Company: TheMathCompany  
  
Role: Data Scientist  
  
  
1. How to find the positions of numbers that are multiples of 4 from a series in python?  
Ans.  
For finding the multples of 4, we will use the argwhere() function. First, we will create a list of 10 numbers –  
s1 = pd.Series([1, 2, 3, 4, 5, 6, 7, 8, 9, 10]) np.argwhere(s1 % 4==0)  
Output > [3], [7]  
  
2. What is the difference between recall and precision?  
Ans.  
While calculating the Precision of a model, we should consider both Positive as well as Negative samples that are classified.  
While calculating the Recall of a model, we only need all positive samples while all negative samples will be neglected.  
Hence Precision quantifies the number of positive class predictions that actually belong to the positive class. Recall quantifies the number of positive class predictions made out of all positive examples in the dataset.  
  
3. How can you select k for k-means?  
Ans.  
There are two methods to calculate the optimal value of k in k-means are:  
\* Elbow method  
\*Silhouette score method  
Silhouette score is the most prevalent while determining the optimal value of k.  
  
4. What is a ROC Curve? Explain how a ROC Curve works?  
Ans.  
AUC – ROC curve is a performance measurement for the classification problem at various thresholds settings. ROC is a probability curve and AUC represents the degree or measure of separability. It tells how much model is capable of distinguishing between classes. Higher the AUC, better the model is at predicting 0s as 0s and 1s as 1s.  
  
5. How will you get second highest salary of an employee emp from employee\_table?  
Ans.  
SELECT TOP 1 salary FROM( SELECT TOP 2 salary FROM employee\_table ORDER BY salary DESC) AS emp ORDER BY salary ASC;  
  
6. What is the central limit theorem?  
Ans.  
The central limit theorem states that the distribution of an average will tend to be Normal as the sample size increases, regardless of the distribution from which the average is taken except when the moments of the parent distribution do not exist.  
  
7. Difference between Normalisation and Standardization?  
Ans.  
Both Normalisation and Standardization are methods of Features Conversion. However, the methods are different in terms of the conversions. The data after Normalisation scales in the range of 0-1. While in case of Standardization the data is scaled such that it means comes out to be 0.

**Company: Splunk**  
  
Role: Data Scientist  
  
  
1. Explain ways to train hyperparameters in a neural network?  
  
Ans:Hyperparameters in a neural network can be trained using four components:  
  
1. Batch size: Indicates size of input data  
  
2. Epochs: Denotes the number of times the training data is visible to neural network to train  
  
3. Momentum: Used to get an idea of next steps that occur with data being executed  
  
4. Learning rate: Represents time required for network to update parameters and learn  
  
  
2. What happens if the learning rate is set too high or too low?  
  
Ans: If the learning rate is too low, your model will train very slowly as minimal updates are made to the weights through each iteration. Thus, it would take many updates before reaching the minimum point.  
If the learning rate is set too high, this causes undesirable divergent behavior to the loss function due to drastic updates in weights, and it may fail to converge.  
  
  
3. Explain Crude working of LSTM? ==> How Does an LSTM Network Work?  
  
Ans: Long-Short-Term Memory (LSTM) is a special kind of recurrent neural network RNN capable of learning long-term dependencies, remembering information for long periods as its default behaviour. Crude steps in an LSTM network are as:  
  
1: Network decides what to forget and what to remember  
2: It selectively updates cell state values  
3: Network decides what part of current state makes it to output  
  
  
4. Explain what is Swish Function?  
  
Ans: Swish is an activation function proposed by Google which is an alternative to ReLU activation function.  
  
It is represented as: f(x) = x \* sigmoid(x)  
  
Swish function works better than ReLU for a variety of deeper models.  
  
The derivative of Swist can be written as: y’ = y + sigmoid(x) \* (1 - y)