This repository contains my completed solutions and analysis for the **J.P. Morgan Quantitative Research Virtual Internship**. The program provided practical, hands-on experience in applying mathematical and computational models to complex financial problems, including pricing derivatives and performing credit risk analysis.

The virtual internship was completed successfully and the overall program is marked as **COMPLETED**.

Task	File Name	Difficulty	Completion Status
Task 1: Investigate and analyze price data	`jpMorgan_first_task.ipynb`	Intermediate	Complete
Task 2: Price a commodity storage contract	`jpMorgan_2nd_task.ipynb`	Intermediate	Complete
Task 3: Credit risk analysis	`jpMorgan_Task_3.ipynb`	Intermediate	Complete
Task 4: Bucket FICO scores	`jpMorgan_last_task.ipynb`	Introductory	Complete
Finish Line: Collect achievements	*(No associated file)*	Intermediate	Complete

🛠️ Technology Stack & Quantitative Methods

The solutions for these tasks primarily leverage Python's quantitative and data science ecosystem.

- **Programming Language:** Python 3
- **Core Libraries:**
  - **NumPy:** Essential for high-performance numerical operations and matrix algebra, critical for quantitative modeling.
  - **Pandas:** Used for efficient data manipulation, time-series handling, and preparing data for financial analysis.
  - **Jupyter Notebook:** For interactive development, modeling, and documentation of the quantitative steps.
- **Methods Applied:**
  - **Time-Series Analysis** (Task 1)
  - **Derivatives Pricing/Modeling** (Task 2)

- **Statistical/Credit Risk Modeling** (Task 3)
- **Data Segmentation/Binning** (Task 4)

Key Achievements & Learning Outcomes

Successful completion of this internship validated my ability to bridge theoretical knowledge with practical quantitative challenges:

- **Financial Data Modeling:** Gained experience in modeling market price data and pricing structured products (commodity contracts).
- **Risk Management:** Applied principles of **credit risk analysis** and data-driven segmentation (FICO scores).
- **Professional Recognition:** Earned the **Certificate** achievement upon completion.