In this assignment students have to transform iris data into 3 dimensions and plot a 3d chart with transformed dimensions and colour each data point with specific class.

Hint:

import numpy as np

import matplotlib.pyplot as plt

from mpl_toolkits.mplot3d import Axes3D

from sklearn import decomposition

from sklearn import datasets

```
In [1]: import numpy as np
        import matplotlib.pyplot as plt
        from mpl_toolkits.mplot3d import Axes3D
        from sklearn.decomposition import PCA as P
        from sklearn import datasets
        import seaborn as sns
```

```
In [2]: Data = sns.load_dataset('iris')
        Data
```

Out[2]:

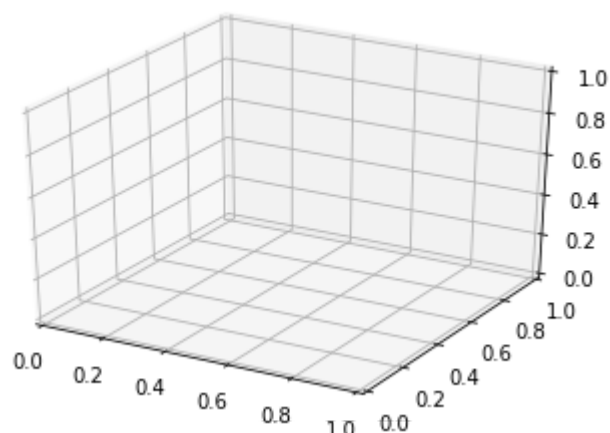|	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

150 rows × 5 columns

In [3]:
```python
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
Data.species = le.fit_transform(Data.species)
Data
```

Out[3]:

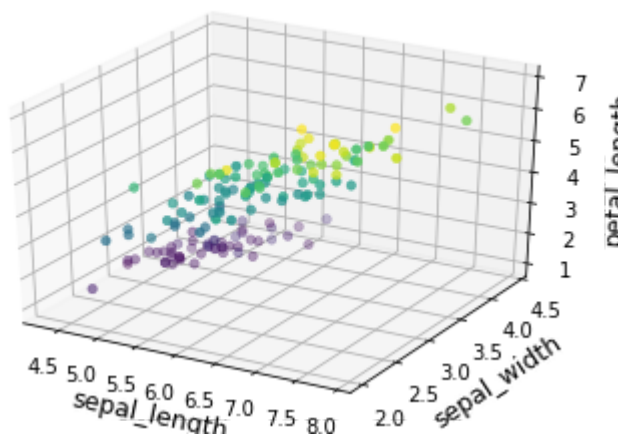|	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	0
1	4.9	3.0	1.4	0.2	0
2	4.7	3.2	1.3	0.2	0
3	4.6	3.1	1.5	0.2	0
4	5.0	3.6	1.4	0.2	0
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2
146	6.3	2.5	5.0	1.9	2
147	6.5	3.0	5.2	2.0	2
148	6.2	3.4	5.4	2.3	2
149	5.9	3.0	5.1	1.8	2

150 rows × 5 columns

In [4]:
```python
ax = plt.axes(projection='3d')
xline = Data["sepal_length"]
yline = Data["sepal_width"]
zline = Data["petal_length"]
```

In [6]:
```python
ax = plt.axes(projection='3d')
ax.scatter3D(xline, yline, zline,c =Data["petal_width"] ,cmap='viridis', linewidt
ax.set_xlabel('sepal_length' , fontsize = 12.5)
ax.set_ylabel("sepal_width", fontsize = 12.5)
ax.set_zlabel('petal_length', fontsize = 12.5)
```

Out[6]: Text(0.5, 0, 'petal_length')

In [ ]:

In [ ]: