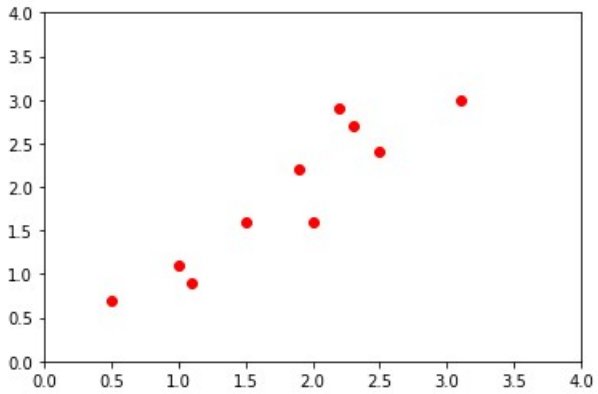
```
Python 3.6.2 |Anaconda, Inc.| (default, Sep 19 2017, 08:03:39) [MSC v.1900 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 6.1.0 -- An enhanced Interactive Python.

Restarting kernel...
```

```
In [1]: runfile('D:/MS/Class Notes/3rd Semester/Deep Learning/Assignments/1/
Assignment1.py', wdir='D:/MS/Class Notes/3rd Semester/Deep Learning/Assignments/1')


Question 1:
Given X Dataset is as follows:
[ 2.5  0.5  2.2  1.9  3.1  2.3  2.   1.   1.5  1.1]
Given Y Dataset is as follows:
[ 2.4  0.7  2.9  2.2  3.   2.7  1.6  1.1  1.6  0.9]


Question 2: Plot the graph y(x)
Graph is as follows:
```

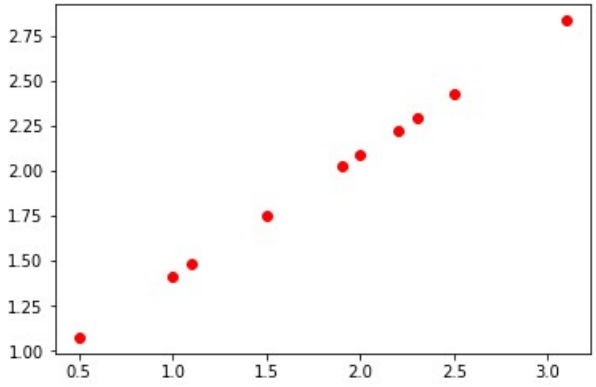



```
Question 3: Find the mean values of the both x, y.
Mean Value of X: 1.81
Mean Value of Y: 1.91


Question 4: Calculate the covariance (2x2) matrix
Covariance of 2x2 Matrix is
[[ 0.61655556  0.61544444]
 [ 0.61544444  0.71655556]]


Question 5: Find the eigenvalues and eigenvectors of the covariance matrix.
Eigen Value is
[ 0.0490834   1.28402771]
Eigen Vector is
[[-0.73517866 -0.6778734 ]
 [ 0.6778734  -0.73517866]]
```

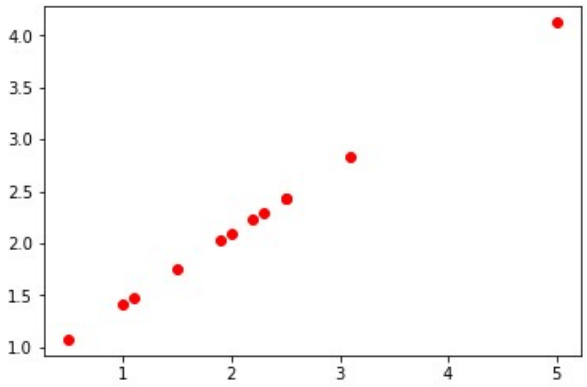
Question 6: . Compare the vectors to see if there is a vector that can be identified as the principal component.
The Vector that can be identified as Principal Component is
[[-0.73517866 -0.6778734]
 [0.6778734 -0.73517866]]

Question 7: Create a learning (regression) model utilizing the principal component.
New Y is computed by using the below formula: NewY= X*P1+P2 where P1 and P2 are Principal Components
P1 value is 0.6778734 and P2 value is 0.73517866
New Y Computed Data Set is as follows
[2.42986216 1.07411536 2.22650014 2.02313812 2.8365862   2.29428748
  2.09092546 1.41305206 1.75198876 1.4808394]

Question 8: Plot the graph y = f(x) representing this new model.
New Graph y=f(x) is as follows



Question 9: Use the model to test it for the unused, so far, data. What output the trained model will suggest for x = 2.5 and 5?
New Graph When Considering x=2.5 and 5 is as follows



In [2]: