ASSIGNMENT 2

ESTIMATION AND CONFIDENCE INTERVALS

BASIC STATISTICS LEVEL 2

**Scenario**

A manufacturer of print-heads for personal computers is interested in estimating the mean durability of their print-heads in terms of the number of characters printed before failure. To assess this, the manufacturer conducts a study on a small sample of print-heads due to the destructive nature of the testing process.

**Data**

A total of 15 print-heads were randomly selected and tested until failure. The durability of each print-head (in millions of characters) was recorded as follows:

1.13, 1.55, 1.43, 0.92, 1.25, 1.36, 1.32, 0.85, 1.07, 1.48, 1.20, 1.33, 1.18, 1.22, 1.29

**Assignment Tasks**

**a. Build 99% Confidence Interval Using Sample Standard Deviation**

Assuming the sample is representative of the population, construct a 99% confidence interval for the mean number of characters printed before the print-head fails using the sample standard deviation. Explain the steps you take and the rationale behind using the t-distribution for this task.

**b. Build 99% Confidence Interval Using Known Population Standard Deviation**

If it were known that the population standard deviation is 0.2 million characters, construct a 99% confidence interval for the mean number of characters printed before failure.

import numpy as np

import pandas as pd

from scipy import stats

import warnings

warnings.filterwarnings("ignore")

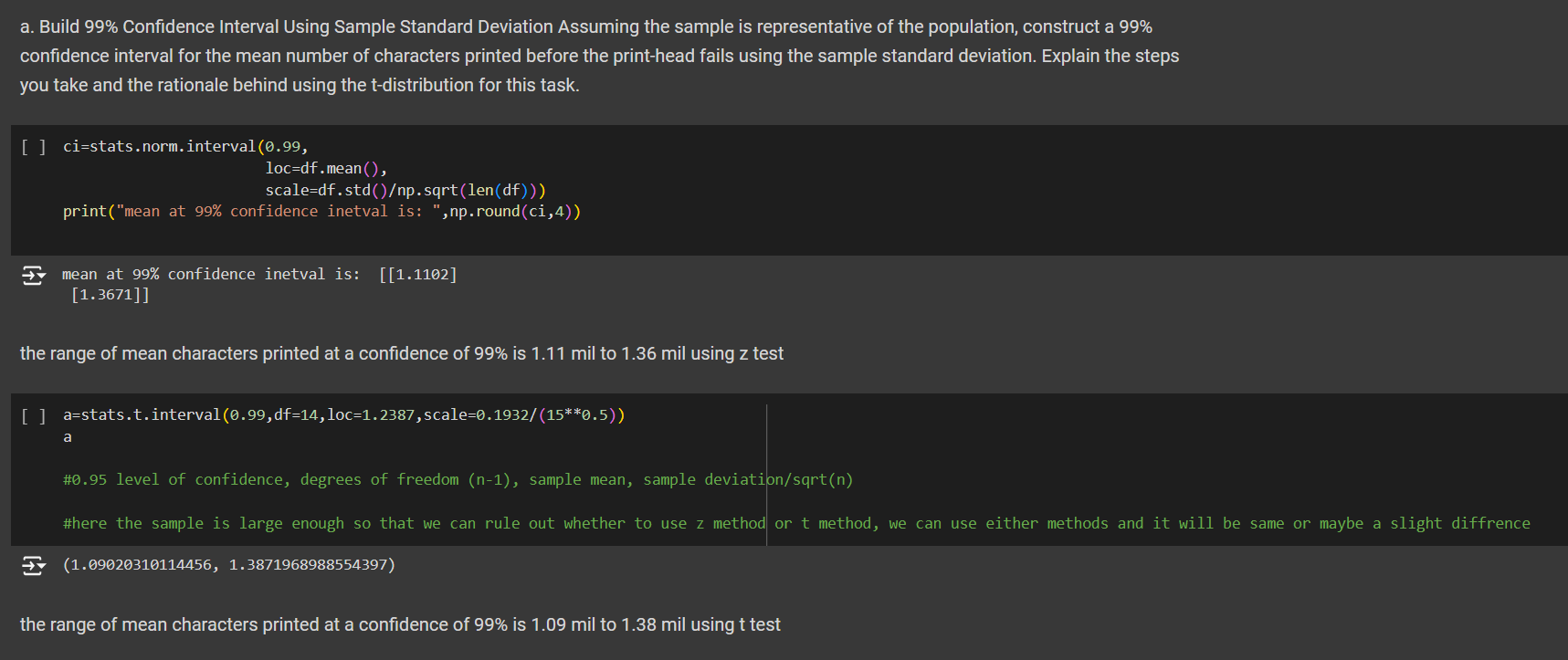
So we imported the libraries and know we use store the given data points into a Data Frame and use the describe method to obtain the mean and standard deviation in one go

A screenshot of a graph

Description automatically generated

A screenshot of a computer

Description automatically generated



A screenshot of a computer program

Description automatically generated