```
import pandas as pd
import numpy as np
from sklearn.datasets import load_iris
from sklearn.cluster import KMeans
import matplotlib.pyplot as plt
```

```
iris = load_iris()
data = pd.DataFrame(iris.data, columns=iris.feature_names)
data
```

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
...	...	...	...	...
145	6.7	3.0	5.2	2.3
146	6.3	2.5	5.0	1.9
147	6.5	3.0	5.2	2.0
148	6.2	3.4	5.4	2.3
149	5.9	3.0	5.1	1.8

150 rows × 4 columns

Start coding or generate with AI.

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 4 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   sepal length (cm)  150 non-null    float64
 1   sepal width (cm)   150 non-null    float64
 2   petal length (cm)  150 non-null    float64
 3   petal width (cm)   150 non-null    float64
dtypes: float64(4)
memory usage: 4.8 KB
```

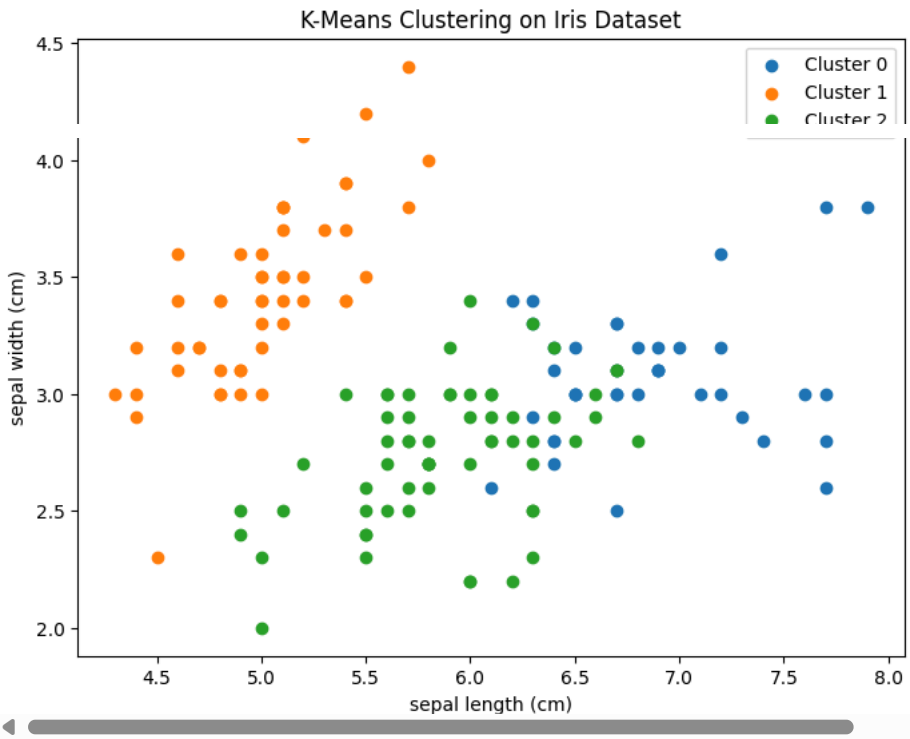
```
data.describe()
```

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333
std	0.828066	0.435866	1.765298	0.762238
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

```
kmeans = KMeans(n_clusters=3, random_state=42)
kmeans.fit(data)
data['Cluster'] = kmeans.labels_
feature_1 = 'sepal length (cm)'
feature_2 = 'sepal width (cm)'
```

```
plt.figure(figsize=(8, 6))
for cluster in range(3):  # Number of clusters
    plt.scatter(data[data['Cluster'] == cluster][feature_1],data[data['Cluster'] == cluster][feature_2],label=f'Cluster {cluster}'
plt.xlabel(feature_1)
plt.ylabel(feature_2)
plt.title('K-Means Clustering on Iris Dataset')
```

```
plt.legend()
plt.show()
```




```
import pandas as pd
import numpy as np
from sklearn.datasets import load_iris
from sklearn.cluster import KMeans
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.manifold import TSNE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Next steps: Generate code with data | View recommended plots | New interactive sheet

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```
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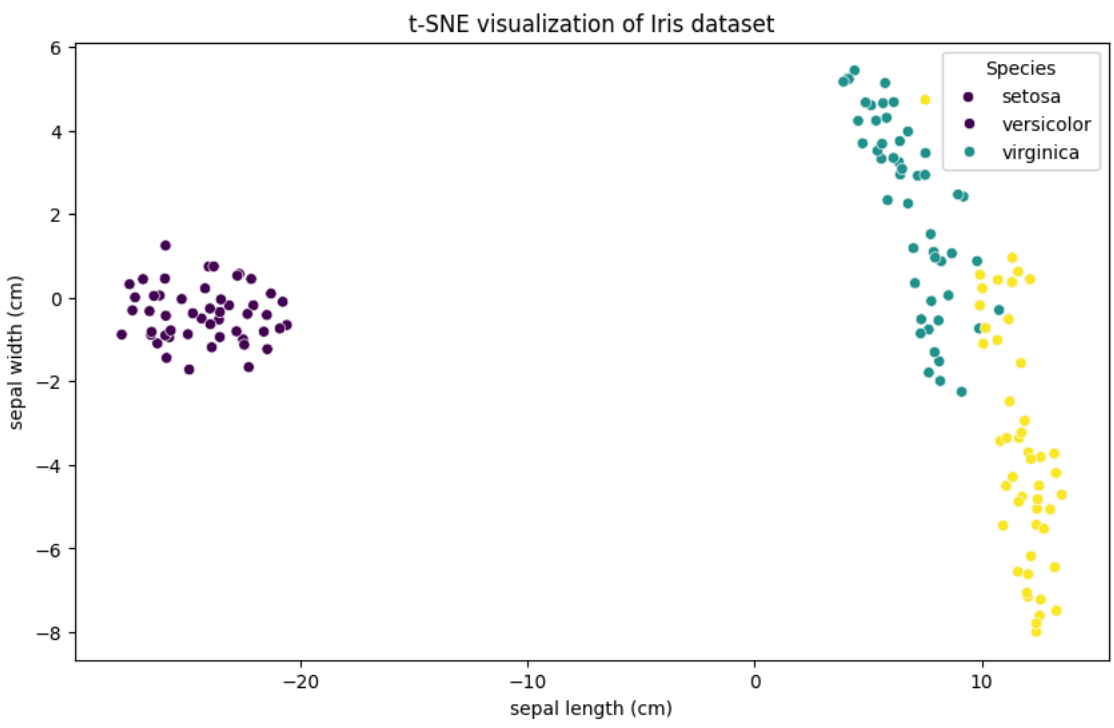
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

```
tsne = TSNE(n_components=3, random_state=42)
iris_tsne = tsne.fit_transform(data)
```

```
tsne = TSNE(n_components=2, random_state=42)
iris_tsne = tsne.fit_transform(iris.data)
tsne_df = pd.DataFrame(data=iris_tsne, columns=['sepal length (cm)', 'sepal width (cm)'])
tsne_df['species'] = iris.target
plt.figure(figsize=(10, 6))
sns.scatterplot(x='sepal length (cm)', y='sepal width (cm)', hue='species', data=tsne_df, palette='viridis')
plt.title('t-SNE visualization of Iris dataset')
plt.xlabel('sepal length (cm)')
plt.ylabel('sepal width (cm)')
plt.legend(title='Species', loc='upper right', labels=iris.target_names)
plt.show()
```



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