ASSIGNMENT 2-PCA

Mahima V   PES1201700665

Amrita hegde   PES1201700970

Chaitra H P   PES1201701370

Problem Statement:

Apply Principal Component Analysis on the iris dataset.

	sepal_len	sepal_wid	petal_len	petal_wid	class
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa
10	5.4	3.7	1.5	0.2	Iris-setosa

```
Covariance matrix
[[ 1.00671141 -0.11010327  0.87760486  0.82344326]
 [-0.11010327  1.00671141 -0.42333835 -0.358937  ]
 [ 0.87760486 -0.42333835  1.00671141  0.96921855]
 [ 0.82344326 -0.358937    0.96921855  1.00671141]]
```

```
Eigenvectors
[[ 0.52237162 -0.37231836 -0.72101681  0.26199559]
 [-0.26335492 -0.92555649  0.24203288 -0.12413481]
 [ 0.58125401 -0.02109478  0.14089226 -0.80115427]
 [ 0.56561105 -0.06541577  0.6338014   0.52354627]]

Eigenvalues
[2.93035378 0.92740362 0.14834223 0.02074601]
```

```
Eigenvalues in descending order:
2.9303537755893165
0.9274036215173417
0.148342264816399
0.0207460139559571
```

```
Matrix W:
  [[ 0.52237162 -0.37231836]
   [-0.26335492 -0.92555649]
   [ 0.58125401 -0.02109478]
   [ 0.56561105 -0.06541577]]
```

```
array([[-2.26454173e+00, -5.05703903e-01],
       [-2.08642550e+00,  6.55404729e-01],
       [-2.36795045e+00,  3.18477311e-01],
       [-2.30419716e+00,  5.75367713e-01],
       [-2.38877749e+00, -6.74767397e-01],
       [-2.07053681e+00, -1.51854856e+00],
       [-2.44571134e+00, -7.45626750e-02],
       [-2.23384186e+00, -2.47613932e-01],
       [-2.34195768e+00,  1.09514636e+00],
       [-2.18867576e+00,  4.48629048e-01],
       [-2.16348656e+00, -1.07059558e+00],
       [-2.32737775e+00, -1.58587455e-01],
       [-2.22408272e+00,  7.09118158e-01],
       [-2.63971626e+00,  9.38281982e-01],
       [-2.19229151e+00, -1.88997851e+00],
       [-2.25146521e+00, -2.72237108e+00],
       [-2.20275048e+00, -1.51375028e+00],
       [-2.19017916e+00, -5.14304308e-01],
```