atomicwrites	1.4.0
attrs	24.2.0
Automat	20.2.0
autopep8	1.6.0
Babel	2.9.1
backcall	0.2.0
backports.functools-lru-cache	1.6.4
backports.tempfile	1.0
backports.weakref	1.0.post1
bcrypt	3.2.0
beautifulsoup4	4.11.1
binaryornot	0.4.4
bitarray	2.5.1
bkcharts	0.2
black	22.6.0
blake3	0.4.1
bleach	4.1.0
bokeh	2.4.3
boto3	1.24.28
botocore	1.27.28
Bottleneck	1.4.1
bqplot	0.12.43
branca	0.8.0
brotlipy	0.7.0
cachetools	5.5.0
certifi	2024.12.14
cffi	1.15.1
chardet	3.0.4
charset-normalizer	2.0.4
click	8.1.7
cloudpickle	2.0.0
clyent	1.2.2
colorama	0.4.5
colorcet	3.0.0
comtypes	1.1.10
conda	22.9.0
conda-build	3.22.0
conda-content-trust	0.1.3
conda-pack	0.6.0
conda-package-handling	1.9.0
conda-repo-cli	1.0.20
conda-token	0.4.0
conda-verify	3.4.2
constantly	15.1.0
cookiecutter	1.7.3
cryptography	37.0.1
cssselect	1.1.0
cycler	0.11.0
Cython	0.29.32
cytoolz	0.11.0

daal4py	2021.6.0
dacite	1.8.1
dask	2024.8.0
dask-expr	1.1.10
datashader	0.14.1
datashape	0.5.4
debugpy	1.5.1
decorator	5.1.1
defusedxml	0.7.1
diff-match-patch	20200713
dill	0.3.4
distributed	2024.8.0
docutils	0.18.1
entrypoints	0.4
et-xmlfile	1.1.0
fastapi	0.115.2
fastjsonschema	2.16.2
filelock	3.6.0
flake8	4.0.1
Flask	1.1.2
flatbuffers	24.3.25
fonttools	4.25.0
fqdn	1.5.1
frozendict	2.4.6
fsspec	2022.7.1
future	0.18.2
gast	0.6.0
gensim	3.5.0
glob2	0.7
google-pasta	0.2.0
googletrans	4.0.0rc1
greenlet	1.1.1
grpcio	1.67.0
h11	0.9.0
h2	3.2.0
h5py	3.12.1
HeapDict	1.0.1
holoviews	1.15.0
hpack	3.0.0
hstspreload	2024.10.1
html5lib	1.1
htmlmin	0.1.12
httpcore	0.9.1
httptools	0.6.4
httpx	0.13.3
hvplot	0.8.0
hyperframe	5.2.0
hyperlink	21.0.0
idna	2.10
imagecodecs	2021.8.26
ImageHash	4.3.1
imageio	2.19.3
imagesize	1.4.1
importlib_metadata	8.5.0
importlib_resources	6.4.5
incremental	21.3.0
inflection	0.5.1
iniconfig	1.1.1
intake	0.6.5
intervaltree	3.1.0
ipydatawidgets	4.3.5
ipykernel	6.15.2
ipyleaflet	0.19.2
ipyml	0.9.4
ipython	7.31.1
ipython-genutils	0.2.0
ipyvolume	0.6.3

ipyvue	1.11.1
ipyvuetify	1.10.0
ipywebrtc	0.6.0
ipywidgets	7.6.5
isoduration	20.11.0
isort	5.9.3
itemadapter	0.3.0
itemloaders	1.0.4
itsdangerous	2.0.1
jdcal	1.4.1
jedi	0.18.1
jellyfish	0.9.0
Jinja2	3.0.3
jinja2-time	0.2.0
jmespath	0.10.0
joblib	1.1.0
json5	0.9.6
jsonpointer	3.0.0
jsonschema	4.23.0
jsonschema-specifications	2024.10.1
jupyter	1.0.0
jupyter_client	8.6.3
jupyter-console	6.4.3
jupyter_core	5.7.2
jupyter-events	0.10.0
jupyter-leaflet	0.19.2
jupyter_server	2.14.2
jupyter_server_terminals	0.5.3
jupyterlab	3.4.4
jupyterlab-pygments	0.1.2
jupyterlab-server	2.10.3
jupyterlab-widgets	1.0.0
keras	3.6.0
keyring	23.4.0
kiwisolver	1.4.2
lazy-object-proxy	1.6.0
libarchive-c	2.9
libclang	18.1.1
llvmlite	0.43.0
loket	1.0.0
lxml	4.9.1
lz4	4.3.3
Markdown	3.3.4
markdown-it-py	3.0.0
MarkupSafe	2.0.1
matplotlib	3.5.2
matplotlib-inline	0.1.6
mccabe	0.6.1
mdurl	0.1.2
menuinst	1.4.19
mistune	0.8.4
mkl-fft	1.3.1
mkl-random	1.2.2
mkl-service	2.4.0
ml-dtypes	0.4.1
mock	4.0.3
mpmath	1.2.1
msgpack	1.0.3
multimethod	1.12
multiplatformdispatch	0.6.0
multitasking	0.0.11
munkres	1.1.4
mypy-extensions	0.4.3
namex	0.0.8
navigator-updater	0.3.0
nbclassic	0.3.5
nbclient	0.5.13

nbconvert	6.4.4
nbformat	5.5.0
nest-asyncio	1.5.5
networkx	2.8.4
nltk	3.7
nose	1.3.7
notebook	6.4.12
numba	0.60.0
numexpr	2.10.1
numpy	1.24.4
numpydoc	1.4.0
olefile	0.46
openpyxl	3.0.10
opt_einsum	3.4.0
optree	0.13.0
overrides	7.7.0
packaging	24.2
pandas	2.2.3
pandocfilters	1.5.0
panel	0.13.1
param	1.12.0
paramiko	2.8.1
parsel	1.6.0
parso	0.8.3
partd	1.4.2
pathlib	1.0.1
pathspec	0.9.0
patsy	0.5.2
peewee	3.17.7
pep8	1.7.1
pexpect	4.8.0
phik	0.12.4
pickleshare	0.7.5
pillow	11.0.0
pip	22.2.2
pkginfo	1.8.2
platformdirs	2.5.2
plotly	5.9.0
pluggy	1.0.0
poyo	0.5.0
print_versions	0.1.0
progressbar2	4.5.0
prometheus-client	0.14.1
prompt-toolkit	3.0.20
Protego	0.1.16
protobuf	4.25.5
psutil	5.9.0
ptyprocess	0.7.0
py	1.11.0
pyarrow	17.0.0
pyarrow-hotfix	0.6
pyasn1	0.4.8
pyasn1-modules	0.2.8
pycodestyle	2.8.0
pycosat	0.6.3
pycparser	2.21
pyct	0.4.8
pycurl	7.45.1
pydantic	2.9.2
pydantic_core	2.23.4
PyDispatcher	2.0.5
pydocstyle	6.1.1
pyee	11.1.1
pyerfa	2.0.0
pyflakes	2.4.0
Pygments	2.18.0
PyHamcrest	2.0.2

PyJWT	2.4.0
pylint	2.14.5
pyls-spyder	0.4.0
PyNaCl	1.5.0
pyodbc	4.0.34
pyOpenSSL	22.0.0
pyparsing	3.0.9
pyppeteer	2.0.0
pyrsistent	0.18.0
PySocks	1.7.1
pytest	7.1.2
python-dateutil	2.8.2
python-dotenv	1.0.1
python-json-logger	3.2.0
python-lsp-black	1.0.0
python-lsp-jsonrpc	1.0.0
python-lsp-server	1.3.3
python-slugify	5.0.2
python-snappy	0.6.0
python-utils	3.9.0
pythreejs	2.4.2
pytz	2024.2
pyviz-comms	2.0.2
PyWavelets	1.3.0
pywin32	302
pywin32-ctypes	0.2.0
pywinpty	2.0.14
PyYAML	6.0
pymq	26.2.0
QDarkStyle	3.0.2
qstylizer	0.1.10
QtAwesome	1.0.3
qtconsole	5.2.2
QtPy	2.2.0
queuelib	1.5.0
referencing	0.35.1
regex	2022.7.9
requests	2.32.3
requests-file	1.5.1
rfc3339-validator	0.1.4
rfc3986	1.5.0
rfc3986-validator	0.1.1
rich	13.9.2
rope	0.22.0
rpds-py	0.22.3
Rtree	0.9.7
ruamel-yaml-cond	0.15.100
s3transfer	0.6.0
scikit-image	0.19.2
scikit-learn	1.0.2
scikit-learn-intelx	2021.20221004.171935
scipy	1.12.0
Scrapy	2.6.2
seaborn	0.11.2
Send2Trash	1.8.3
service-identity	18.1.0
setuptools	63.4.1
sip	4.19.13
six	1.16.0
smart-open	5.2.1
sniffio	1.2.0
snowballstemmer	2.2.0
sortedcollections	2.1.0
sortedcontainers	2.4.0
soupsieve	2.3.1
Sphinx	5.0.2
sphinxcontrib-applehelp	1.0.2

sphinxcontrib-devhelp	1.0.2
sphinxcontrib-htmlhelp	2.0.0
sphinxcontrib-jsmath	1.0.1
sphinxcontrib-qthelp	1.0.3
sphinxcontrib-serializinghtml	1.1.5
spyder	5.2.2
spyder-kernels	2.2.1
SQLAlchemy	1.4.39
starlette	0.40.0
statsmodels	0.13.2
sweetviz	2.3.1
sympy	1.10.1
tables	3.6.1
tabulate	0.8.10
TBB	0.2
tblib	1.7.0
tenacity	8.0.1
tensorboard	2.17.1
tensorboard-data-server	0.7.2
tensorflow	2.17.0
tensorflow-intel	2.17.0
tensorflow-io-gcs-filesystem	0.31.0
termcolor	2.5.0
terminado	0.13.1
testpath	0.6.0
text-unidecode	1.3
textdistance	4.2.1
threadpoolctl	2.2.0
three-merge	0.1.1
tifffile	2021.7.2
tinycss	0.4
tlextract	3.2.0
toml	0.10.2
tomli	2.0.1
tomlkit	0.11.1
toolz	0.11.2
tornado	6.4.2
tqdm	4.64.1
traitlets	5.14.3
traitletypes	0.2.1
Twisted	22.2.0
twisted-iocpsupport	1.0.2
typeguard	4.3.0
typing_extensions	4.12.2
tzdata	2024.2
ujson	5.4.0
Unidecode	1.2.0
uri-template	1.3.0
urllib3	1.26.11
uvicorn	0.32.0
vaex	4.17.0
vaex-astro	0.9.3
vaex-core	4.17.1
vaex-hdf5	0.14.1
vaex-jupyter	0.8.2
vaex-ml	0.18.3
vaex-server	0.9.0
vaex-viz	0.5.4
visions	0.7.6
w3lib	1.21.0
watchdog	2.1.6
watchfiles	0.24.0
wcwidth	0.2.5
webcolors	24.11.1
webencodings	0.5.1
websocket-client	1.8.0
websockets	10.4

```
Werkzeug                2.0.3
wheel                   0.37.1
widgetsnbextension      3.5.2
win-inet-pton           1.1.0
win-unicode-console     0.5
wincertstore            0.2
wordcloud               1.9.3
wrapt                   1.14.1
xarray                  0.20.1
xlrd                    2.0.1
XlsxWriter              3.2.0
xlwings                 0.27.15
xyzservices             2024.9.0
yapf                    0.31.0
ydata-profiling         4.11.0
yfinance                0.2.44
zict                    3.0.0
zipp                    3.20.2
zope.interface          5.4.0
```

```
In [5]: import sys # Python sistem ile ilgili bilgileri almak için sys modülünü içe aktarıyoruz
print("Python versiyonu:", sys.version) # Python'un sistemde yüklü olan Python'un sürümü

Python versiyonu: 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
```

```
In [6]: DATA.head() # Veri setinin ilk 5 satırını görüntüler. Başka bir sayı verilmediği sürece
```

```
Out[6]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	Sleep
0	23	84	Low	High		No
1	19	64	Low	Medium		No
2	24	98	Medium	Medium		Yes
3	29	89	Low	Medium		Yes
4	19	92	Medium	Medium		Yes

```
In [7]: DATA.tail() # Veri setinin son 5 satırını görüntüler. Varsayılan olarak 5 satır döner,
```

```
Out[7]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
6602	25	69	High	Medium		No
6603	23	76	High	Medium		No
6604	20	90	Medium	Low		Yes
6605	10	86	High	High		Yes
6606	15	67	Medium	Low		Yes

```
In [8]: DATA # Veri setindeki tüm satır ve sütunları döndürerek veri setinin tamamını görüntüle
```


Out[8]:

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
0	23	84	Low	High	No	
1	19	64	Low	Medium	No	
2	24	98	Medium	Medium	Yes	
3	29	89	Low	Medium	Yes	
4	19	92	Medium	Medium	Yes	
...
6602	25	69	High	Medium	No	
6603	23	76	High	Medium	No	
6604	20	90	Medium	Low	Yes	
6605	10	86	High	High	Yes	
6606	15	67	Medium	Low	Yes	

6607 rows × 20 columns

In [9]: DATA.select_dtypes(include='number').head() # Sayısal veri türündeki sütunları seçer ve

Out[9]:

	Hours_Studied	Attendance	Sleep_Hours	Previous_Scores	Tutoring_Sessions	Physical_Activity	Exam_Score
0	23	84	7	73	0	3	
1	19	64	8	59	2	4	
2	24	98	7	91	2	4	
3	29	89	8	98	1	4	
4	19	92	6	65	3	4	

```
In [10]: # Sayısal olmayan sütunların isimlerini alıyoruz.
columns = DATA.select_dtypes(exclude='number').columns

# Her sütun için değerlerin sıklığını hesaplıyoruz.
frequency = {col: DATA[col].value_counts() for col in columns}

# Her sütunun ismini ve değer dağılımını yazdırıyoruz.
for column, distribution in frequency.items():
    print(f"--- {column} ---") # Sütun ismini başlık olarak yazdırıyoruz.
    print(distribution) # Sütun içindeki her bir değer sıklığını gösteriyoruz.
    print("\n") # Daha okunabilir bir çıktı için araya boşluk bırakıyoruz.

# Bu kod, veri setindeki sütunlar için her bir değer kaç kez tekrarlandığını (frekans)
# Böylece, sütunların veri dağılımını analiz etmek kolaylaşır.
```

```
--- Parental_Involvement ---
Parental_Involvement
Medium    3362
High      1908
Low       1337
Name: count, dtype: int64
```

```
--- Access_to_Resources ---
Access_to_Resources
Medium    3319
High      1975
Low       1313
Name: count, dtype: int64
```

```
--- Extracurricular_Activities ---
Extracurricular_Activities
Yes       3938
No        2669
Name: count, dtype: int64
```

```
--- Motivation_Level ---
Motivation_Level
Medium    3351
Low       1937
High      1319
Name: count, dtype: int64
```

```
--- Internet_Access ---
Internet_Access
Yes       6108
No        499
Name: count, dtype: int64
```

```
--- Family_Income ---
Family_Income
Low       2672
Medium    2666
High      1269
Name: count, dtype: int64
```

```
--- Teacher_Quality ---
Teacher_Quality
Medium    3925
High      1947
Low       657
Name: count, dtype: int64
```

```
--- School_Type ---
School_Type
Public    4598
Private   2009
Name: count, dtype: int64
```

```
--- Peer_Influence ---
Peer_Influence
Positive   2638
Neutral    2592
Negative   1377
Name: count, dtype: int64
```

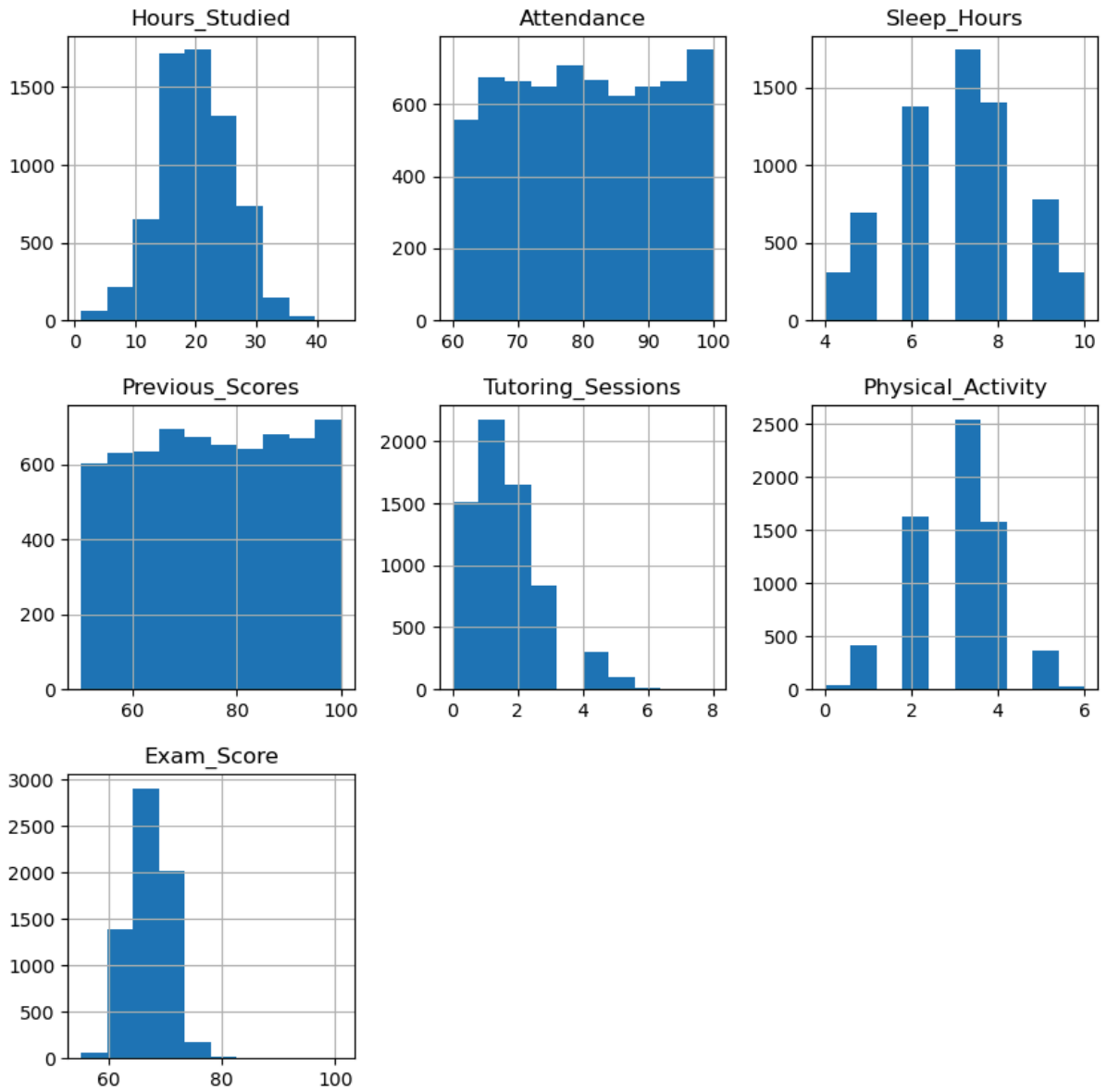
```
--- Learning_Disabilities ---  
Learning_Disabilities  
No      5912  
Yes      695  
Name: count, dtype: int64
```

```
--- Parental_Education_Level ---  
Parental_Education_Level  
High School      3223  
College          1989  
Postgraduate     1305  
Name: count, dtype: int64
```

```
--- Distance_from_Home ---  
Distance_from_Home  
Near      3884  
Moderate  1998  
Far       658  
Name: count, dtype: int64
```

```
--- Gender ---  
Gender  
Male      3814  
Female    2793  
Name: count, dtype: int64
```

```
In [11]: import matplotlib.pyplot as plt # Veri setindeki tüm sayısal sütunların dağılımını görs  
  
# Veri setindeki sayısal sütunlar için histogramlar oluşturuyoruz.  
DATA.hist(figsize=(10, 10)) # Grafik boyutlarını 10x10 olarak ayarlıyoruz.  
plt.show() # Grafiklerin ekranda görünmesini sağlıyoruz.
```



```
In [12]: DATA.size # Veri setindeki toplam eleman sayısını döndürür.
```

```
Out[12]: 132140
```

```
In [13]: DATA.shape[1] # Veri setindeki sütun sayısını döndürür.
```

```
Out[13]: 20
```

```
In [14]: DATA.columns # Veri setindeki tüm sütunların adlarını döndürür.
```

```
Out[14]: Index(['Hours_Studied', 'Attendance', 'Parental_Involvement',
        'Access_to_Resources', 'Extracurricular_Activities', 'Sleep_Hours',
        'Previous_Scores', 'Motivation_Level', 'Internet_Access',
        'Tutoring_Sessions', 'Family_Income', 'Teacher_Quality', 'School_Type',
        'Peer_Influence', 'Physical_Activity', 'Learning_Disabilities',
        'Parental_Education_Level', 'Distance_from_Home', 'Gender',
        'Exam_Score'],
        dtype='object')
```

```
In [15]: # Eksik değerlerin her sütunda sayısını hesaplıyoruz.
missing_values = DATA.isnull().sum()
```

```
# Sadece eksik değere sahip sütunları filtreliyoruz.
missing_values = missing_values[missing_values > 0]
```

```
# Eksik değer içeren sütunları ve eksik değer sayılarını görüntülüyoruz.
missing_values
```

```
Out[15]: Teacher_Quality      78
Parental_Education_Level    90
Distance_from_Home          67
dtype: int64
```

```
In [16]: # Eksik (NaN) değerlerin her sütundaki sayısını hesaplıyoruz.
missing_values = DATA.isnull().sum()

# Eksik değerlerin bulunduğu her sütunun isimlerini ve eksik değer sayılarını görüntölüy
missing_values
```

```
Out[16]: Hours_Studied      0
Attendance                 0
Parental_Involvement       0
Access_to_Resources        0
Extracurricular_Activities 0
Sleep_Hours                0
Previous_Scores            0
Motivation_Level           0
Internet_Access            0
Tutoring_Sessions          0
Family_Income              0
Teacher_Quality            78
School_Type                0
Peer_Influence             0
Physical_Activity          0
Learning_Disabilities       0
Parental_Education_Level   90
Distance_from_Home         67
Gender                     0
Exam_Score                 0
dtype: int64
```

```
In [17]: # Veri setindeki tüm eksik (NaN) değerlerin toplamını hesaplıyoruz.
total_missing_values = DATA.isnull().sum().sum()

# Toplam eksik veri sayısını ekrana yazdırıyoruz.
print("Bütün sütunlardaki toplam eksik veri sayısı:", total_missing_values)

Bütün sütunlardaki toplam eksik veri sayısı: 235
```

```
In [18]: # Veri setindeki eksik (NaN) değerleri sıfır ile dolduruyoruz.
data_filled = DATA.fillna(0)

# Eksik değerlerin doldurulduğu yeni veri setini görüntölüyoruz.
data_filled
```

Out[18]:

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
0	23	84	Low	High	No	
1	19	64	Low	Medium	No	
2	24	98	Medium	Medium	Yes	
3	29	89	Low	Medium	Yes	
4	19	92	Medium	Medium	Yes	
...
6602	25	69	High	Medium	No	
6603	23	76	High	Medium	No	
6604	20	90	Medium	Low	Yes	
6605	10	86	High	High	Yes	
6606	15	67	Medium	Low	Yes	

6607 rows × 20 columns

In [19]:

```
# Veri setindeki eksik (NaN) değer içeren satırları kaldırıyoruz.
data_dropped = DATA.dropna()

# Eksik değerlerden arındırılmış yeni veri setini görüntülüyoruz.
data_dropped
```

Out[19]:

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
0	23	84	Low	High	No	
1	19	64	Low	Medium	No	
2	24	98	Medium	Medium	Yes	
3	29	89	Low	Medium	Yes	
4	19	92	Medium	Medium	Yes	
...
6602	25	69	High	Medium	No	
6603	23	76	High	Medium	No	
6604	20	90	Medium	Low	Yes	
6605	10	86	High	High	Yes	
6606	15	67	Medium	Low	Yes	

6378 rows × 20 columns

In [20]:

```
import pandas as pd # Veri analizi için Pandas kütüphanesini içe aktarıyoruz.

# Veri setindeki tekrarlı (aynı) satırların sayısını hesaplıyoruz.
duplicate_count = DATA.duplicated().sum()

# Toplam tekrarlı veri sayısını ekrana yazdırıyoruz.
print("Tekrarlı verilerin sayısı:", duplicate_count)
```

Tekrarlı verilerin sayısı: 0

```
In [21]: print("Belirli sayıda sütun gösterimi (max_cols=5):")
DATA.info(max_cols=5) # max_cols parametresi, en fazla kaç sütunun gösterileceğini belirler.
print("\n") # düzen için boş bir satır ekliyoruz.

print("Bellek kullanımı dahil info() (memory_usage='deep'):")
DATA.info(memory_usage='deep') # memory_usage='deep', veri setinin bellek kullanımını gösterir.
```

```
Belirli sayıda sütun gösterimi (max_cols=5):
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6607 entries, 0 to 6606
Columns: 20 entries, Hours_Studied to Exam_Score
dtypes: int64(7), object(13)
memory usage: 1.0+ MB
```

```
Bellek kullanımı dahil info() (memory_usage='deep'):
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6607 entries, 0 to 6606
Data columns (total 20 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   Hours_Studied                        6607 non-null   int64
1   Attendance                          6607 non-null   int64
2   Parental_Involvement                6607 non-null   object
3   Access_to_Resources                 6607 non-null   object
4   Extracurricular_Activities          6607 non-null   object
5   Sleep_Hours                        6607 non-null   int64
6   Previous_Scores                     6607 non-null   int64
7   Motivation_Level                    6607 non-null   object
8   Internet_Access                     6607 non-null   object
9   Tutoring_Sessions                   6607 non-null   int64
10  Family_Income                       6607 non-null   object
11  Teacher_Quality                     6529 non-null   object
12  School_Type                         6607 non-null   object
13  Peer_Influence                      6607 non-null   object
14  Physical_Activity                   6607 non-null   int64
15  Learning_Disabilities               6607 non-null   object
16  Parental_Education_Level            6517 non-null   object
17  Distance_from_Home                  6540 non-null   object
18  Gender                              6607 non-null   object
19  Exam_Score                          6607 non-null   int64
dtypes: int64(7), object(13)
memory usage: 5.4 MB
```

```
In [22]: # Veri setini yeni bir CSV dosyasına kaydediyoruz.
DATA.to_csv('OZTURK_DS_copy.csv')

# Orijinal dosya ile oluşturulan dosyanın aynı olup olmadığını karşılaştırıyoruz.
import filecmp # Dosya karşılaştırması için filecmp modülünü içe aktarıyoruz.
filecmp.cmp(file_path, 'OZTURK_DS.csv') # Dosyaların içeriklerini karşılaştırır.
```

```
Out[22]: True
```

```
In [23]: DATA['Exam_Score'].dtype # 'Exam_Score' sütununun veri tipini döndürür.
```

```
Out[23]: dtype('int64')
```

```
In [24]: type(DATA['Exam_Score']) # 'Exam_Score' sütununun veri yapısını döndürür. Pandas Series
```

```
Out[24]: pandas.core.series.Series
```

```
In [25]: DATA.loc[0] # Veri setindeki 0. indeksli satıra erişmek için kullanılır.
```

```
Out[25]: Hours_Studied      23
Attendance      84
Parental_Involvement Low
Access_to_Resources High
Extracurricular_Activities No
Sleep_Hours      7
Previous_Scores  73
Motivation_Level Low
Internet_Access  Yes
Tutoring_Sessions 0
Family_Income    Low
Teacher_Quality  Medium
School_Type      Public
Peer_Influence   Positive
Physical_Activity 3
Learning_Disabilities No
Parental_Education_Level High School
Distance_from_Home Near
Gender           Male
Exam_Score       67
Name: 0, dtype: object
```

```
In [26]: DATA.iloc[0] # Veri setindeki 0. indeksli satırı döndürür. iloc fonksiyonu, yalnızca in
```

```
Out[26]: Hours_Studied      23
Attendance      84
Parental_Involvement Low
Access_to_Resources High
Extracurricular_Activities No
Sleep_Hours      7
Previous_Scores  73
Motivation_Level Low
Internet_Access  Yes
Tutoring_Sessions 0
Family_Income    Low
Teacher_Quality  Medium
School_Type      Public
Peer_Influence   Positive
Physical_Activity 3
Learning_Disabilities No
Parental_Education_Level High School
Distance_from_Home Near
Gender           Male
Exam_Score       67
Name: 0, dtype: object
```

```
In [27]: DATA.loc[0, 'Exam_Score'] # Veri setindeki 0. indeksli satırın 'Exam_Score' sütunundaki
```

```
Out[27]: 67
```

```
In [28]: DATA.loc[0:5, ['Exam_Score', 'Hours_Studied']]
# 0'dan 5'e kadar olan satırların ('Exam_Score' ve 'Hours_Studied') sütunlarındaki değer
```

```
Out[28]:
```

	Exam_Score	Hours_Studied
0	67	23
1	61	19
2	74	24
3	71	29
4	70	19
5	71	19


```
In [29]: DATA[DATA['Exam_Score'] > 70]
# 'Exam_Score' sütunundaki değerleri 70'ten büyük olan satırları filtreler ve bu satırları
```

```
Out[29]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
2	24	98	Medium	Medium	Yes	
3	29	89	Low	Medium	Yes	
5	19	88	Medium	Medium	Yes	
9	23	98	Medium	Medium	Yes	
11	17	97	Medium	High	Yes	
...
6565	24	89	Medium	Low	No	
6566	29	96	High	Medium	No	
6572	33	95	Low	Low	Yes	
6592	29	100	Medium	Low	Yes	
6595	28	78	Medium	High	No	

1083 rows × 20 columns

```
In [30]: data_reset = DATA.reset_index(drop=True)
# Mevcut veri setindeki indeksleri sıfırlar ve 0'dan başlayarak yeni indeksler atar.

data_reset
```

```
Out[30]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
0	23	84	Low	High	No	
1	19	64	Low	Medium	No	
2	24	98	Medium	Medium	Yes	
3	29	89	Low	Medium	Yes	
4	19	92	Medium	Medium	Yes	
...
6602	25	69	High	Medium	No	
6603	23	76	High	Medium	No	
6604	20	90	Medium	Low	Yes	
6605	10	86	High	High	Yes	
6606	15	67	Medium	Low	Yes	

6607 rows × 20 columns

```
In [31]: DATA['New_Column'] = DATA['Exam_Score'] * 1.1
# 'Exam_Score' sütunundaki değerleri %10 artırarak yeni bir sütun oluşturur ve veri seti
```

```
In [32]: data_temp = DATA.drop(columns=['New_Column'])
# 'New_Column' adlı sütunu veri setinden kaldırarak yeni bir DataFrame oluşturur.

data_temp
```

```
Out[32]:      Hours_Studied  Attendance  Parental_Involvement  Access_to_Resources  Extracurricular_Activities  S
```

0	23	84	Low	High	No
1	19	64	Low	Medium	No
2	24	98	Medium	Medium	Yes
3	29	89	Low	Medium	Yes
4	19	92	Medium	Medium	Yes
...
6602	25	69	High	Medium	No
6603	23	76	High	Medium	No
6604	20	90	Medium	Low	Yes
6605	10	86	High	High	Yes
6606	15	67	Medium	Low	Yes

6607 rows × 20 columns

```
In [33]: DATA.drop(columns=['New_Column'], inplace=True)
          # 'New_Column' adlı sütunu veri setinden kalıcı olarak siler.

          DATA
```

```
Out[33]:      Hours_Studied  Attendance  Parental_Involvement  Access_to_Resources  Extracurricular_Activities  S
```

0	23	84	Low	High	No
1	19	64	Low	Medium	No
2	24	98	Medium	Medium	Yes
3	29	89	Low	Medium	Yes
4	19	92	Medium	Medium	Yes
...
6602	25	69	High	Medium	No
6603	23	76	High	Medium	No
6604	20	90	Medium	Low	Yes
6605	10	86	High	High	Yes
6606	15	67	Medium	Low	Yes

6607 rows × 20 columns

```
In [34]: DATA.info()  
# Veri seti hakkında genel bilgi sağlar. Veri setindeki sütunların isimlerini, veri tipl
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6607 entries, 0 to 6606
Data columns (total 20 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   Hours_Studied                        6607 non-null   int64
1   Attendance                          6607 non-null   int64
2   Parental_Involvement                6607 non-null   object
3   Access_to_Resources                 6607 non-null   object
4   Extracurricular_Activities          6607 non-null   object
5   Sleep_Hours                        6607 non-null   int64
6   Previous_Scores                     6607 non-null   int64
7   Motivation_Level                    6607 non-null   object
8   Internet_Access                     6607 non-null   object
9   Tutoring_Sessions                   6607 non-null   int64
10  Family_Income                       6607 non-null   object
11  Teacher_Quality                     6529 non-null   object
12  School_Type                         6607 non-null   object
13  Peer_Influence                      6607 non-null   object
14  Physical_Activity                   6607 non-null   int64
15  Learning_Disabilities               6607 non-null   object
16  Parental_Education_Level            6517 non-null   object
17  Distance_from_Home                  6540 non-null   object
18  Gender                              6607 non-null   object
19  Exam_Score                          6607 non-null   int64
dtypes: int64(7), object(13)
memory usage: 1.0+ MB
```

```
In [35]: import sys # Sistemle ilgili bilgileri almak için sys modülünü içe aktarıyoruz.
sys.version # Kullanılan Python sürümünü döndürür.
```

```
Out[35]: '3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]'
```

```
In [36]: pd.__version__ # Yüklü olan Pandas kütüphanesinin sürümünü döndürür.
```

```
Out[36]: '2.2.3'
```

```
In [37]: import matplotlib # Veri görselleştirme için kullanılan Matplotlib kütüphanesini içe aktarıyoruz.
matplotlib.__version__ # Yüklü olan Matplotlib kütüphanesinin sürümünü döndürür.
```

```
Out[37]: '3.5.2'
```

```
In [38]: DATA.describe()
# Veri setindeki sayısal sütunların özet istatistiklerini döndürür.

# Bu kod, veri setindeki sayısal sütunlar için aşağıdaki istatistikleri sağlar:
# - count: Sütundaki toplam veri sayısı
# - mean: Ortalama
# - std: Standart sapma
# - min: Minimum değer
# - 25%, 50%, 75%: Çeyrek dilimler (yüzdelik dilimler)
# - max: Maksimum değer
# Bu özet, veri setinin dağılımını anlamak ve hızlı analiz yapmak için kullanılır.
```

	Hours_Studied	Attendance	Sleep_Hours	Previous_Scores	Tutoring_Sessions	Physical_Activity	Exam_Score
count	6607.000000	6607.000000	6607.000000	6607.000000	6607.000000	6607.000000	6607.000000
mean	19.975329	79.977448	7.02906	75.070531	1.493719	2.967610	67.228894
std	5.990594	11.547475	1.46812	14.399784	1.230570	1.031231	1.714714
min	1.000000	60.000000	4.00000	50.000000	0.000000	0.000000	50.000000
25%	16.000000	70.000000	6.00000	63.000000	1.000000	2.000000	63.000000
50%	20.000000	80.000000	7.00000	75.000000	1.000000	3.000000	67.000000
75%	24.000000	90.000000	8.00000	88.000000	2.000000	4.000000	70.000000
max	44.000000	100.000000	10.00000	100.000000	8.000000	6.000000	100.000000

```
In [39]: pd.pivot_table(DATA, values='Exam_Score', index='Gender')
# 'Exam_Score' değerlerinin cinsiyete ('Gender') göre ortalamasını hesaplayan pivot tablo
```

	Exam_Score
Gender	
Female	67.244898
Male	67.228894

```
In [40]: pd.pivot_table(DATA, values='Exam_Score', index=['Gender', 'School_Type'])
# Exam_Score değerlerinin cinsiyet (Gender) ve okul türüne (School_Type) göre ortalaması
# Çıktı, Gender ve School_Type kombinasyonları için Exam_Score ortalamalarını içerir.
```

		Exam_Score
Gender	School_Type	
Female	Private	67.300119
	Public	67.221026
Male	Private	67.278731
	Public	67.206949

```
In [41]: import numpy as np # NumPy kütüphanesi, sayısal hesaplamalar için içe aktarılıyor.

pd.pivot_table(DATA, values='Exam_Score', index=['Gender'], aggfunc=np.sum)
# Exam_Score değerlerinin cinsiyete (Gender) göre toplamını hesaplayan pivot tablo oluşturdu
# Çıktı, her cinsiyet için Exam_Score değerlerinin toplamını gösterir.
```

C:\Users\sedat.ozturk\AppData\Local\Temp\ipykernel_35272\1681025916.py:3: FutureWarning: The provided callable <function sum at 0x000001DDC7887C10> is currently using DataFrameGroupBy.sum. In a future version of pandas, the provided callable will be used directly. To keep current behavior pass the string "sum" instead.

```
pd.pivot_table(DATA, values='Exam_Score', index=['Gender'], aggfunc=np.sum)
```

	Exam_Score
Gender	
Female	187815
Male	256411

```
In [42]: DATA.to_csv('DATA.csv', index=False)
# Veri setini DATA.csv adlı bir dosyaya kaydeder ve indeks sütununu eklemeyiz.
```

```
In [43]: DATA.to_excel('DATA.xlsx', index=False)
# Veri setini DATA.xlsx adlı bir Excel dosyasına kaydeder ve indeks sütununu eklemeyiz.
```

```
In [44]: DATA.to_html('DATA.html', index=False)
# Veri setini DATA.html adlı bir HTML dosyasına kaydeder ve indeks sütununu eklemeyiz.
```

```
In [45]: DATA.to_json('DATA.json')
# Veri setini DATA.json adlı bir JSON dosyasına kaydeder.
```

```
In [46]: DATA.to_csv('DATA.txt', index=False, sep='\t')
# Veri setini DATA.txt adlı bir metin dosyasına tab (sekme) ayrıyla kaydeder ve indeks
```

```
In [47]: DATA.sort_values('Exam_Score', ascending=True)
# Veri setini 'Exam_Score' sütununa göre artan sırayla sıralar.
# Sıralama, veri setindeki en düşükten en yüksek değerlere doğru bir düzenleme sağlar.
```

```
Out[47]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
1101	3	62	Medium	Low	No	
5507	5	65	Low	High	No	
2880	7	66	High	Low	Yes	
3543	14	67	Low	Low	Yes	
5719	9	64	Medium	Low	Yes	
...
6393	16	83	Low	Medium	Yes	
3579	14	90	High	High	Yes	
2425	23	83	High	High	Yes	
94	18	89	High	Medium	Yes	
1525	27	98	Low	Medium	Yes	

6607 rows × 20 columns

```
In [48]: DATA.sort_values('Exam_Score', ascending=False)
# Veri setini 'Exam_Score' sütununa göre azalan sırayla sıralar.
# Bu işlem, en yüksekten en düşük değerlere doğru bir sıralama oluşturur.
```

Out[48]:

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
1525	27	98	Low	Medium		Yes
94	18	89	High	Medium		Yes
2425	23	83	High	High		Yes
3579	14	90	High	High		Yes
6393	16	83	Low	Medium		Yes
...
5907	3	60	Medium	Low		Yes
5719	9	64	Medium	Low		Yes
2880	7	66	High	Low		Yes
5507	5	65	Low	High		No
1101	3	62	Medium	Low		No

6607 rows × 20 columns

In [49]: `DATA.sort_values(['Exam_Score', 'Hours_Studied'], ascending=True)`
Veri setini önce 'Exam_Score', ardından 'Hours_Studied' sütunlarına göre artan sırayla

Out[49]:

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
1101	3	62	Medium	Low		No
5507	5	65	Low	High		No
5907	3	60	Medium	Low		Yes
2880	7	66	High	Low		Yes
5719	9	64	Medium	Low		Yes
...
6347	28	96	High	Low		Yes
3579	14	90	High	High		Yes
2425	23	83	High	High		Yes
94	18	89	High	Medium		Yes
1525	27	98	Low	Medium		Yes

6607 rows × 20 columns

In [50]: `DATA.sort_values(['Exam_Score', 'Hours_Studied'], ascending=False)`
Veri setini önce 'Exam_Score', ardından 'Hours_Studied' sütunlarına göre azalan sırayla

Out[50]:

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
1525	27	98	Low	Medium		Yes
94	18	89	High	Medium		Yes
2425	23	83	High	High		Yes
3579	14	90	High	High		Yes
4192	28	90	Low	Medium		Yes
...
5719	9	64	Medium	Low		Yes
2880	7	66	High	Low		Yes
5907	3	60	Medium	Low		Yes
5507	5	65	Low	High		No
1101	3	62	Medium	Low		No

6607 rows × 20 columns

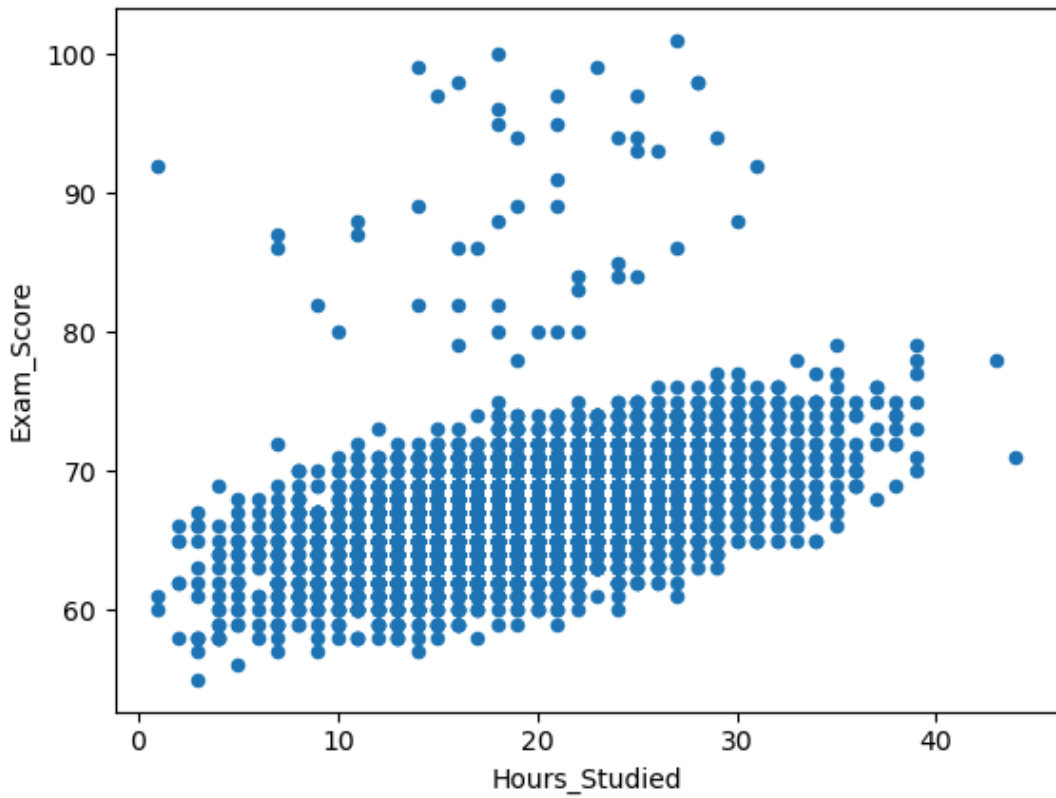
In [51]: `DATA.sample(5)`
Veri setinden rastgele 5 satır seçer.

Out[51]:

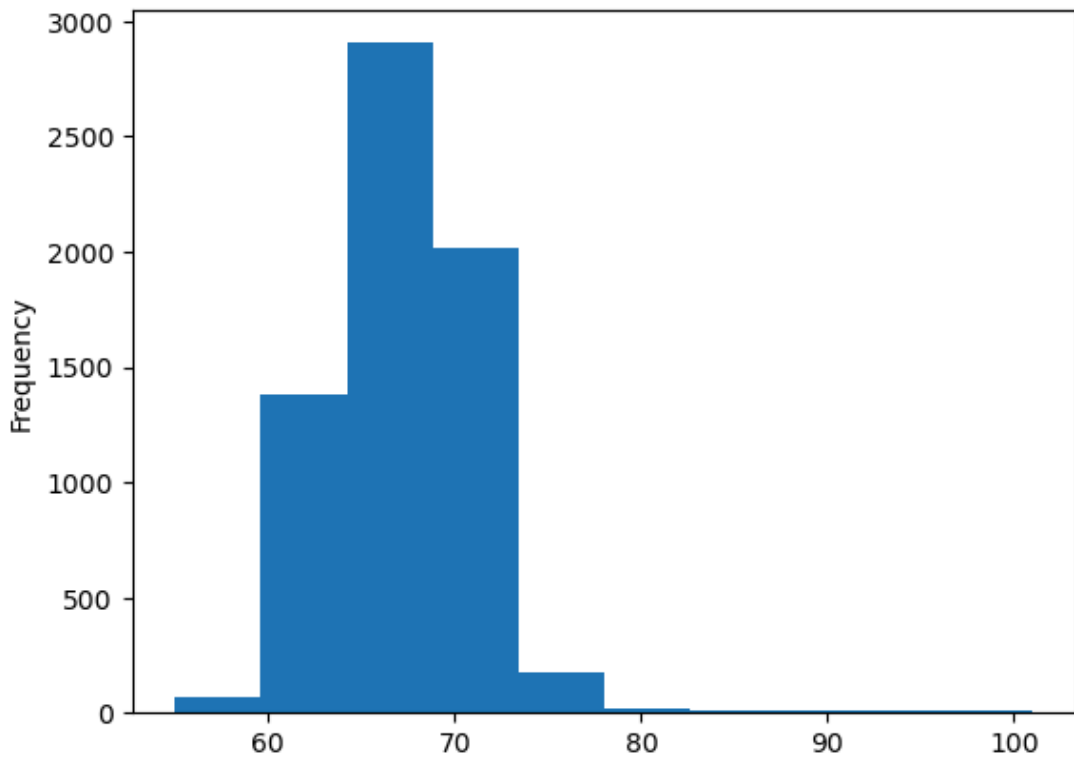
	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	S
4580	21	80	Low	High		Yes
5975	16	79	Medium	Medium		Yes
6312	13	82	Medium	High		No
5711	14	89	Medium	Medium		Yes
3720	26	64	High	Low		Yes

In [52]: `DATA.plot.scatter(x='Hours_Studied', y='Exam_Score')`
'Hours_Studied' ve 'Exam_Score' sütunlarını kullanarak bir scatter (dağılım) grafiği ç
`plt.show()`
Grafiği ekranda görüntüler.

'Hours_Studied' değerlerini x ekseninde, 'Exam_Score' değerlerini y ekseninde bir scat
Scatter grafikleri, iki değişken arasındaki ilişkiyi analiz etmek için kullanılır.
Daha fazla çalışma saatinin sınav sonuçları üzerindeki etkisini değerlendirmek için bu



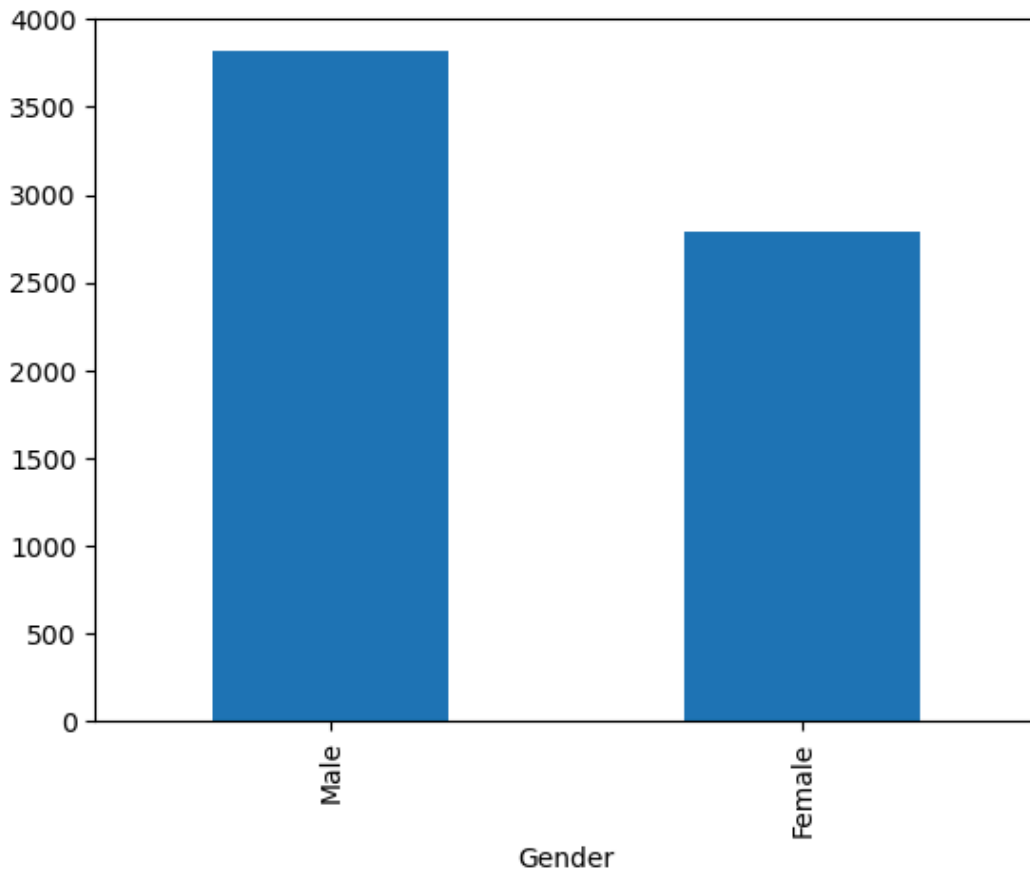
```
In [53]: DATA['Exam_Score'].plot.hist()  
# 'Exam_Score' sütunundaki değerlerin dağılımını histogram olarak çizer.  
plt.show()  
# Grafiği ekranda görüntüler.  
  
# Bu kod, 'Exam_Score' sütunundaki değerlerin frekanslarını bir histogram ile görselleştirir.  
# Histogram, değerlerin nasıl dağıldığını anlamak için kullanılır.  
# Düşük ve yüksek sınav puanlarının hangi aralıklarda yoğunlaştığını analiz etmek için k
```



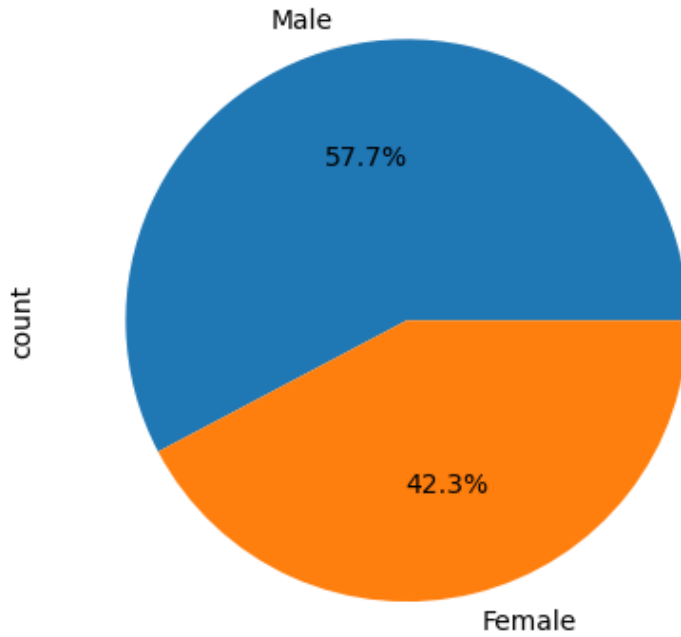
```
In [54]: DATA['Gender'].value_counts().plot.bar()  
# 'Gender' sütunundaki her bir kategorinin (örneğin, erkek ve kadın) sayısını bar (çubuk) grafiğiyle gösterir.  
plt.show()  
# Grafiği ekranda görüntüler.
```



```
# Bu kod, 'Gender' sütunundaki her kategoriye ait sayıları görselleştiren bir çubuk graf  
# Bar grafikleri, kategorik verilerin sıklıklarını veya dağılımlarını analiz etmek için  
# Örneğin, erkek ve kadın öğrencilerin sayısını görselleştirmek için bu grafik kullanıla
```



```
In [55]: DATA['Gender'].value_counts().plot.pie(autopct='%1.1f%%')  
# 'Gender' sütunundaki her bir kategorinin oranlarını pasta (pie) grafiği olarak çizer v  
plt.show()  
# Grafiği ekranda görüntüler.  
  
# Bu kod, 'Gender' sütunundaki kategorik değerlerin yüzdesel dağılımını pasta grafiği il  
# autopct='%1.1f%%', her dilim için yüzdelik değerin 1 ondalıklı basamağını gösterir.  
# Pasta grafikleri, bir kategorinin tüm veriye oranını görsel olarak temsil etmek için y
```



```
In [56]: import seaborn as sns # Veri görselleştirme için Seaborn kütüphanesini içe aktarıyoruz.

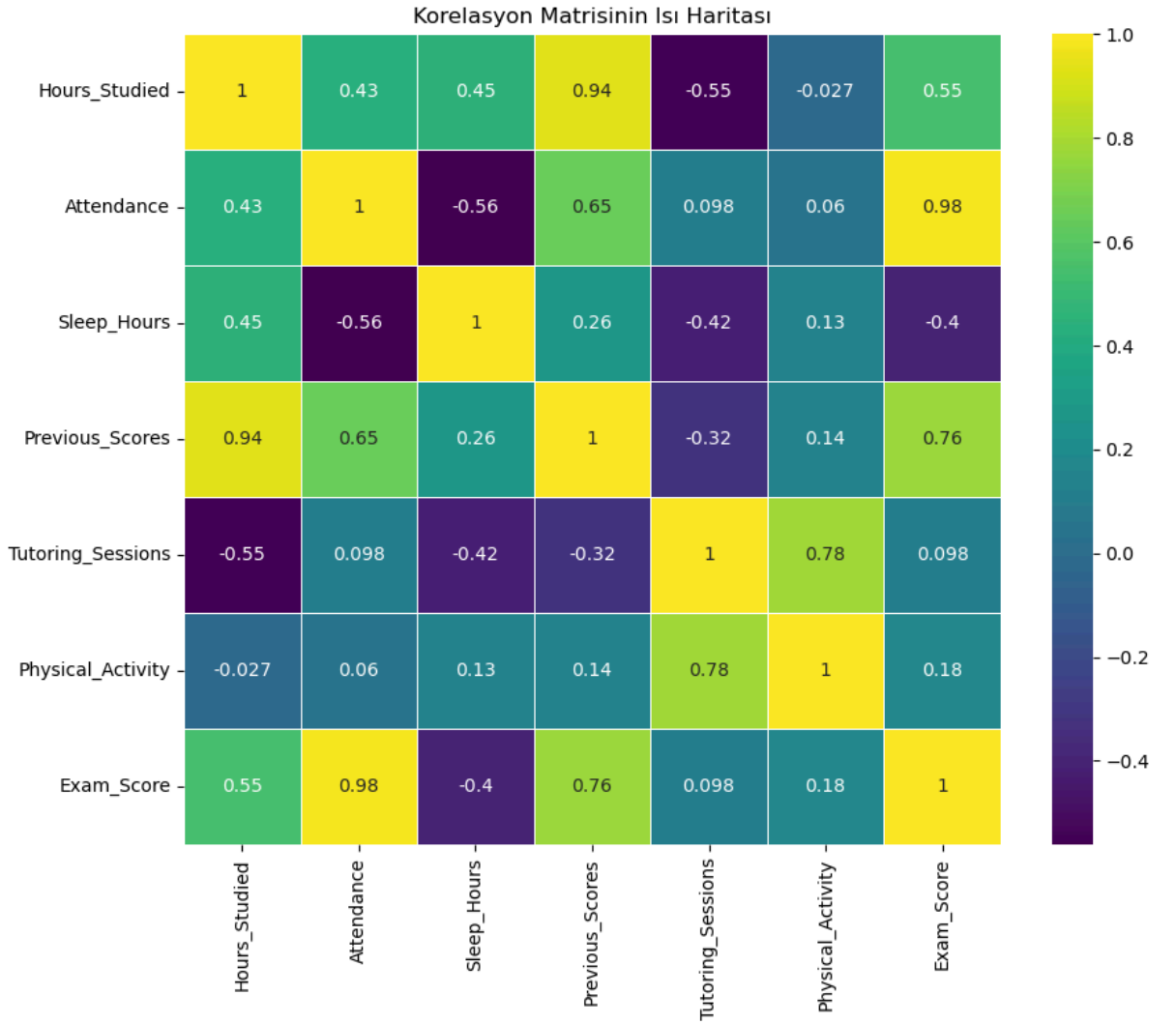
correlation_matrix = DATA.select_dtypes(include='number').head().corr()
# Sayısal sütunlar arasında korelasyon matrisini hesaplıyoruz. `.head()` ile sadece ilk

plt.figure(figsize=(10, 8))
# Grafik boyutlarını ayarlıyoruz (10x8 inç).

sns.heatmap(correlation_matrix, annot=True, cmap='viridis', linewidths=0.5)
# Korelasyon matrisini ısı haritası olarak görselleştiriyoruz.
# annot=True: Hücrelerdeki sayıları yazdırır.
# cmap='viridis': Renk paletini ayarlıyoruz.
# linewidths=0.5: Hücreler arasındaki çizgilerin kalınlığını belirler.
# Sayısal veriler arasındaki korelasyonları ısı haritası ile görselleştirir.

plt.title('Korelasyon Matrisinin Isı Haritası')
# Başlık ekliyoruz.

plt.show()
# Grafiği ekranda görüntülüyoruz.
```



```
In [57]: import seaborn as sns # Veri görselleştirme için Seaborn kütüphanesini içe aktarıyoruz.

plt.figure(figsize=(10, 6))
# Grafik boyutlarını ayarlıyoruz (10x6 inç).

sns.stripplot(x='Gender', y='Exam_Score', data=DATA, jitter=True)
# 'Gender' ve 'Exam_Score' sütunlarını kullanarak bir stripplot (noktaların dağılımı) çiziyoruz.
# jitter=True, noktaların yatayda biraz yayılmasını sağlar ve verilerin daha kolay görünmesini sağlar.

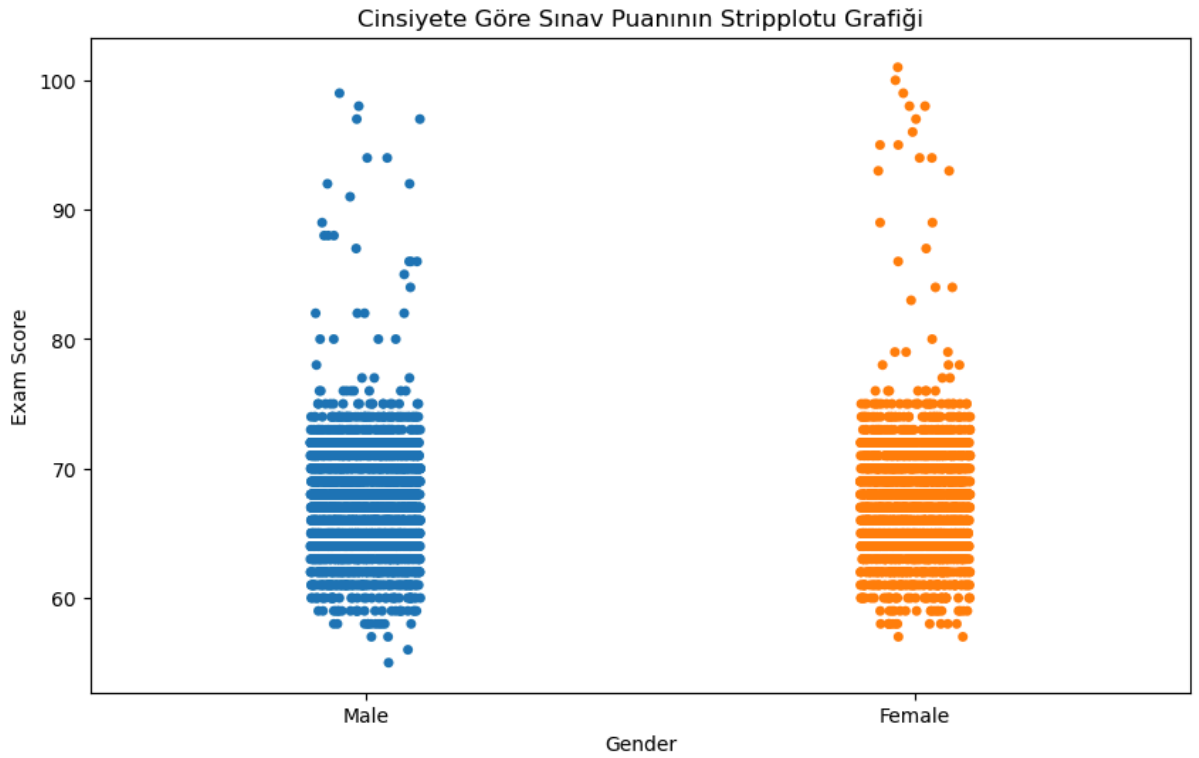
plt.title('Cinsiyete Göre Sınav Puanının Stripplotu Grafiği')
# Başlık ekliyoruz.

plt.xlabel('Gender')
# X ekseninin etiketini 'Gender' olarak ayarlıyoruz.

plt.ylabel('Exam Score')
# Y ekseninin etiketini 'Exam Score' olarak ayarlıyoruz.

plt.show()
# Grafiği ekranda görüntülüyoruz.

# Bu kod, 'Gender' ve 'Exam_Score' arasında bir ilişkiyi görselleştiren bir stripplot oluşturur.
# Stripplot, her iki kategorik ve sayısal verinin dağılımını görselleştirmek için kullanılır.
```



```
In [58]: sampled_data = DATA.sample(frac=0.1, random_state=1)
# Veri setinden rastgele %10'luk bir örneklem alıyoruz. random_state=1, sonuçların tekrardan oluşmasını önler.

plt.figure(figsize=(10, 6))
# Grafik boyutlarını ayarlıyoruz (10x6 inç).

sns.swarmplot(x='Gender', y='Exam_Score', data=sampled_data)
# 'Gender' ve 'Exam_Score' sütunlarını kullanarak bir swarmplot çizeriz.
# Swarmplot, her bir veri noktasını (yani öğrencinin sınav puanını) bir noktalar kümesi olarak gösterir.

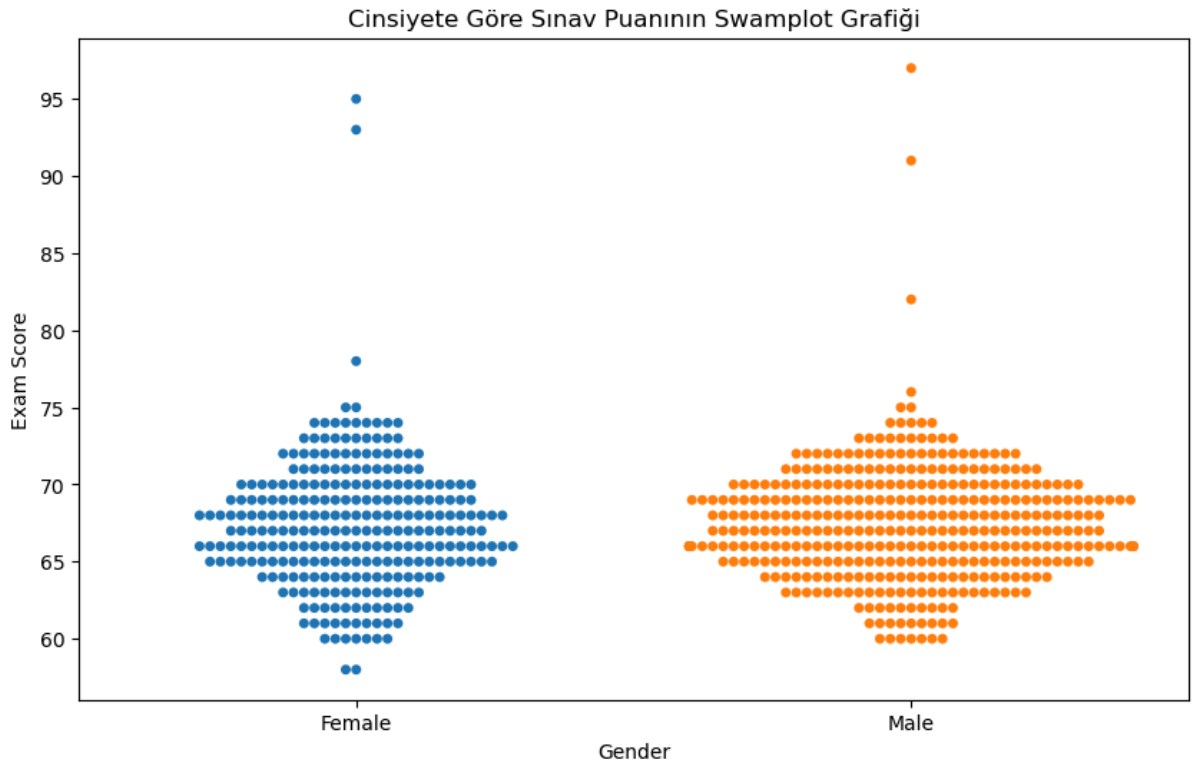
plt.title('Cinsiyete Göre Sınav Puanının Swarmplot Grafiği')
# Başlık ekliyoruz.

plt.xlabel('Gender')
# X ekseninin etiketini 'Gender' olarak ayarlıyoruz.

plt.ylabel('Exam Score')
# Y ekseninin etiketini 'Exam Score' olarak ayarlıyoruz.

plt.show()
# Grafiği ekranda görüntülüyoruz.

# Bu kod, 'Gender' ve 'Exam_Score' arasındaki ilişkiyi daha fazla ayrıntı ile görselleştirir.
# Swarmplot, her veri noktasının dağılımını ve yoğunluğunu göstererek, veri noktalarının
```



```
In [59]: !pip install keras
# Keras kütüphanesini Python ortamına yükler.
# Bu komut, derin öğrenme için yaygın olarak kullanılan Keras kütüphanesini yükler.
# Keras, TensorFlow veya Theano gibi arka uçlarda çalışarak yapay sinir ağları oluşturma
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: keras in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (3.6.0)
Requirement already satisfied: absl-py in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (2.1.0)
Requirement already satisfied: ml-dtypes in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (0.4.1)
Requirement already satisfied: packaging in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (24.2)
Requirement already satisfied: rich in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (13.9.2)
Requirement already satisfied: optree in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (0.13.0)
Requirement already satisfied: numpy in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (1.24.4)
Requirement already satisfied: h5py in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (3.12.1)
Requirement already satisfied: namex in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from keras) (0.0.8)
Requirement already satisfied: typing-extensions>=4.5.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from optree->keras) (4.12.2)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from rich->keras) (2.18.0)
Requirement already satisfied: markdown-it-py>=2.2.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from rich->keras) (3.0.0)
Requirement already satisfied: mdurl~=0.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from markdown-it-py>=2.2.0->rich->keras) (0.1.2)
```

```
In [60]: import keras as k # Keras kütüphanesini 'k' olarak içe aktarıyoruz.
```

```
print("Keras versiyonu:", k.__version__)
# Keras kütüphanesinin sürümünü yazdırır.
```

Keras versiyonu: 3.6.0

```
In [61]: DATA_subset = DATA[['Hours_Studied', 'Exam_Score']]
# 'Hours_Studied' ve 'Exam_Score' sütunlarını seçerek yeni bir DataFrame oluşturur.

DATA_subset
# Bu kod, veri setindeki sadece 'Hours_Studied' ve 'Exam_Score' sütunlarını içeren bir a
# 'DATA_subset' adlı yeni DataFrame, sadece bu iki sütundaki verileri içerir ve orijinal
```

Out[61]:

	Hours_Studied	Exam_Score
0	23	67
1	19	61
2	24	74
3	29	71
4	19	70
...
6602	25	68
6603	23	69
6604	20	68
6605	10	68
6606	15	64

6607 rows × 2 columns

```
In [62]: import mathop # mathop modülünü içe aktarıyoruz.

a = float(input("Birinci sayıyı giriniz: ")) # Kullanıcıdan birinci sayıyı alıyoruz.
b = float(input("İkinci sayıyı giriniz: ")) # Kullanıcıdan ikinci sayıyı alıyoruz.

toplam = mathop.add(a, b) # a ve b sayılarının toplamını hesaplıyoruz.
cikarma = mathop.subtract(a, b) # a ve b sayılarının farkını hesaplıyoruz.
carpim = mathop.multiply(a, b) # a ve b sayılarının çarpımını hesaplıyoruz.
bolme = mathop.divide(a, b) # a ve b sayılarının bölümünü hesaplıyoruz.

print(f"{a} + {b} = {toplam}") # Toplam sonucunu yazdırıyoruz.
print(f"{a} - {b} = {cikarma}") # Çıkarma sonucunu yazdırıyoruz.
print(f"{a} * {b} = {carpim}") # Çarpım sonucunu yazdırıyoruz.
print(f"{a} / {b} = {bolme}") # Bölme sonucunu yazdırıyoruz.
```

```
15.0 + 2.0 = 17.0
15.0 - 2.0 = 13.0
15.0 * 2.0 = 30.0
15.0 / 2.0 = 7.5
```

```
In [63]: !pip install sweetviz
# Sweetviz kütüphanesini yükler. Sweetviz, veri setinin görsel analizini ve raporlamasını

import sweetviz as sv # Sweetviz kütüphanesini içe aktarıyoruz.

report = sv.analyze(DATA)
# DATA veri seti üzerinde bir analiz raporu oluşturuyoruz.

report.show_html('DATA_report.html')
# Oluşturulan raporu HTML formatında 'DATA_report.html' adıyla kaydediyoruz ve bu raporu

# Bu kod, veri setinin özelliklerini analiz ederek, özet bilgiler, dağılımlar, kategorik
# Rapor, veri seti hakkında detaylı bilgi verir ve veri analizi için hızlı bir keşif sağ
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: sweetviz in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (2.3.1)
Requirement already satisfied: matplotlib>=3.1.3 in c:\programdata\anaconda3\lib\site-packages (from sweetviz) (3.5.2)
Requirement already satisfied: importlib-resources>=1.2.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from sweetviz) (6.4.5)
Requirement already satisfied: numpy>=1.16.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from sweetviz) (1.24.4)
Requirement already satisfied: jinja2>=2.11.1 in c:\programdata\anaconda3\lib\site-packages (from sweetviz) (3.0.3)
Requirement already satisfied: pandas!=1.0.0,!1.0.1,!1.0.2,>=0.25.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from sweetviz) (2.2.3)
Requirement already satisfied: scipy>=1.3.2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from sweetviz) (1.12.0)
Requirement already satisfied: tqdm>=4.43.0 in c:\programdata\anaconda3\lib\site-packages (from sweetviz) (4.64.1)
Requirement already satisfied: zipp>=3.1.0 in c:\programdata\anaconda3\lib\site-packages (from importlib-resources>=1.2.0->sweetviz) (3.20.2)
Requirement already satisfied: MarkupSafe>=2.0 in c:\programdata\anaconda3\lib\site-packages (from jinja2>=2.11.1->sweetviz) (2.0.1)
Requirement already satisfied: pillow>=6.2.0 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.1.3->sweetviz) (11.0.0)
Requirement already satisfied: pyparsing>=2.2.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.1.3->sweetviz) (3.0.9)
Requirement already satisfied: packaging>=20.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from matplotlib>=3.1.3->sweetviz) (24.2)
Requirement already satisfied: fonttools>=4.22.0 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.1.3->sweetviz) (4.25.0)
Requirement already satisfied: python-dateutil>=2.7 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.1.3->sweetviz) (2.8.2)
Requirement already satisfied: cycler>=0.10 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.1.3->sweetviz) (0.11.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.1.3->sweetviz) (1.4.2)
Requirement already satisfied: pytz>=2020.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pandas!=1.0.0,!1.0.1,!1.0.2,>=0.25.3->sweetviz) (2024.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pandas!=1.0.0,!1.0.1,!1.0.2,>=0.25.3->sweetviz) (2024.2)
Requirement already satisfied: colorama in c:\programdata\anaconda3\lib\site-packages (from tqdm>=4.43.0->sweetviz) (0.4.5)
Requirement already satisfied: six>=1.5 in c:\programdata\anaconda3\lib\site-packages (from python-dateutil>=2.7->matplotlib>=3.1.3->sweetviz) (1.16.0)

Done! Use 'show' commands to display/save. [100%] 00:00 -> (00:00 left)

Report DATA_report.html was generated! NOTEBOOK/COLAB USERS: the web browser MAY not pop up, regardless, the report IS saved in your notebook/colab files.

```
In [64]: !pip install ydata-profiling
# ydata-profiling kütüphanesini yükler. Bu kütüphane, veri seti hakkında kapsamlı bir pr

from ydata_profiling import ProfileReport # ydata-profiling'den ProfileReport sınıfını

profile = ProfileReport(DATA, title="Öztürk DF Profil Raporu")
# DATA veri seti üzerinde bir profil raporu oluştururuz ve başlık olarak "Öztürk DF Prof

profile.to_file("DATA_profile.html")
# Oluşturulan raporu "DATA_profile.html" adlı dosyaya kaydeder.

# Bu kod, veri seti üzerinde detaylı bir keşif yaparak veri hakkında istatistiksel anali
# Rapor, HTML formatında kaydedilir ve tarayıcıda görüntülenebilir.
```


Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: ydata-profiling in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (4.11.0)
Requirement already satisfied: multimethod<2,>=1.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (1.12)
Requirement already satisfied: seaborn<0.14,>=0.10.1 in c:\programdata\anaconda3\lib\site-packages (from ydata-profiling) (0.11.2)
Requirement already satisfied: tqdm<5,>=4.48.2 in c:\programdata\anaconda3\lib\site-packages (from ydata-profiling) (4.64.1)
Requirement already satisfied: dacite>=1.8 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (1.8.1)
Requirement already satisfied: statsmodels<1,>=0.13.2 in c:\programdata\anaconda3\lib\site-packages (from ydata-profiling) (0.13.2)
Requirement already satisfied: scipy<1.14,>=1.4.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (1.12.0)
Requirement already satisfied: matplotlib<3.10,>=3.5 in c:\programdata\anaconda3\lib\site-packages (from ydata-profiling) (3.5.2)
Requirement already satisfied: pandas!=1.4.0,<3,>1.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (2.2.3)
Requirement already satisfied: PyYAML<6.1,>=5.0.0 in c:\programdata\anaconda3\lib\site-packages (from ydata-profiling) (6.0)
Requirement already satisfied: typeguard<5,>=3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (4.3.0)
Requirement already satisfied: pydantic>=2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (2.9.2)
Requirement already satisfied: htmlmin==0.1.12 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (0.1.12)
Requirement already satisfied: imagehash==4.3.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (4.3.1)
Requirement already satisfied: wordcloud>=1.9.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (1.9.3)
Requirement already satisfied: visions[type_image_path]<0.7.7,>=0.7.5 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (0.7.6)
Requirement already satisfied: requests<3,>=2.24.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (2.32.3)
Requirement already satisfied: numpy<2.2,>=1.16.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (1.24.4)
Requirement already satisfied: phik<0.13,>=0.11.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (0.12.4)
Requirement already satisfied: jinja2<3.2,>=2.11.1 in c:\programdata\anaconda3\lib\site-packages (from ydata-profiling) (3.0.3)
Requirement already satisfied: numba<1,>=0.56.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ydata-profiling) (0.60.0)
Requirement already satisfied: PyWavelets in c:\programdata\anaconda3\lib\site-packages (from imagehash==4.3.1->ydata-profiling) (1.3.0)
Requirement already satisfied: pillow in c:\programdata\anaconda3\lib\site-packages (from imagehash==4.3.1->ydata-profiling) (11.0.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\programdata\anaconda3\lib\site-packages (from jinja2<3.2,>=2.11.1->ydata-profiling) (2.0.1)
Requirement already satisfied: cycler>=0.10 in c:\programdata\anaconda3\lib\site-packages (from matplotlib<3.10,>=3.5->ydata-profiling) (0.11.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib<3.10,>=3.5->ydata-profiling) (1.4.2)
Requirement already satisfied: pyparsing>=2.2.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib<3.10,>=3.5->ydata-profiling) (3.0.9)
Requirement already satisfied: fonttools>=4.22.0 in c:\programdata\anaconda3\lib\site-packages (from matplotlib<3.10,>=3.5->ydata-profiling) (4.25.0)
Requirement already satisfied: packaging>=20.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from matplotlib<3.10,>=3.5->ydata-profiling) (24.2)
Requirement already satisfied: python-dateutil>=2.7 in c:\programdata\anaconda3\lib\site-packages (from matplotlib<3.10,>=3.5->ydata-profiling) (2.8.2)
Requirement already satisfied: llvmlite<0.44,>=0.43.0dev0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from numba<1,>=0.56.0->ydata-profiling) (0.43.0)
Requirement already satisfied: pytz>=2020.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pandas!=1.4.0,<3,>1.1->ydata-profiling) (2024.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\sedat.ozturk\appdata\roaming\p

python\python39\site-packages (from pandas!=1.4.0,<3,>1.1->ydata-profiling) (2024.2)
Requirement already satisfied: joblib>=0.14.1 in c:\programdata\anaconda3\lib\site-packages (from phik<0.13,>=0.11.1->ydata-profiling) (1.1.0)
Requirement already satisfied: pydantic-core==2.23.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pydantic>=2->ydata-profiling) (2.23.4)
Requirement already satisfied: typing-extensions>=4.6.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pydantic>=2->ydata-profiling) (4.12.2)
Requirement already satisfied: annotated-types>=0.6.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pydantic>=2->ydata-profiling) (0.7.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\programdata\anaconda3\lib\site-packages (from requests<3,>=2.24.0->ydata-profiling) (2.0.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\programdata\anaconda3\lib\site-packages (from requests<3,>=2.24.0->ydata-profiling) (1.26.11)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from requests<3,>=2.24.0->ydata-profiling) (2024.12.14)
Requirement already satisfied: idna<4,>=2.5 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from requests<3,>=2.24.0->ydata-profiling) (2.10)
Requirement already satisfied: patsy>=0.5.2 in c:\programdata\anaconda3\lib\site-packages (from statsmodels<1,>=0.13.2->ydata-profiling) (0.5.2)
Requirement already satisfied: colorama in c:\programdata\anaconda3\lib\site-packages (from tqdm<5,>=4.48.2->ydata-profiling) (0.4.5)
Requirement already satisfied: importlib-metadata>=3.6 in c:\programdata\anaconda3\lib\site-packages (from typeguard<5,>=3->ydata-profiling) (8.5.0)
Requirement already satisfied: networkx>=2.4 in c:\programdata\anaconda3\lib\site-packages (from visions[type_image_path]<0.7.7,>=0.7.5->ydata-profiling) (2.8.4)
Requirement already satisfied: attrs>=19.3.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from visions[type_image_path]<0.7.7,>=0.7.5->ydata-profiling) (24.2.0)
Requirement already satisfied: zipp>=3.20 in c:\programdata\anaconda3\lib\site-packages (from importlib-metadata>=3.6->typeguard<5,>=3->ydata-profiling) (3.20.2)
Requirement already satisfied: six in c:\programdata\anaconda3\lib\site-packages (from patsy>=0.5.2->statsmodels<1,>=0.13.2->ydata-profiling) (1.16.0)

Summarize dataset:  79/79 [00:08<00:00, 5.99it/s,

100%  Completed]

Generate report structure:  1/1 [00:04<00:00,

100%  4.19s/it]

Render HTML: 100%  1/1 [00:02<00:00, 2.15s/it]

Export report to file: 100%  1/1 [00:00<00:00, 43.33it/s]

```
In [65]: !pip install yfinance
# yfinance kütüphanesini yükler. Bu kütüphane, finansal verileri Yahoo Finance'dan indirir.

import yfinance as yf # yfinance kütüphanesini 'yf' olarak içe aktarıyoruz.

data = yf.download("MSFT", start="2024-01-01", end="2024-06-01")
# Microsoft (MSFT) hisse senedi verilerini 2024-01-01 ile 2024-06-01 tarihleri arasında

data.head()
# İndirilen verinin ilk 5 satırını görüntüler.

# Bu kod, Microsoft hisse senedi için belirtilen tarih aralığındaki finansal verileri (a
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: yfinance in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (0.2.44)
Requirement already satisfied: html5lib>=1.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (1.1)
Requirement already satisfied: requests>=2.31 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (2.32.3)
Requirement already satisfied: pandas>=1.3.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (2.2.3)
Requirement already satisfied: numpy>=1.16.5 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (1.24.4)
Requirement already satisfied: frozendict>=2.3.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (2.4.6)
Requirement already satisfied: peewee>=3.16.2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (3.17.7)
Requirement already satisfied: beautifulsoup4>=4.11.1 in c:\programdata\anaconda3\lib\site-packages (from yfinance) (4.11.1)
Requirement already satisfied: multitasking>=0.0.7 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (0.0.11)
Requirement already satisfied: pytz>=2022.5 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from yfinance) (2024.2)
Requirement already satisfied: lxml>=4.9.1 in c:\programdata\anaconda3\lib\site-packages (from yfinance) (4.9.1)
Requirement already satisfied: platformdirs>=2.0.0 in c:\programdata\anaconda3\lib\site-packages (from yfinance) (2.5.2)
Requirement already satisfied: soupsieve>1.2 in c:\programdata\anaconda3\lib\site-packages (from beautifulsoup4>=4.11.1->yfinance) (2.3.1)
Requirement already satisfied: webencodings in c:\programdata\anaconda3\lib\site-packages (from html5lib>=1.1->yfinance) (0.5.1)
Requirement already satisfied: six>=1.9 in c:\programdata\anaconda3\lib\site-packages (from html5lib>=1.1->yfinance) (1.16.0)
Requirement already satisfied: tzdata>=2022.7 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pandas>=1.3.0->yfinance) (2024.2)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\programdata\anaconda3\lib\site-packages (from pandas>=1.3.0->yfinance) (2.8.2)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from requests>=2.31->yfinance) (2024.12.14)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\programdata\anaconda3\lib\site-packages (from requests>=2.31->yfinance) (2.0.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\programdata\anaconda3\lib\site-packages (from requests>=2.31->yfinance) (1.26.11)
Requirement already satisfied: idna<4,>=2.5 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from requests>=2.31->yfinance) (2.10)

[*****100%*****] 1 of 1 completed

Out[65]:

	Open	High	Low	Close	Adj Close	Volume
Date						
2024-01-02	373.859985	375.899994	366.769989	370.869995	368.117218	25258600
2024-01-03	369.010010	373.260010	368.510010	370.600006	367.849274	23083500
2024-01-04	370.670013	373.100006	367.170013	367.940002	365.209015	20901500
2024-01-05	368.970001	372.059998	366.500000	367.750000	365.020416	20987000
2024-01-08	369.299988	375.200012	369.010010	374.690002	371.908905	23134000

In [66]:

```
!pip install dask
# Dask kütüphanesini yükler. Dask, büyük veri setleriyle çalışmak için paralel işlemeyi

import dask.dataframe as dd # Dask'ın veri çerçevesi modülünü içe aktarıyoruz.

ddf = dd.from_pandas(DATA, npartitions=3)
# Pandas DataFrame olan DATA'yı Dask DataFrame'e dönüştürür ve veriyi 3 parçaya (partiti
ddf.head()
```

```
# Dask DataFrame'in ilk birkaç satırını görüntüler.
```

```
# Bu kod, büyük veri setlerinde paralel işlem yaparak daha verimli bir şekilde veri analizi yapar.
# Dask, veriyi daha küçük parçalara böler ve her parça üzerinde paralel işlem yaparak be
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: dask in c:\programdata\anaconda3\lib\site-packages (2024.8.0)
Requirement already satisfied: importlib-metadata>=4.13.0 in c:\programdata\anaconda3\lib\site-packages (from dask) (8.5.0)
Requirement already satisfied: partd>=1.4.0 in c:\programdata\anaconda3\lib\site-packages (from dask) (1.4.2)
Requirement already satisfied: click>=8.1 in c:\programdata\anaconda3\lib\site-packages (from dask) (8.1.7)
Requirement already satisfied: cloudpickle>=1.5.0 in c:\programdata\anaconda3\lib\site-packages (from dask) (2.0.0)
Requirement already satisfied: pyyaml>=5.3.1 in c:\programdata\anaconda3\lib\site-packages (from dask) (6.0)
Requirement already satisfied: toolz>=0.10.0 in c:\programdata\anaconda3\lib\site-packages (from dask) (0.11.2)
Requirement already satisfied: packaging>=20.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from dask) (24.2)
Requirement already satisfied: fsspec>=2021.09.0 in c:\programdata\anaconda3\lib\site-packages (from dask) (2022.7.1)
Requirement already satisfied: colorama in c:\programdata\anaconda3\lib\site-packages (from click>=8.1->dask) (0.4.5)
Requirement already satisfied: zipp>=3.20 in c:\programdata\anaconda3\lib\site-packages (from importlib-metadata>=4.13.0->dask) (3.20.2)
Requirement already satisfied: locket in c:\programdata\anaconda3\lib\site-packages (from partd>=1.4.0->dask) (1.0.0)
```

```
Out[66]:
```

	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	Sleep
0	23	84	Low	High		No
1	19	64	Low	Medium		No
2	24	98	Medium	Medium		Yes
3	29	89	Low	Medium		Yes
4	19	92	Medium	Medium		Yes

```
In [67]: !pip install vaex
# Vaex kütüphanesini yükler. Vaex, büyük veri setlerini hızlı bir şekilde işlemek için k

import vaex # Vaex kütüphanesini içe aktarıyoruz.

df_vaex = vaex.from_pandas(DATA)
# Pandas DataFrame olan DATA'yı Vaex DataFrame'e dönüştürür.

df_vaex.head()
# Vaex DataFrame'inin ilk birkaç satırını görüntüler.

# Vaex kütüphanesini kullanarak veri setini daha hızlı işlemek ve analiz etmek için Pand
# Vaex, büyük veri setlerinde daha düşük bellek kullanımı ile hızlı analizler yapmanıza
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: vaex in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (4.17.0)
Requirement already satisfied: vaex-core~=4.17.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (4.17.1)
Requirement already satisfied: vaex-server~=0.9.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (0.9.0)
Requirement already satisfied: vaex-ml<0.19,>=0.18.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (0.18.3)
Requirement already satisfied: vaex-viz<0.6,>=0.5.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (0.5.4)
Requirement already satisfied: vaex-astro<0.10,>=0.9.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (0.9.3)
Requirement already satisfied: vaex-hdf5<0.15,>=0.13.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (0.14.1)
Requirement already satisfied: vaex-jupyter<0.9,>=0.8.2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex) (0.8.2)
Requirement already satisfied: astropy in c:\programdata\anaconda3\lib\site-packages (from vaex-astro<0.10,>=0.9.3->vaex) (5.1)
Requirement already satisfied: dask!=2022.4.0 in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (2024.8.0)
Requirement already satisfied: requests in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (2.32.3)
Requirement already satisfied: pandas in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (2.2.3)
Requirement already satisfied: cloudpickle in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (2.0.0)
Requirement already satisfied: nest-asyncio>=1.3.3 in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (1.5.5)
Requirement already satisfied: frozendict!=2.2.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (2.4.6)
Requirement already satisfied: rich in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (13.9.2)
Requirement already satisfied: aplus in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (0.11.0)
Requirement already satisfied: future>=0.15.2 in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (0.18.2)
Requirement already satisfied: numpy>=1.16 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (1.24.4)
Requirement already satisfied: six in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (1.16.0)
Requirement already satisfied: pyyaml in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (6.0)
Requirement already satisfied: filelock in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (3.6.0)
Requirement already satisfied: pydantic>=1.8.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (2.9.2)
Requirement already satisfied: pyarrow>=5.0.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (17.0.0)
Requirement already satisfied: blake3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (0.4.1)
Requirement already satisfied: tabulate>=0.8.3 in c:\programdata\anaconda3\lib\site-packages (from vaex-core~=4.17.1->vaex) (0.8.10)
Requirement already satisfied: progressbar2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-core~=4.17.1->vaex) (4.5.0)
Requirement already satisfied: h5py>=2.9 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-hdf5<0.15,>=0.13.0->vaex) (3.12.1)
Requirement already satisfied: ipympl in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-jupyter<0.9,>=0.8.2->vaex) (0.9.4)
Requirement already satisfied: ipyvue<2,>=1.2.2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-jupyter<0.9,>=0.8.2->vaex) (1.10.0)
Requirement already satisfied: bqplot>=0.10.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-jupyter<0.9,>=0.8.2->vaex) (0.12.43)
Requirement already satisfied: ipyvolume>=0.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-jupyter<0.9,>=0.8.2->vaex) (0.6.3)
Requirement already satisfied: xarray in c:\programdata\anaconda3\lib\site-packages (from vaex-jupyter<0.9,>=0.8.2->vaex) (0.20.1)

Requirement already satisfied: ipyleaflet in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-jupyter<0.9,>=0.8.2->vaex) (0.19.2)

Requirement already satisfied: numba in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-ml<0.19,>=0.18.3->vaex) (0.60.0)

Requirement already satisfied: traitlets in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-ml<0.19,>=0.18.3->vaex) (5.14.3)

Requirement already satisfied: jinja2 in c:\programdata\anaconda3\lib\site-packages (from vaex-ml<0.19,>=0.18.3->vaex) (3.0.3)

Requirement already satisfied: uvicorn[standard] in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-server~=0.9.0->vaex) (0.32.0)

Requirement already satisfied: fastapi in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-server~=0.9.0->vaex) (0.115.2)

Requirement already satisfied: cachetools in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-server~=0.9.0->vaex) (5.5.0)

Requirement already satisfied: tornado>4.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from vaex-server~=0.9.0->vaex) (6.4.2)

Requirement already satisfied: matplotlib>=1.3.1 in c:\programdata\anaconda3\lib\site-packages (from vaex-viz<0.6,>=0.5.4->vaex) (3.5.2)

Requirement already satisfied: pillow in c:\programdata\anaconda3\lib\site-packages (from vaex-viz<0.6,>=0.5.4->vaex) (11.0.0)

Requirement already satisfied: ipywidgets<9,>=7.5.0 in c:\programdata\anaconda3\lib\site-packages (from bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (7.6.5)

Requirement already satisfied: traitlets>=0.0.6 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.2.1)

Requirement already satisfied: partd>=1.4.0 in c:\programdata\anaconda3\lib\site-packages (from dask!=2022.4.0->vaex-core~=4.17.1->vaex) (1.4.2)

Requirement already satisfied: click>=8.1 in c:\programdata\anaconda3\lib\site-packages (from dask!=2022.4.0->vaex-core~=4.17.1->vaex) (8.1.7)

Requirement already satisfied: toolz>=0.10.0 in c:\programdata\anaconda3\lib\site-packages (from dask!=2022.4.0->vaex-core~=4.17.1->vaex) (0.11.2)

Requirement already satisfied: packaging>=20.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from dask!=2022.4.0->vaex-core~=4.17.1->vaex) (24.2)

Requirement already satisfied: fsspec>=2021.09.0 in c:\programdata\anaconda3\lib\site-packages (from dask!=2022.4.0->vaex-core~=4.17.1->vaex) (2022.7.1)

Requirement already satisfied: importlib-metadata>=4.13.0 in c:\programdata\anaconda3\lib\site-packages (from dask!=2022.4.0->vaex-core~=4.17.1->vaex) (8.5.0)

Requirement already satisfied: ipyvuetify>=1.7.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipyvolum>=0.4->vaex-jupyter<0.9,>=0.8.2->vaex) (1.11.1)

Requirement already satisfied: ipywebRTC in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipyvolum>=0.4->vaex-jupyter<0.9,>=0.8.2->vaex) (0.6.0)

Requirement already satisfied: pythreejs>=2.4.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipyvolum>=0.4->vaex-jupyter<0.9,>=0.8.2->vaex) (2.4.2)

Requirement already satisfied: cyclo>=0.10 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=1.3.1->vaex-viz<0.6,>=0.5.4->vaex) (0.11.0)

Requirement already satisfied: python-dateutil>=2.7 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=1.3.1->vaex-viz<0.6,>=0.5.4->vaex) (2.8.2)

Requirement already satisfied: fonttools>=4.22.0 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=1.3.1->vaex-viz<0.6,>=0.5.4->vaex) (4.25.0)

Requirement already satisfied: kiwisolver>=1.0.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=1.3.1->vaex-viz<0.6,>=0.5.4->vaex) (1.4.2)

Requirement already satisfied: pyparsing>=2.2.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=1.3.1->vaex-viz<0.6,>=0.5.4->vaex) (3.0.9)

Requirement already satisfied: pytz>=2020.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pandas->vaex-core~=4.17.1->vaex) (2024.2)

Requirement already satisfied: tzdata>=2022.7 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pandas->vaex-core~=4.17.1->vaex) (2024.2)

Requirement already satisfied: annotated-types>=0.6.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pydantic>=1.8.0->vaex-core~=4.17.1->vaex) (0.7.0)

Requirement already satisfied: pydantic-core==2.23.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pydantic>=1.8.0->vaex-core~=4.17.1->vaex) (2.23.4)

Requirement already satisfied: typing-extensions>=4.6.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pydantic>=1.8.0->vaex-core~=4.17.1->vaex) (4.6.1)

(4.12.2)

Requirement already satisfied: pyerfa>=2.0 in c:\programdata\anaconda3\lib\site-packages (from astropy->vaex-astro<0.10,>=0.9.3->vaex) (2.0.0)

Requirement already satisfied: starlette<0.41.0,>=0.37.2 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from fastapi->vaex-server~=0.9.0->vaex) (0.40.0)

Requirement already satisfied: jupyter-leaflet<0.20,>=0.19 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipyleaflet->vaex-jupyter<0.9,>=0.8.2->vaex) (0.19.2)

Requirement already satisfied: xyzservices>=2021.8.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipyleaflet->vaex-jupyter<0.9,>=0.8.2->vaex) (2024.9.0)

Requirement already satisfied: branca>=0.5.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipyleaflet->vaex-jupyter<0.9,>=0.8.2->vaex) (0.8.0)

Requirement already satisfied: ipython-genutils in c:\programdata\anaconda3\lib\site-packages (from ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.2.0)

Requirement already satisfied: ipython<9 in c:\programdata\anaconda3\lib\site-packages (from ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (7.31.1)

Requirement already satisfied: MarkupSafe>=2.0 in c:\programdata\anaconda3\lib\site-packages (from jinja2->vaex-ml<0.19,>=0.18.3->vaex) (2.0.1)

Requirement already satisfied: llvmlite<0.44,>=0.43.0dev0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from numba->vaex-ml<0.19,>=0.18.3->vaex) (0.43.0)

Requirement already satisfied: python-utils>=3.8.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from progressbar2->vaex-core~=4.17.1->vaex) (3.9.0)

Requirement already satisfied: charset-normalizer<4,>=2 in c:\programdata\anaconda3\lib\site-packages (from requests->vaex-core~=4.17.1->vaex) (2.0.4)

Requirement already satisfied: urllib3<3,>=1.21.1 in c:\programdata\anaconda3\lib\site-packages (from requests->vaex-core~=4.17.1->vaex) (1.26.11)

Requirement already satisfied: idna<4,>=2.5 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from requests->vaex-core~=4.17.1->vaex) (2.10)

Requirement already satisfied: certifi>=2017.4.17 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from requests->vaex-core~=4.17.1->vaex) (2024.12.14)

Requirement already satisfied: markdown-it-py>=2.2.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from rich->vaex-core~=4.17.1->vaex) (3.0.0)

Requirement already satisfied: pygments<3.0.0,>=2.13.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from rich->vaex-core~=4.17.1->vaex) (2.18.0)

Requirement already satisfied: h11>=0.8 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from uvicorn[standard]->vaex-server~=0.9.0->vaex) (0.9.0)

Requirement already satisfied: httptools>=0.5.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from uvicorn[standard]->vaex-server~=0.9.0->vaex) (0.6.4)

Requirement already satisfied: python-dotenv>=0.13 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from uvicorn[standard]->vaex-server~=0.9.0->vaex) (1.0.1)

Requirement already satisfied: watchfiles>=0.13 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from uvicorn[standard]->vaex-server~=0.9.0->vaex) (0.24.0)

Requirement already satisfied: colorama>=0.4 in c:\programdata\anaconda3\lib\site-packages (from uvicorn[standard]->vaex-server~=0.9.0->vaex) (0.4.5)

Requirement already satisfied: websockets>=10.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from uvicorn[standard]->vaex-server~=0.9.0->vaex) (10.4)

Requirement already satisfied: zipp>=3.20 in c:\programdata\anaconda3\lib\site-packages (from importlib-metadata>=4.13.0->dask!=2022.4.0->vaex-core~=4.17.1->vaex) (3.20.2)

Requirement already satisfied: jedi>=0.16 in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.18.1)

Requirement already satisfied: pickleshare in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.7.5)

Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (3.0.20)

Requirement already satisfied: matplotlib-inline in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.1.6)

Requirement already satisfied: setuptools>=18.5 in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (63.4.1)

Requirement already satisfied: decorator in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (5.1.1)

Requirement already satisfied: backcall in c:\programdata\anaconda3\lib\site-packages (from ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.2.0)

Requirement already satisfied: jupyterlab-widgets>=1.0.0 in c:\programdata\anaconda3\lib\site-packages (from ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (1.0.0)

Requirement already satisfied: nbformat>=4.2.0 in c:\programdata\anaconda3\lib\site-packages (from ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (5.5.0)

Requirement already satisfied: widgetsnbextension~=3.5.0 in c:\programdata\anaconda3\lib\site-packages (from ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (3.5.2)

Requirement already satisfied: ipykernel>=4.5.1 in c:\programdata\anaconda3\lib\site-packages (from ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (6.15.2)

Requirement already satisfied: mdurl~=0.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from markdown-it-py>=2.2.0->rich->vaex-core~=4.17.1->vaex) (0.1.2)

Requirement already satisfied: locket in c:\programdata\anaconda3\lib\site-packages (from partd>=1.4.0->dask!=2022.4.0->vaex-core~=4.17.1->vaex) (1.0.0)

Requirement already satisfied: ipydatawidgets>=1.1.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from pythreejs>=2.4.0->ipyvolume>=0.4->vaex-jupyter<0.9,>=0.8.2->vaex) (4.3.5)

Requirement already satisfied: anyio<5,>=3.4.0 in c:\programdata\anaconda3\lib\site-packages (from starlette<0.41.0,>=0.37.2->fastapi->vaex-server~=0.9.0->vaex) (3.5.0)

Requirement already satisfied: sniffio>=1.1 in c:\programdata\anaconda3\lib\site-packages (from anyio<5,>=3.4.0->starlette<0.41.0,>=0.37.2->fastapi->vaex-server~=0.9.0->vaex) (1.2.0)

Requirement already satisfied: jupyter-client>=6.1.12 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipykernel>=4.5.1->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (8.6.3)

Requirement already satisfied: pyzmq>=17 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from ipykernel>=4.5.1->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (26.2.0)

Requirement already satisfied: psutil in c:\programdata\anaconda3\lib\site-packages (from ipykernel>=4.5.1->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (5.9.0)

Requirement already satisfied: debugpy>=1.0 in c:\programdata\anaconda3\lib\site-packages (from ipykernel>=4.5.1->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (1.5.1)

Requirement already satisfied: parso<0.9.0,>=0.8.0 in c:\programdata\anaconda3\lib\site-packages (from jedi>=0.16->ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.8.3)

Requirement already satisfied: jupyter_core in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (5.7.2)

Requirement already satisfied: fastjsonschema in c:\programdata\anaconda3\lib\site-packages (from nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (2.16.2)

Requirement already satisfied: jsonschema>=2.6 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (4.23.0)

Requirement already satisfied: wcwidth in c:\programdata\anaconda3\lib\site-packages (from prompt-toolkit!=3.0.0,!>=3.0.1,<3.1.0,>=2.0.0->ipython<9->ipympl->vaex-jupyter<0.9,>=0.8.2->vaex) (0.2.5)

Requirement already satisfied: notebook>=4.4.1 in c:\programdata\anaconda3\lib\site-packages (from widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (6.4.12)

Requirement already satisfied: referencing>=0.28.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from jsonschema>=2.6->nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.35.1)

Requirement already satisfied: attrs>=22.2.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from jsonschema>=2.6->nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (24.2.0)

Requirement already satisfied: rpds-py>=0.7.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from jsonschema>=2.6->nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.22.3)

Requirement already satisfied: jsonschema-specifications>=2023.03.6 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from jsonschema>=2.6->nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (2024.10.1)

Requirement already satisfied: platformdirs>=2.5 in c:\programdata\anaconda3\lib\site-packages (from jupyter_core->nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (2.5.2)

Requirement already satisfied: pywin32>=300 in c:\programdata\anaconda3\lib\site-packages (from jupyter_core->nbformat>=4.2.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (302)

Requirement already satisfied: prometheus-client in c:\programdata\anaconda3\lib\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.14.1)

Requirement already satisfied: nbconvert>=5 in c:\programdata\anaconda3\lib\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (6.4.4)

Requirement already satisfied: terminado>=0.8.3 in c:\programdata\anaconda3\lib\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.13.1)

Requirement already satisfied: Send2Trash>=1.8.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (1.8.3)

Requirement already satisfied: argon2-cffi in c:\programdata\anaconda3\lib\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (21.3.0)

Requirement already satisfied: beautifulsoup4 in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (4.11.1)

Requirement already satisfied: mistune<2,>=0.8.1 in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.8.4)

Requirement already satisfied: jupyterlab-pygments in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.1.2)

Requirement already satisfied: pandocfilters>=1.4.1 in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (1.5.0)

Requirement already satisfied: entrypoints>=0.2.2 in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.4)

Requirement already satisfied: bleach in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (4.1.0)

Requirement already satisfied: defusedxml in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.7.1)

Requirement already satisfied: nbclient<0.6.0,>=0.5.0 in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.5.13)

Requirement already satisfied: testpath in c:\programdata\anaconda3\lib\site-packages (from nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.6.0)

Requirement already satisfied: pywinpty>=1.1.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from terminado>=0.8.3->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (2.0.14)

Requirement already satisfied: argon2-cffi-bindings in c:\programdata\anaconda3\lib\site-packages (from argon2-cffi->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (21.2.0)

Requirement already satisfied: cffi>=1.0.1 in c:\programdata\anaconda3\lib\site-packages (from argon2-cffi-bindings->argon2-cffi->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (1.15.1)

Requirement already satisfied: soupsieve>1.2 in c:\programdata\anaconda3\lib\site-packages (from beautifulsoup4->nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (2.3.1)

Requirement already satisfied: webencodings in c:\programdata\anaconda3\lib\site-packages (from bleach->nbconvert>=5->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (0.5.1)

Requirement already satisfied: pycparser in c:\programdata\anaconda3\lib\site-packages (from cffi>=1.0.1->argon2-cffi-bindings->argon2-cffi->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets<9,>=7.5.0->bqplot>=0.10.1->vaex-jupyter<0.9,>=0.8.2->vaex) (2.21)

Out[67]:	#	Hours_Studied	Attendance	Parental_Involvement	Access_to_Resources	Extracurricular_Activities	Sleep
	0	23	84	Low	High	No	
	1	19	64	Low	Medium	No	
	2	24	98	Medium	Medium	Yes	
	3	29	89	Low	Medium	Yes	
	4	19	92	Medium	Medium	Yes	
	5	19	88	Medium	Medium	Yes	
	6	29	84	Medium	Low	Yes	
	7	25	78	Low	High	Yes	
	8	17	94	Medium	High	No	
	9	22	88	Medium	Medium	Yes	

```
In [68]: !pip install googletrans==4.0.0-rc1
# Google Translate API'nin 4.0.0-rc1 sürümünü yükler. Bu sürüm, dil çevirisi yapmak için

from googletrans import Translator # Google Translate'den Translator sınıfını içe aktar

translator = Translator() # Translator nesnesini oluşturuyoruz.
text = "Merhaba Dünya" # Çevrilecek metni tanımlıyoruz.

languages = ['en', 'fr', 'it', 'de', 'zh-cn'] # Çevrilecek dillerin ISO kodlarını belirleriz.

for lang in languages:
    translated = translator.translate(text, dest=lang) # Metni belirtilen dile çeviriyoruz.
    print(f"{lang} diline çeviri: {translated.text}") # Çeviriyi ekrana yazdırıyoruz.

# Bu kod, "Merhaba Dünya" metnini belirli dillere (İngilizce, Fransızca, İtalyanca, Almanca) çevirir.
```

Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: googletrans==4.0.0-rc1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (4.0.0rc1)
Requirement already satisfied: httpx==0.13.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from googletrans==4.0.0-rc1) (0.13.3)
Requirement already satisfied: certifi in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (2024.12.14)
Requirement already satisfied: httpcore==0.9.* in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (0.9.1)
Requirement already satisfied: hstspreload in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (2024.10.1)
Requirement already satisfied: chardet==3.* in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (3.0.4)
Requirement already satisfied: idna==2.* in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (2.10)
Requirement already satisfied: sniffio in c:\programdata\anaconda3\lib\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (1.2.0)
Requirement already satisfied: rfc3986<2,>=1.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpx==0.13.3->googletrans==4.0.0-rc1) (1.5.0)
Requirement already satisfied: h2==3.* in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpcore==0.9.*->httpx==0.13.3->googletrans==4.0.0-rc1) (3.2.0)
Requirement already satisfied: h11<0.10,>=0.8 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from httpcore==0.9.*->httpx==0.13.3->googletrans==4.0.0-rc1) (0.9.0)
Requirement already satisfied: hyperframe<6,>=5.2.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from h2==3.*->httpcore==0.9.*->httpx==0.13.3->googletrans==4.0.0-rc1) (5.2.0)
Requirement already satisfied: hpack<4,>=3.0 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from h2==3.*->httpcore==0.9.*->httpx==0.13.3->googletrans==4.0.0-rc1) (3.0.0)
en diline çeviri: Hello world
fr diline çeviri: Bonjour le monde
it diline çeviri: Ciao mondo
de diline çeviri: Hallo Welt
zh-cn diline çeviri: 你好世界

```
In [69]: !pip install scipy
# SciPy kütüphanesini yükler. Bu kütüphane, bilimsel hesaplamalar ve istatistiksel analizi için yaygın olarak kullanılır.

!pip install gensim
# Gensim kütüphanesini yükler. Bu kütüphane, doğal dil işleme ve metin analizi için yaygın olarak kullanılır.

from gensim.summarization.summarizer import summarize # Gensim'den summarize fonksiyonunu import ediyoruz.

text = '''Pirinç Pudingi - Alan Alexander Milne'in Şiiri
Mary Jane'e ne oldu?
Bütün gücüyle ağlıyor,
Ve akşam yemeğini yemiyor -yine pirinç pudingi-
Mary Jane'e ne oldu?
Mary Jane'e ne oldu?
Ona bebekler ve papatya zinciri sözü verdim,
Ve hayvanlarla ilgili bir kitap -hepsi boşuna-
Mary Jane'e ne oldu?
Mary Jane'e ne oldu?
Çok iyi ve hiç ağrısı yok;
Ama bak ona, şimdi yeniden başlıyor! -
Mary Jane'e ne oldu?
Mary Jane'e ne oldu?
Ona tatlılar ve tren yolculuğu sözü verdim,
Ve biraz durup açıklamasını rica ettim -
Mary Jane'e ne oldu?
Mary Jane'e ne oldu?
Çok iyi ve hiç ağrısı yok,
Ve akşam yemeğinde yine harika pirinç pudingi var!
Mary Jane'e ne oldu?''' # Özetlenecek metni tanımlıyoruz.
```

```
summary = summarize(text) # Metni özetliyoruz.
print(summary) # Çıkan özet ekrana yazdırıyoruz.
```

```
# Bu kod, Gensim kütüphanesindeki summarize fonksiyonunu kullanarak verilen metni özetler.
# Metnin özeti, metinde yer alan önemli cümleleri içerir ve gereksiz detayları atar.
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: scipy in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (1.12.0)
Requirement already satisfied: numpy<1.29.0,>=1.22.4 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from scipy) (1.24.4)
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: gensim in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (3.5.0)
Requirement already satisfied: six>=1.5.0 in c:\programdata\anaconda3\lib\site-packages (from gensim) (1.16.0)
Requirement already satisfied: smart-open>=1.2.1 in c:\programdata\anaconda3\lib\site-packages (from gensim) (5.2.1)
Requirement already satisfied: scipy>=0.18.1 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from gensim) (1.12.0)
Requirement already satisfied: numpy>=1.11.3 in c:\users\sedat.ozturk\appdata\roaming\python\python39\site-packages (from gensim) (1.24.4)
Ve akşam yemeğini yemiyor -yine pirinç pudingi-
Ona bebekler ve papatya zinciri sözü verdim,
Ona tatlılar ve tren yolculuğu sözü verdim,
Ve akşam yemeğinde yine harika pirinç pudingi var!
```

```
C:\Users\sedat.ozturk\AppData\Roaming\Python\Python39\site-packages\gensim\utils.py:120: UserWarning: detected Windows; aliasing chunkize to chunkize_serial
warnings.warn("detected Windows; aliasing chunkize to chunkize_serial")
```

```
In [70]: from gensim.summarization import keywords # Gensim'den keywords fonksiyonunu içe aktar
```

```
key_words = keywords(text) # Metnin anahtar kelimelerini çıkarıyoruz.
print(key_words) # Çıkarılan anahtar kelimeleri ekrana yazdırıyoruz.
```

```
# Bu kod, Gensim kütüphanesindeki keywords fonksiyonunu kullanarak verilen metnin en önemli anahtar kelimeleri, metnin özünü yansıtan ve en fazla önem taşıyan kelimelerdir.
```

```
mary
ona
sozu
oldu
yine
pudingi
zinciri
yolculugu
pirinc
```

```
In [ ]:
```