Concept Questions.

1. You're a professor in Data Analytics with Python, and you want to visually assess if longer answers on exam questions lead to higher grades. Which plot do you use?
   A. Line plot
   B. Scatter plot
   C. Histogram

   Answer: B

2. What will the output be if you run this piece of code in the IPython Shell?

```
area = 10.0
if(area < 9) :
    print("small")
elif(area < 12) :
    print("medium")
else :
    print("large")
```

   A. small
   B. medium
   C. large

   Answer:B

3. Can you tell how many printouts the following while loop will do?

```
x = 1
while x < 4 :
    print(x)
    x = x + 1
```

   A.0
   B.1
   C.2
   D.3
   E.4

   Answer:D

4. You've just run an experiment where you compared two networks that were identical except that the 2nd network had an extra hidden layer. You see that this 2nd network (the deeper network) had better performance. Given that, which of the following would be a good experiment to run next for even better performance?

   A. Try a new network with fewer layers than anything you have tried yet
   B. Use more units in each hidden layer
   C. Use fewer units in each hidden layer

   Answer:B

5. If you have gone through 4 iterations of calculating slopes (using backward propagation) and then updated weights, how many times must you have done forward propagation?

   A. 0
   B. 1
   C. 4
   D. 8

   Answer:C

6. If your predictions were all exactly right, and your errors were all exactly 0, the slope of the loss function with respect to your predictions would also be 0. In that circumstance, which of the following statements would be correct?

   A. The updates to all weights in the network would also be 0.
   B. The updates to all weights in the network would be dependent on the activation function
   C. The update to all weights in the network would be proportional to values from input data

   Answer:A

7. Which layers of a model capture more complex or "higher level" interactions?

   A. The first layers capture the most complex interactions.
   B. The last layers capture the most complex interactions.
   C. All layers capture interactions of similar complexity.

   Answer:B

8. How are the weights that determine the features/interactions in Neural Networks created?

   A. A user chooses them when creating the model.
   B. The model training process sets them to optimize predictive accuracy.
   C. The weights are random numbers

   Answer:B

True/False Questions:

1. Imagine you have to make a prediction for a single data point. The actual value of the target is 7. The weight going from node_0 to the output is 2. If you increased it slightly, changing it to 2.01, would the predictions become less accurate?

   True *False*

   Answer: True

2. The example given below can be framed as regression problem :

   "*A bike share company using time and weather data to predict the number of bikes being rented at any given hour."*

   True *False*

   Answer: True

3. The example given below can be framed as regression problem :

   "*A restaurant using review data to ascribe positive or negative sentiment to a given review*."

   True *False*

   Answer: False

4. *"A nice looking plot is always the end goal of a statistical analysis."*

   True *False*

   Answer: False

5. *"If done well, graphical representations can allow for more rapid interpretation of data."*

   True *False*

   Answer: True

6. An outlier can significantly affect the value of the mean, but not the median.

   True *False*

   Answer: True

7. A bootstrap sample is an array of length n that was drawn from the original data with replacement.

   True *False*

   Answer: True