Q1. The main difference between a NumPy array and a Pandas data frame is that a NumPy array is a homogeneous collection of values with a fixed size, while a Pandas data frame is a heterogeneous collection of values with a size that can be changed. NumPy arrays are primarily used for mathematical operations, while Pandas data frames are used for data analysis and manipulation. It is possible to convert a Pandas data frame to a NumPy array using the `to\_numpy()` method, and vice versa using the `DataFrame()` constructor.

Q2. When a user enters a stock-ticker symbol, there are several things that can go wrong, such as:

- The symbol may not exist or may be spelled incorrectly

- The data for the symbol may not be available or may be corrupted

- The data may be out of date or incomplete

To handle these issues, it is important to validate the user input, check the data source for accuracy and completeness, and handle any errors that may occur gracefully.

Q3. Some of the plotting techniques that are commonly used to produce a stock-market chart include:

- Line charts: These are used to show trends in stock prices over time

- Bar charts: These are used to show the volume of shares traded for each day

- Candlestick charts: These are used to show the opening, closing, high, and low prices for each day

- Area charts: These are used to show the cumulative returns over time

Q4. It is essential to print a legend on a stock market chart to provide context for the data being presented. A legend helps to identify the different data series in the chart and provides information about what they represent. This makes it easier for viewers to understand the information being presented and to draw meaningful conclusions from the data.

Q5. One way to limit the length of a Pandas data frame to less than a year is to use indexing to select only the rows that fall within the desired time frame. For example, if the data frame has a column called "date" that contains date values, you could select only the rows from the past year using the following code:

```

import pandas as pd

import datetime as dt

# assume df is the original data frame

start\_date = dt.date.today() - dt.timedelta(days=365)

end\_date = dt.date.today()

df\_filtered = df[(df['date'] >= start\_date) & (df['date'] <= end\_date)]

```

Q6. A 180-day moving average is a technical analysis indicator that is used to smooth out short-term fluctuations in stock prices and to identify longer-term trends. It is calculated by taking the average price of a stock over the past 180 trading days, and then recalculating the average each day as the new data becomes available. This creates a moving average that is constantly updated to reflect the most recent price data, while smoothing out the effects of short-term market volatility.