**Section A: How to submit the assignment.**

1. Create a public repository called : **DA\_Submission02**
2. Add GitHub User Azubi01 as collaborator to this repository
3. Write an email to **submissions@azubiafrica.org** with the subject **DA\_Submission02, Your Name.** Please use the name that you used to submit your application for the position.

For example, if you applied using the name John Doe then the subject of the email should be **DA\_Submission02, John Doe.**

1. In the body of the email send a link to the repository with your submission

**Section B: The Assignment**

**Description**

Big Pharma is a large pharmaceutical distribution company in Germany. They restock their warehouses monthly but have been running into issues with overstocking and under-stocking products. You were employed as a data scientist to help find a solution to this problem. The sales team has provided you with data to get started on implementing your solution.

The data required for this is in the accompanying attachment **data.zip**.

**Metadata**

1. Date: The date a product was purchased
2. Product ID: The ID for the product
3. Stock Demand: The quantity of product purchased (unit is in boxes)

**Task**

The data provided includes product demand from October 2020 to October 2021. Your task is to forecast the quantity of products the company should purchase for their warehouses in the coming month.

You would be required to answer the following questions:

1. What evaluation metric would you recommend for your model and why?

* 1-Mean Absolute Error
* 2-Root Mean Squared Error
* 3-Mean Absolute percentage Error

Because the time series problem considers as regression but with constrains that`s why this metrics are suitable

1. How would you build a machine learning pipeline for your model?

First prépare the data to be in the right format for enter the model , then we should get d,p,q value for ARIMA modl so we need to check first if the data is stationary or not then I draw PACF and ACF to get the right value of p,q values for ARIMA model then apply the model and test it using test data

1. How would you measure the impact your model has on the company’s operations?

It will help the company to take in their considération to achieve the Target based on demand that the model predict

NB: Be free to make your own reasonable assumptions. Please state any assumptions that you make.

**How to submit**

Follow the instructions in section A to make your submission. Any additional notes should be added to the README file of your repository.

**Evaluation**

We will be assessing:

1. your data storytelling skills
2. data visualization skills
3. presentations skills
4. overall coding ability