

Step 1: Study 121. Best Time to Buy and Sell Stock (local copy) – Easy

```
class Solution:
    def maxProfit(self, prices: List[int]) -> int:
        min_price = float('inf')
        max_profit = 0
        for i in range(len(prices)):
            if prices[i] < min_price:
                min_price = prices[i]
            elif prices[i] - min_price > max_profit:
                max_profit = prices[i] - min_price

        return max_profit
```

Console ^



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Step 2: Ask ChatGPT: "How to implement a Python code to solve the LeetCode question: '121. Best Time to Buy and Sell Stock', with the test data: 'Input: prices = [7,1,5,3,6,4], Output: 5'"

To solve the LeetCode question "Best Time to Buy and Sell Stock" in Python, you can follow these steps:

1. Initialize two variables, `min_price` and `max_profit`, to track the minimum price seen so far and the maximum profit that can be obtained.
2. Iterate over the `prices` list.
3. For each price, check if it is smaller than the current `min_price`. If it is, update `min_price` to the new minimum value.
4. Calculate the potential profit by subtracting `min_price` from the current price.
5. If the calculated profit is greater than `max_profit`, update `max_profit` with the new maximum value.
6. After iterating through all prices, return the `max_profit` as the result.

Here's the Python code implementing the above steps for the given test data:

python

 Copy code

```
def maxProfit(prices):  
    min_price = float('inf')  
    max_profit = 0  
  
    for price in prices:  
        if price < min_price:  
            min_price = price  
        else:  
            profit = price - min_price  
            if profit > max_profit:  
                max_profit = profit  
  
    return max_profit  
  
# Test data  
prices = [7, 1, 5, 3, 6, 4]  
output = maxProfit(prices)  
print(output) # Output: 5
```

 Regenerate response

The code above should solve the "Best Time to Buy and Sell Stock" question on LeetCode using the given test data. It finds the maximum profit that can be obtained by buying and selling a stock based on the price history. The output for the provided test data will be `5`.

Step 3: Implement the Python code created by ChatGPT

```
q1.py > ...
1  def maxProfit(prices):
2      min_price = float('inf')
3      max_profit = 0
4
5      for price in prices:
6          if price < min_price:
7              min_price = price
8          else:
9              profit = price - min_price
10             if profit > max_profit:
11                 max_profit = profit
12
13     return max_profit
14
15
16 # Test data
17 prices = [7, 1, 5, 3, 6, 4]
18 output = maxProfit(prices)
19 print(output) # Output: 5
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Python + - [] [x] ... ^

PS D:\MSCS\CS455 Algorithm\w5> & C:/Users/odody/AppData/Local/Programs/Python/Python311/python.exe "d:/MSCS/CS455 Algorithm/w5/q1.py"

5

PS D:\MSCS\CS455 Algorithm\w5>

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Step 4: Test the Python code with all the test cases provided by 121. Best Time to Buy and Sell Stock (local copy)

```
q1.py > ...
1  def maxProfit(prices):
2      min_price = float('inf')
3      max_profit = 0
4
5      for price in prices:
6          if price < min_price:
7              min_price = price
8          else:
9              profit = price - min_price
10             if profit > max_profit:
11                 max_profit = profit
12
13     return max_profit
14
15
16 # Test data
17 prices = [7, 1, 5, 3, 6, 4]
18 output = maxProfit(prices)
19 print(output) # Output: 5
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Python + - [] [x] ... ^

PS D:\MSCS\CS455 Algorithm\w5> & C:/Users/odody/AppData/Local/Programs/Python/Python311/python.exe "d:/MSCS/CS455 Algorithm/w5/q1.py"

5

PS D:\MSCS\CS455 Algorithm\w5>

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```
q1.py > ...
1  def maxProfit(prices):
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5      for price in prices:
6          if price < min_price:
7              min_price = price
8          else:
9              profit = price - min_price
10             if profit > max_profit:
11                 max_profit = profit
12
13     return max_profit
14
15
16 # Test data
17 prices = [7,6,4,3,1]
18 output = maxProfit(prices)
19 print(output) # Output: 0
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL Python + - [] [X] ... ^

```
PS D:\MSCS\CS455 Algorithm\w5> & C:/Users/odody/AppData/Local/Programs/Python/Python311/python.exe "d:/MSCS/CS455 Algorithm/w5/q1.py"
0
PS D:\MSCS\CS455 Algorithm\w5>
```

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