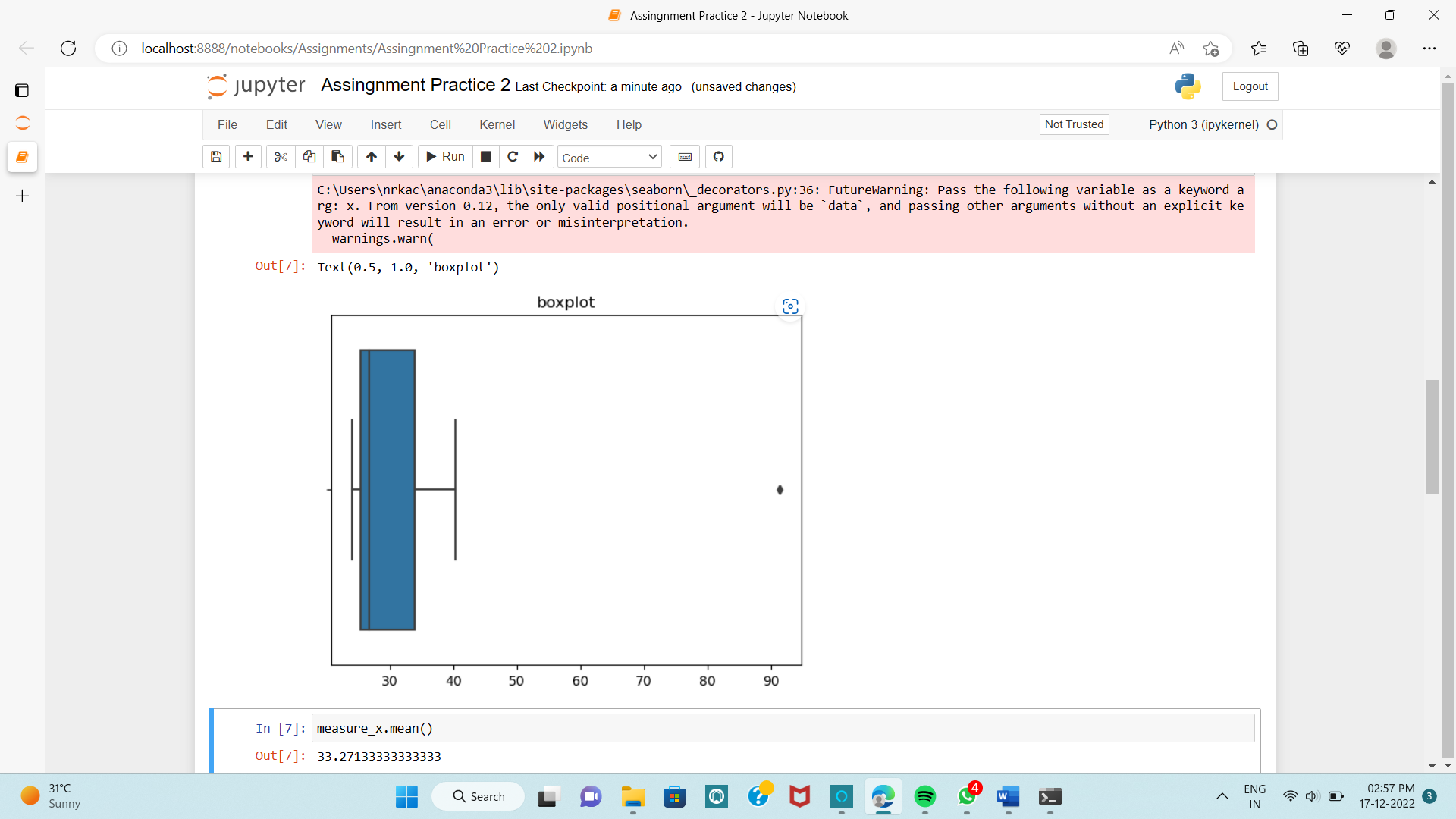
**Topics: Descriptive Statistics and Probability**

1. Look at the data given below. Plot the data, find the outliers and find out

|  |  |
| --- | --- |
| **Name of company** | **Measure X** |
| Allied Signal | 24.23% |
| Bankers Trust | 25.53% |
| General Mills | 25.41% |
| ITT Industries | 24.14% |
| J.P.Morgan & Co. | 29.62% |
| Lehman Brothers | 28.25% |
| Marriott | 25.81% |
| MCI | 24.39% |
| Merrill Lynch | 40.26% |
| Microsoft | 32.95% |
| Morgan Stanley | 91.36% |
| Sun Microsystems | 25.99% |
| Travelers | 39.42% |
| US Airways | 26.71% |
| Warner-Lambert | 35.00% |
|  |  |

**Ans :**

****

* Mean () : 33. 2713
* Standard Deviation () : 16.9454
* Variance () : 287.1466



Answer the following three questions based on the box-plot above.

1. What is inter-quartile range of this dataset? (please approximate the numbers) In one line, explain what this value implies.

**Ans :**

**Inter quartile (IQR) = Q3 – Q1**

**= 12-5**

**= 7**

**# Inter quartile range represents the middle of data or the 50% of data.**

1. What can we say about the skewness of this dataset?

**Ans : From dataset we can say that dataset is positively or right skewed.**

1. If it was found that the data point with the value 25 is actually 2.5, how would the new box-plot be affected?

**Ans : If the data point with the value 25 is actually 2.5, then there will be no outliers.**



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

**Ans : The mode of above dataset would be in between bar 4 to bar 6 and bar 6 to bar 8.**

1. Comment on the skewness of the dataset.

**Ans : Above dataset is positively or right skewed.**

1. Suppose that the above histogram and the box-plot in question 2 are plotted for the same dataset. Explain how these graphs complement each other in providing information about any dataset.

**Ans : From both of the graphs we can get idea about skewness and it is positively skewed.**

1. AT&T was running commercials in 1990 aimed at luring back customers who had switched to one of the other long-distance phone service providers. One such commercial shows a businessman trying to reach Phoenix and mistakenly getting Fiji, where a half-naked native on a beach responds incomprehensibly in Polynesian. When asked about this advertisement, AT&T admitted that the portrayed incident did not actually take place but added that this was an enactment of something that “could happen.” Suppose that one in 200 long-distance telephone calls is misdirected. What is the probability that at least one in five attempted telephone calls reaches the wrong number? (Assume independence of attempts.)

**Ans :**

**Let us consider X be the call is misdirected ,**

**Then the probability of event X must be ,**

**P(X) = 1 / 200**

**Therefore,**

**According to condition in question at least one in five call reaches to the wrong**

**number,**

**Probability = 1 – Probability that no attempted call reaches the wrong number**

**= 1 – P(X bar)**

**= 1 – (199/200)\*(199/200)\*(199/200)\*(199/200)\*(199/200)**

**= 1 – 0.975**

**= 0.025**

**# 0.025 is the probability that at least one in five attempted call reaches to the wrong**

**Number.**

1. Returns on a certain business venture, to the nearest $1,000, are known to follow the following probability distribution

|  |  |
| --- | --- |
| x | P(x) |
| -2,000 | 0.1 |
| -1,000 | 0.1 |
| 0 | 0.2 |
| 1000 | 0.2 |
| 2000 | 0.3 |
| 3000 | 0.1 |

1. What is the most likely monetary outcome of the business venture?

**Ans : 2000**

1. Is the venture likely to be successful? Explain

**Ans :**

**Venture likely to be successful**

**Venture is successful if X is +ve**

**Hence if X is 1000, 2000 or 3000**

**Probability is 0.2 + 0.3 + 0.1 = 0.6**

**# As 0.6 > 0.5 hence Venture likely to be successful.**

1. What is the long-term average earning of business ventures of this kind? Explain

**Ans : Long term average earning of business ventures is around $800.**

1. What is the good measure of the risk involved in a venture of this kind? Compute this measure

**Ans: Risk stems from the possible variability in the expected returns. Therefore, a good**

**Measure to evaluate the risk for a venture of this kind would be variance or**

**Standard deviation of the variable X.**

**Standard Deviation = 1870.829**

**Variance = 3500000**

**The large value of standard deviation of $1870 is considered along with the average**

**returns of $800 indicates that this venture is highly risky.**