Problem Statement 1: Data Analysis with NumPy (Arrays)

Objective: Practice working with NumPy arrays for data manipulation and analysis.

Task: • Simulate a dataset containing daily stock prices for a company over the past month.

- Each day's price will be a random number within a reasonable range.
- Use NumPy to create an array to store the daily closing prices.
- Analyze the stock price data using NumPy functions:
  - ✓ Calculate the standard deviation of the closing prices
  - ✓ Identify the day with the highest closing price and its value
  - ✓ Find the days where the closing price increased by more than 5% compared to the previous day
- Display the results in a clear and informative manner.

CODE:

```
import numpy as np

stock_prices_raw = np.random.random((30,10))*100
stock_prices=np.round(stock_prices_raw,decimals=2)
print(“STOCK PRICES”)
print(stock_prices)

print("-"*60)
daily_closing_prices=stock_prices[:,-1]

print("DAILY CLOSING:",daily_closing_prices)
```

```
standard_deviation_closing=np.std(daily_closing_prices)

print("-"*60)

print("STANDARD DEVIATION:",standard_deviation_closing)

print("-"*60)


highest_closing_price_day=np.argmax(daily_closing_prices)

print("HIGHEST CLOSING DAY:",highest_closing_price_day)


price_diff = np.diff(daily_closing_prices)

previous_day_prices = daily_closing_prices[:-1]

current_day_prices = daily_closing_prices[1:]

price_increase_percentage = ((current_day_prices - previous_day_prices) /
previous_day_prices) * 100

increased_by_5_percent_indices = np.where(price_increase_percentage > 5)[0] + 1


print("-" * 60)


print("Days where the Closing Price Increased by more than 5% compared to the Previous Day:",
increased_by_5_percent_indices)
```

OUTPUT:

```
= RESTART: C:/Program Files/Python312/ASSIGNMENTQUESTION_TECHACADEMY/learnnumpy-assignment1-10-06-2024.py
STOCK PRICES
[[75.87 75.94 57.62 10.99 19.18 84.78  5.98 84.82 79.13 57.45]
 [38.94 81.06 74.4  62.72 43.96 77.19 10.91 83.49 75.08 35.31]
 [35.69 74.36 99.43 82.74 82.1  92.18 67.46 79.14 77.83  4.38]
 [67.26 15.99 63.16 18.45 82.96  9.89 81.11 78.69 37.14 18.78]
 [ 9.13  4.77 77.76 40.97 27.15 72.21 28.42 29.05 26.16 30.38]
 [22.31 29.21 45.05 28.3  28.22 51.77 56.77 18.25 11.62 73.48]
 [ 9.38 45.32 83.67  7.13  3.38 33.89 68.77 42.93  1.1  59.91]
 [13.4  17.08  3.32 93.05 92.79 35.92 94.88 68.19 32.46 39.08]
 [ 7.27 36.03 44.2  37.45 15.85 41.58 43.15 64.48 70.87 48.96]
 [33.45 18.07 90.85 10.95 71.03 34.17 95.58 42.58 77.95 83.18]
 [ 2.72 84.71  1.79 91.74 12.44 19.77 65.52 14.33 25.23 14.8 ]
 [19.84  9.37  5.   41.06 53.88 34.08 34.95 60.72 72.44 12.37]
 [62.41 87.55 91.37  2.41 28.9  23.23 97.03 93.75 48.46 52.05]
 [54.39 74.2  65.26 97.93 62.86 49.38 46.84 73.2  87.85 71.63]
 [46.34 61.36 47.73 40.42 98.61 39.44 35.99 58.41 35.45 97.16]
 [68.29 88.06 40.18 51.6  97.68 20.03 21.14 46.71  2.7   7.76]
 [94.07 98.7  17.68 48.27 19.19 26.08 17.27 33.22 59.94 27.13]
 [15.73 49.49 76.31 32.46 83.65 38.14 30.02 81.19  2.99 72.84]
 [92.82 18.27 65.87 19.52 21.19 83.18  1.38 44.68 48.98 80.25]
 [99.57 92.3  95.44 18.79 88.7  86.97 39.03 94.08 12.49 12.97]
 [51.52  1.37 21.71 29.66  4.98 85.45 35.01 41.82 12.17  0.93]
 [37.44 84.48 98.65 75.52 76.19 71.26 22.51 44.53 13.95 71.28]
 [53.36 29.2  91.83  5.75 78.66 22.77 73.83 25.62 65.82  8.78]
 [40.23 31.9  79.81 46.52 71.17 37.07  7.88 29.43  6.03 69.21]
 [46.36 21.23 36.31 29.93 54.02 85.37 26.36 59.25 33.65 93.61]
 [16.81 95.51 84.63 24.15 46.11 99.11 50.65 58.28 94.85 19.37]
 [33.36  6.23 77.22 46.06 34.21 22.73 80.21 38.17 16.58 54.33]
 [76.33 46.79  5.93 36.53 79.76 42.11 33.64 61.42 52.48 83.92]
 [99.95 31.4  33.26  9.28 16.49 88.84 68.24  9.71 45.54 80.4 ]
 [ 9.36 14.91 11.49 64.74 79.28 99.75 93.53 44.08 23.28 68.66]]
------------------------------------------------------------
DAILY CLOSING: [57.45 35.31  4.38 18.78 30.38 73.48 59.91 39.08 48.96 83.18 14.8  12.37
 52.05 71.63 97.16  7.76 27.13 72.84 80.25 12.97  0.93 71.28  8.78 69.21
 93.61 19.37 54.33 83.92 80.4  68.66]
------------------------------------------------------------
```

```
------------------------------------------------------------
DAILY CLOSING: [57.45 35.31  4.38 18.78 30.38 73.48 59.91 39.08 48.96 83.18 14.8  12.37
 52.05 71.63 97.16  7.76 27.13 72.84 80.25 12.97  0.93 71.28  8.78 69.21
 93.61 19.37 54.33 83.92 80.4  68.66]
------------------------------------------------------------
STANDARD DEVIATION: 29.539599493260265
------------------------------------------------------------
HIGHEST CLOSING DAY: 14
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Days where the Closing Price Increased by more than 5% compared to the Previous Day: [ 3  4  5  8  9 12 13 14 16 17 18 21 23 24 26 27]
```