# README – Final Python Project

## Project Information

Group Members:

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## Project Overview

### Definition of the Subject

This project focuses on analyzing Amazon’s stock performance using various Python-based data analysis and visualization tools. It uses historical stock data from January 2020 to December 2023 and applies key technical indicators and graphical methods to better understand stock behavior.

### Motivation Behind the Project

The primary objective of this project is to apply the skills and tools we studied during the course Business Analytics – Excel, VBA & Python, taught by Mr. Bousselmi Wael in Semester 7 of the Master in Management program at ESSCA.

We chose a stock market-based project to demonstrate the practical use of Python in business analytics, specifically focusing on real-world datasets, time series data, and financial indicators. Working with Amazon’s stock allowed us to explore patterns, trends, and volatility in an impactful and recognizable context.

### Explanation of Functionalities

The project is structured in the following main components:

* Data Collection: Historical stock data is fetched directly from Yahoo Finance using the **yfinance** library.
* Data Cleaning and Preprocessing: Missing values are handled using forward fill and Normalized Close is calculated.
* Technical Indicators: 20-day and 50-day Simple Moving Averages (SMA) and Daily Returns are computed.
* Data Visualization: Includes line plots, histograms, heatmaps, and volatility plots.
* Report Generation: All visuals and insights are compiled into a professionally formatted PDF using reportlab.

### Description of Inputs and Outputs

Inputs:

* Stock Ticker: 'AMZN'
* Time Range: 2020-01-01 to 2023-12-31
* Source: Yahoo Finance API via yfinance

Outputs:

* Visualizations: closing\_price.png, distribution\_prices.png, correlation\_heatmap.png, moving\_averages.png, daily\_return.png
* Report: amazon\_stock\_analysis\_report.pdf – a compiled summary of all visuals and insights

### Important Note

This project was entirely developed using **Google Colab**.

To ensure all functionalities - including data fetching from Yahoo Finance, visualizations, and PDF generation - work correctly, **please use Google Colab to run this project**.