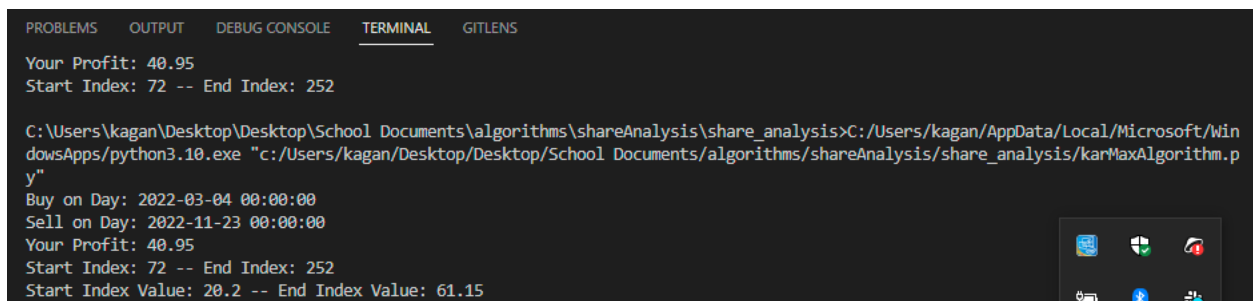# Reviewing the Market Value of Anadolu Efes Stock in 2021-2022

This research is based on the data collected for AnadoluEfes stock from the official website of isyatirim. Data were collected and stored for 365 days for the year 2021-2022. For this research we focused on the data in the closing (TL) column (second column) and as a result for this research, the results and the graphs and graphs found programmatically will be compared.

For this research, data was read from Excel files using the 'Python' programming language and pandas, matplotlib and openpyxl libraries, the daily changes were calculated by comparing the data in the program data set with the data of the next day, and using the profit maximization algorithm, it shows the highest profit that can be made in that year.

Figure 1: Results of the program by using the Maximum sub-array algorithm

As seen in Figure 1, Maximum subarray range starts on 2022-03-04 (72nd index of index) and ends at 2022-11-23 (252nd index of index) of the year. It brings us the total maximum profit between these indexes.

Now it's time to inspect and review the plot: (built with matplotlib library)
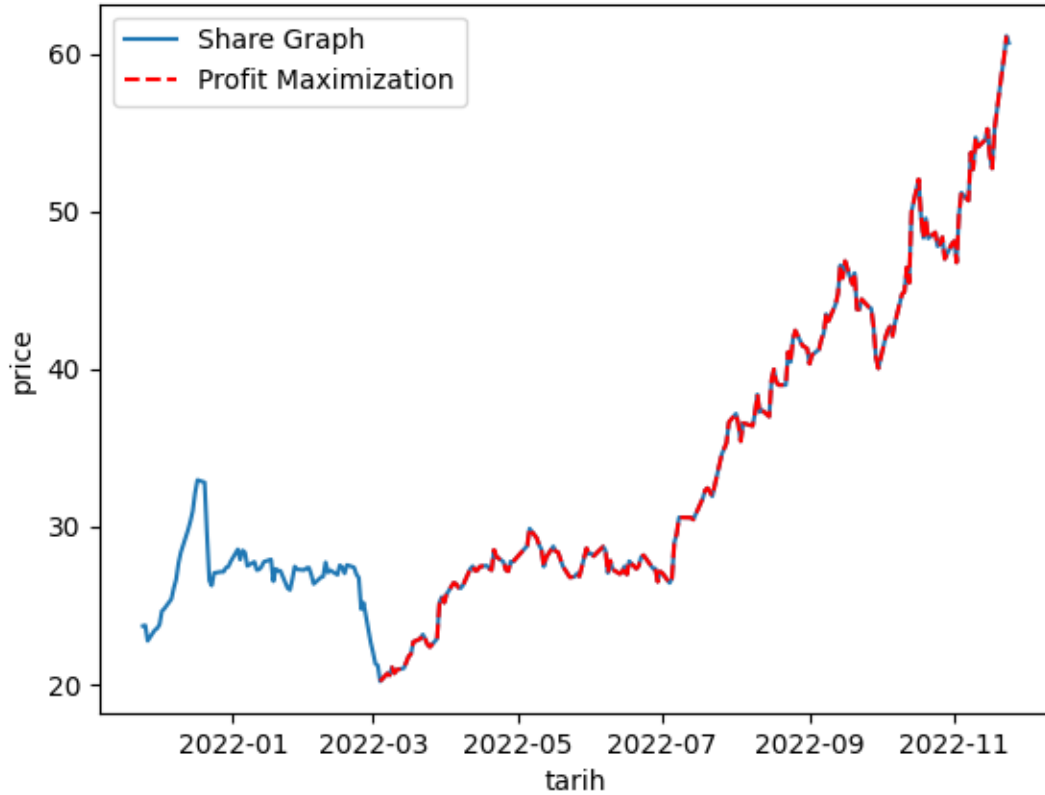

Figure 2:linear graph of Anadolu Efes stock in 2021-2022

When the chart above is examined, the dates indicated in blue indicate the ordinary state of the stock, and the dates indicated in red lines indicate that the person who will trade on these two dates will make a profit according to our algorithm. In this respect, it can be noticed that Anadolu Efes shares are more successful and profitable after the first quarter of 2021. The program results in figure 1 also confirmed this.

As a result, both the program and the linear charts confirmed that Anadolu Efes stock might be suitable for investing

Finally, we can conclude that the maximum substring algorithm can be a way to analyze a particular stock based on its previous data, it seems suitable for long-term investment methods such as annuity.

Let's go into some detail and examine the algorithm I wrote.

```python
def maxProfit(arr,len):
    i=0
    minIndex=0
    maxIndex=0
    profit=0
    tempProfit=0
    while i<len:

        j=i+1
        while j<len:
            tempProfit=arr[j]-arr[i]
            if(tempProfit>profit):
                profit=tempProfit
                minIndex=i
                maxIndex=j

            j+=1
        i+=1


    return minIndex,maxIndex,profit
```

Figure 3:Algorithm

I created a function called maxProfit. This function takes 2 parameters, one is stock price information, and the other is the length of the array where this information is kept.

We have 4 different variables for the function.

The variables are:

minIndex: It will give us the index where the stock should be taken.

maxIndex: It will give us the index that the stock should be sold to get the highest profit.

profit: Shows us the profit to be made.

tempProfit: It is the temporary difference kept to compare the profit difference between 2 days.

Starting from the first day, the algorithm looks at the price difference between the next days and continues this cycle until all the elements in the array are checked.

Since the newly purchased stock cannot be sold in the past, it is checked for comparison with the values after that day.

During this control, the price difference between 2 days is checked and this value is assigned to the tempProfit variable.
If the value of tempProfit is higher than the value of profit, the value of tempProfitin is assigned to the variable profit.

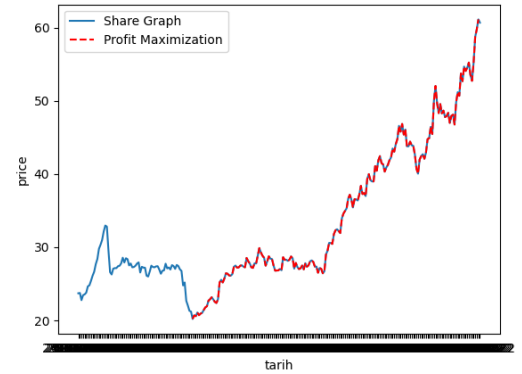After all the elements in the array are checked, the variables are returned.

Anadolu Efes 2021

```
Buy on Day: 30-11-2020
Sell on Day: 19-01-2021
Your Profit: 6.510000000000002
Start Index: 5 -- End Index: 40
Start Index Value: 18.11 -- End Index Value: 24.62
```
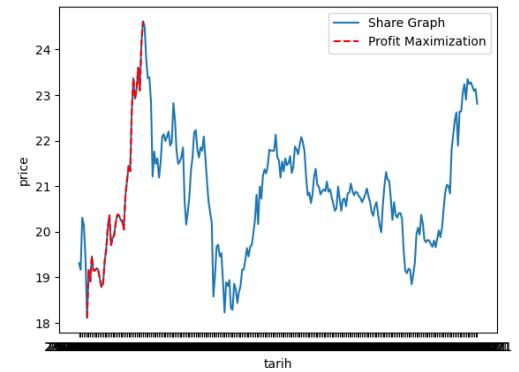

Anadolu Efes 2022

```
Buy on Day: 04-03-2022
Sell on Day: 23-11-2022
Your Profit: 40.95
Start Index: 72 -- End Index: 252
Start Index Value: 20.2 -- End Index Value: 61.15
```

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