Sigma Coding Challenge

1) Maximized Portfolio value and the transition probability
   matrix of the year 2023

```
Day: 2023-01-03 00:00:00, State: nan, Portfolio Value: 0
Day: 2023-01-18 00:00:00, State: 0.0, Portfolio Value: 2
Day: 2023-02-01 00:00:00, State: 0.0, Portfolio Value: 4
Day: 2023-02-15 00:00:00, State: 1.0, Portfolio Value: 7
Day: 2023-03-02 00:00:00, State: 0.0, Portfolio Value: 4
Day: 2023-03-16 00:00:00, State: 1.0, Portfolio Value: 5
Day: 2023-03-30 00:00:00, State: 0.0, Portfolio Value: 6
Day: 2023-04-14 00:00:00, State: 0.0, Portfolio Value: 6
Day: 2023-04-28 00:00:00, State: 0.0, Portfolio Value: 7
Day: 2023-05-12 00:00:00, State: 0.0, Portfolio Value: 9
Day: 2023-05-26 00:00:00, State: 1.0, Portfolio Value: 10
Day: 2023-06-12 00:00:00, State: 1.0, Portfolio Value: 13
Day: 2023-06-27 00:00:00, State: 1.0, Portfolio Value: 16
Day: 2023-07-12 00:00:00, State: 0.0, Portfolio Value: 16
Day: 2023-07-26 00:00:00, State: 0.0, Portfolio Value: 16
Day: 2023-08-09 00:00:00, State: 0.0, Portfolio Value: 15
Day: 2023-08-23 00:00:00, State: 1.0, Portfolio Value: 14
Day: 2023-09-07 00:00:00, State: -1.0, Portfolio Value: 14
Day: 2023-09-21 00:00:00, State: 0.0, Portfolio Value: 13
Day: 2023-10-05 00:00:00, State: 0.0, Portfolio Value: 13
Day: 2023-10-19 00:00:00, State: 0.0, Portfolio Value: 13
Day: 2023-11-02 00:00:00, State: 1.0, Portfolio Value: 13
Day: 2023-11-16 00:00:00, State: 0.0, Portfolio Value: 16
Day: 2023-12-01 00:00:00, State: 0.0, Portfolio Value: 16
Day: 2023-12-15 00:00:00, State: 0.0, Portfolio Value: 18
Day: 2023-12-29 00:00:00, State: 0.0, Portfolio Value: 17

Transition Probabilities:
        1      0      -1
  1    0.2   0.68   0.12
  0    0.25  0.6    0.15
 -1    0.11  0.74   0.14
```

2) The buy Indexes of the year 2023

6 , 8 , 12 , 16 , 21 , 28 , 30 , 33 , 36 , 39 , 41 , 45 , 50 , 52 ,
57 , 59 , 61 , 64 , 66 , 69 , 79 , 85 , 88 , 94 , 97 , 100 , 103 ,
108 , 110 , 113 , 117 , 120 , 123 , 128 , 133 , 136 , 142 , 145
, 147 , 154 , 156 , 160 , 164 , 169 , 173 , 177 , 179 , 183 ,
187 , 191 , 196 , 201 , 204 , 207 , 209 , 212 , 216 , 218 , 232
, 234 , 236 , 238 , 243

3) Buy indexes of certain days of the year 2023

```
Enter starting date (dd-mm-yyyy):   08-06-2023
Enter ending date (dd-mm-yyyy):   08-07-2023
```

```
2023-06-08 00:00:00
2023-06-12 00:00:00
2023-06-15 00:00:00
2023-06-22 00:00:00
2023-06-27 00:00:00
2023-06-30 00:00:00
```