Holding-Period Return - Object Oriented Programming (Python)

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Introduction

This report will describe a python application that is designed to calculate the holding period for a stock investment. The holding period is an important metric in stocks as it shows returns on investments over a period of time. This application uses Costco Wholesale Corporation (COST) stock as an example object for this application.

Main Idea

The purpose of this application is to compute the holding-period return using this formula:

HPR = (Ending Price - Beginning Price + Dividend) / Beginning Price.

Object-oriented programming ideas are shown by implementing a Stock class that contains the data attributes and another class called StockTest which carries out and outputs the information.

Data Collection

The data comes from MarketWatch(https://www.marketwatch.com) for Costco Wholesale Corporation (COST) for the calendar year 2024.

- Stock Symbol: COST
- Company Name: Costco Wholesale Corporation
- Beginning Price (open 01/02/2024): $655.58
- Ending Price (closed 12/31/2024): $916.27
- Total Dividends: $4.50

Analysis

The holding-period return for COST stock in 2024 was approximately 40.5%. This means that investors who purchased stocks for mCostco at the beginning of 2024 and held it for the entire year would have earned 40.5% return on their investment. This reflects Costco's business model and continued growth in the retail industry since 2024.

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Conclusion

The application I made for this project successfully demonstrates one of the many uses of object-oriented programming in Python. The Stock files use relevant data (stored in the StockTest file) and provide a method to calculate the holding-period return while the StockTest creates objects and outputs these ideas. This application can be easily modified and analyze other stocks by simply changing input values.

Source Code

Stock.py

```
#Stock.py
#Stock class for calculating hiolding-period return

class Stock:
    def __init__(self, symbol, name):
            self.symbol = symbol
            self.name = name
            self.beginningPrice = 0.0
            self.endingPrice = 0.0
            self.dividend = 0.0

    def getHoldingPeriodRetrun(self):
        #HPR (ending price - beginning price + dividend) / beginning price
        hpr = (self.endingPrice - self.beginningPrice + self.dividend) / self.be
        return hpr
```

StockTest.py

```
#stockTest.py
#Test program from Stock class

from Stock import Stock

#creat a Stock object for Costco
myStock = Stock("COST", "Costco Wholesale Corporation")

#Set the stock data for 2024
myStock.beginningPrice = 655.58 #Jan 2, 2024
myStock.endingPrice = 916.27 #Dec 31, 2024
myStock.dividend = 4.50

#Calculate and display the holding period return
hpr = myStock.getHoldingPeriodRetrun()

#Display results
print(f"Stock Symbol: {myStock.symbol}")
print(f"Company Name: {myStock.name}")
print(f"Beginning Price: ${myStock.beginningPrice:.2}")
print(f"Ending Price: {myStock.endingPrice:.2f}")
print(f"Dividends: {myStock.dividend:.2f}")
print(f"Holding-Period Return: {hpr:.1%}")
```

Output

```
========== RESTART: C:/Users/rylei/Downloads/python/StockTest.py ==========
Stock Symbol: COST
Company Name: Costco Wholesale Corporation
Beginning Price: $6.6e+02
Ending Price: 916.27
Dividends: 4.50
Holding-Period Return: 40.5%
```