1. **Defang IP address.**

A user's IP address is defanged to prevent the user from clicking on a malicious link. The problem with Defanginig IP addresses is one of the common coding interview questions for someone who is planning data science. In this article, I will tell you how to defang an IP address using Python.

Solving the problem of changing an IP address is good for someone who is a newbie for practising the concept of string manipulation. It is very easy to understand because it is only based on the concepts of replacing and join. There are so many unique ways to solve this problem, which is why this is one of the favourite questions for interview coding.

Defanging IP Address: Problem Statement  
To convert an IP address to a defanged IP address, we need to replace "." with "[.]". During coding interviews, a standard problem for changing an IP address is that you receive a valid IP address, you must return a defanged version of that IP address.

This is generally a warm-up question for coding interviews. Solving this question quickly will give a good impression that you know how to understand a problem statement quickly because there is not much that you need to solve this problem. You just need to replace every "." with "[.]".

1. **Data Challenge - Instructions and Dataset      (Interview Challenge)**  
          
   Challenge:   You have been hired as a Strategy and Analytics Consultant by the Head of Sales for a company.      
     You have been given data on sales transactions and need to create a strategy to grow revenue for a portfolio of 5 different products.      
     First, identify which product has had the highest revenue growth rate over the last four years and outline major contributing factors to that growth.      
     Then, provide your recommendations for how to grow overall revenue. Please use the data attached to provide your rationale for your recommendations.     
     In your recommendations, feel free to include external data on market trends, and the usage of advanced analytics and techniques is recommended.     
          
    Please submit the Excel file with your work and your code file in Python.

1. You can make a Kaggle notebook with your markups and share it with me.

2. The excel sheet is attached.

[data\_challenge.xlsx](https://mylearning.suny.edu/content/enforced/471760-2023SP-NEW-EGC493-944/csfiles/home_dir/courses/spring22_merged_egc493_ege593_fouda/data_challenge.xlsx?_&d2lSessionVal=QPhaDid5LSMIAVLzfaxtEZQya)

1. Suppose that you are the administrator of a university department and you want to determine each applicant's chance of admission based on their results on two exams. You have historical data from previous applicants that you can use as a training set for logistic regression. For each training example, you have the applicant's scores on two exams and the admissions decision. Your task is to build a classification model that estimates an applicant's probability of admission based the scores from those two exams.

[ex2data2.txt](https://mylearning.suny.edu/content/enforced/471760-2023SP-NEW-EGC493-944/csfiles/home_dir/courses/spring22_merged_egc493_ege593_fouda/ex2data2.txt?_&d2lSessionVal=QPhaDid5LSMIAVLzfaxtEZQya)

1. Before starting to implement any learning algorithm, it is always good to visualize the data if possible. Draw a scatter plot having Exam 1 scores on the x-axis and Exam 2 scores on the y-axis. Plot the dots by admitted or not admitted.

2. Implement the sigmoid function. So, it can be called by the rest of your program. When you are finished, try testing a few values by calling sigmoid(x) in a new cell. For large positive values of x, the sigmoid should be close to 1, while for large negative values, the sigmoid should be close to 0. Evaluating sigmoid (0) should give you exactly 0.5. Your code should also work with vectors and matrices. For a matrix, your function should perform the sigmoid function on every element.

4. Write the line equation between the stock performance index (S & P index) and the prices of oil per barrel and gold in presidential election years.

Target variable: stock\_market\_returns

Independent Variables: oil and gold prices.

[sp\_oil\_gold.xlsx](https://mylearning.suny.edu/content/enforced/471760-2023SP-NEW-EGC493-944/csfiles/home_dir/courses/spring22_merged_egc493_ege593_fouda/sp_oil_gold.xlsx?_&d2lSessionVal=QPhaDid5LSMIAVLzfaxtEZQya)