

STEVENS INSTITUTE OF TECHNOLOGY

SYS-601 Homework Cover Sheet

Date:

HW #:

Author:

Collaborators:

Homework 2 – Origami Dataset

Question 2.1

A. Using the full dataset on time to manufacture an origami boat:

- **Compute the mean (\bar{x}).**

Mean (\bar{x}) = 93.01229167

- **Compute the median.**

Median = 65.785

- **Compute the 5th and 95th percentile (P5; P95).**

5th percentile = 13.9935

95th percentile = 230.5155

- **Compute the 1st, 2nd, and 3rd quartile (Q1; Q2; Q3).**

1st Quartile = 42.845

2nd Quartile = 65.785

3rd Quartile = 116.155

- **Compute the interquartile range (IQR).**

Interquartile Range (IQR) = 73.31

- **Compute the sample variance and sample standard deviation (s^2 ; s).**

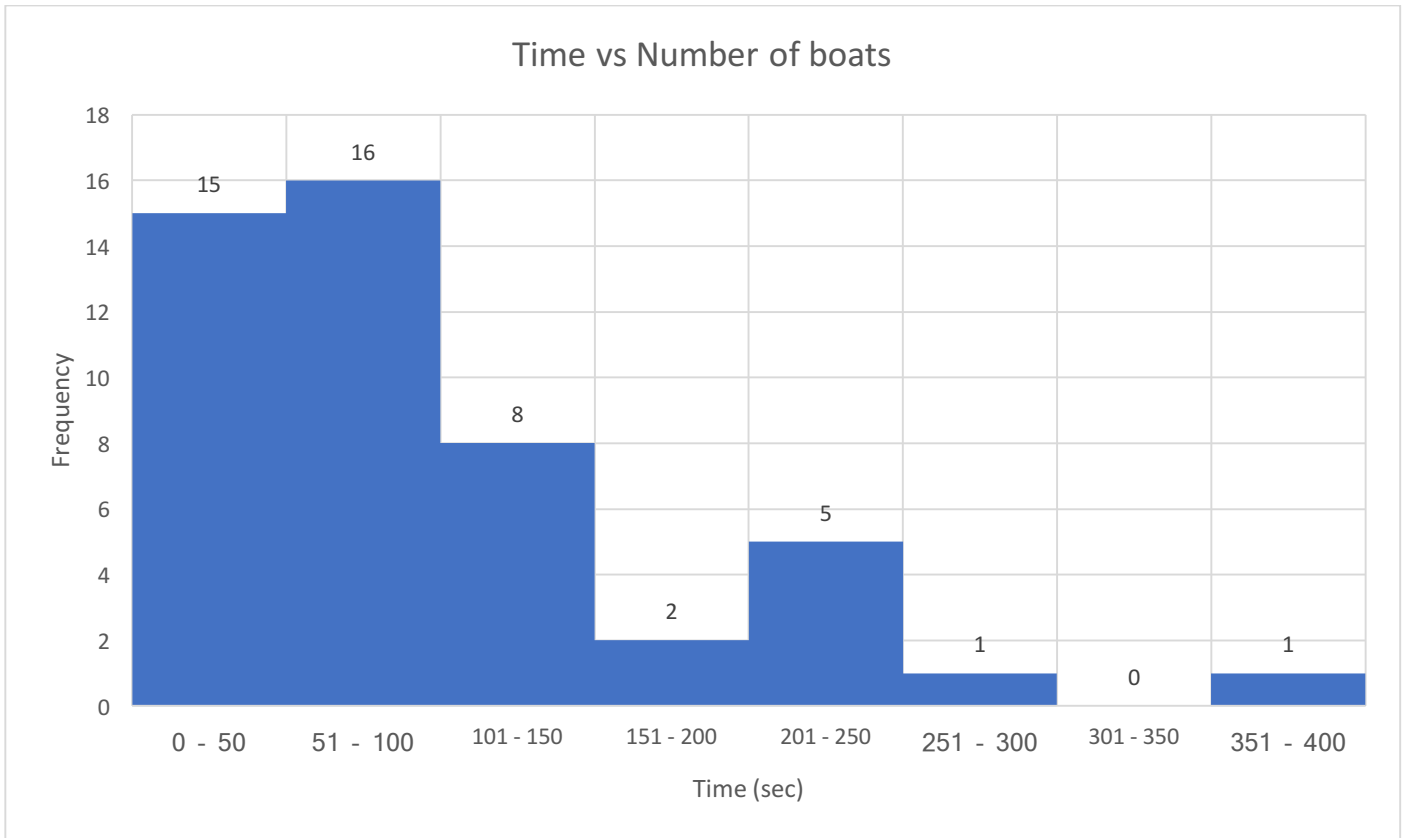
Sample Variance s^2 = 5995.876141

Standard Deviation s = 77.43304296

- **Create a histogram with appropriate bins.**

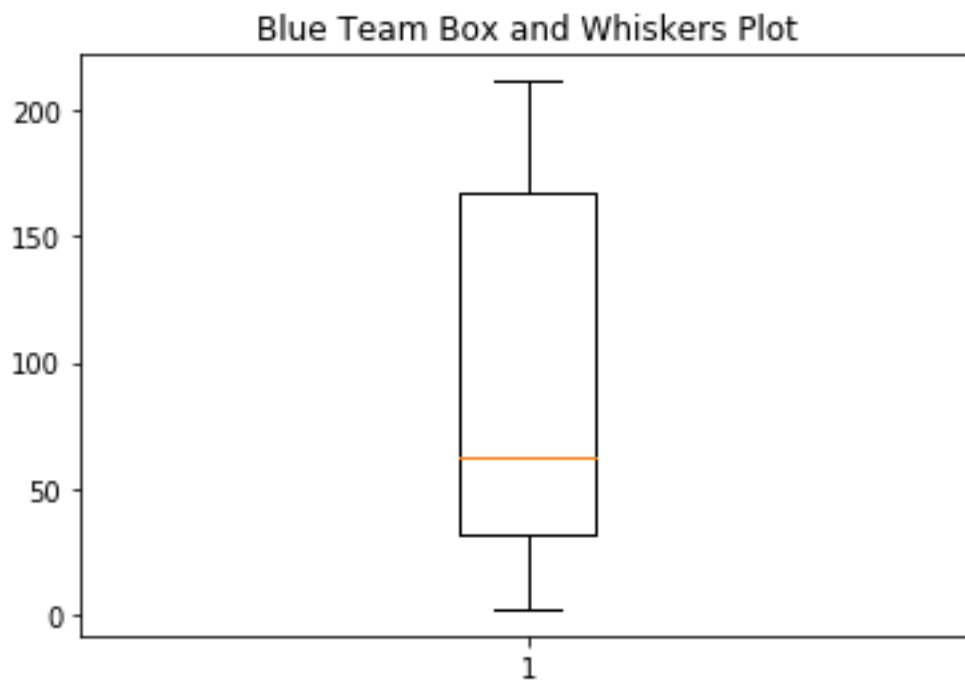
Bin	Frequency
0 - 50	15
51 - 100	16
101 - 150	8
151 - 200	2
201 - 250	5
251 - 300	1
301 - 350	0
351 - 400	1

SYS 601 – PROBABILITY AND STATISTICS FOR SYSTEMS ENGINEERING



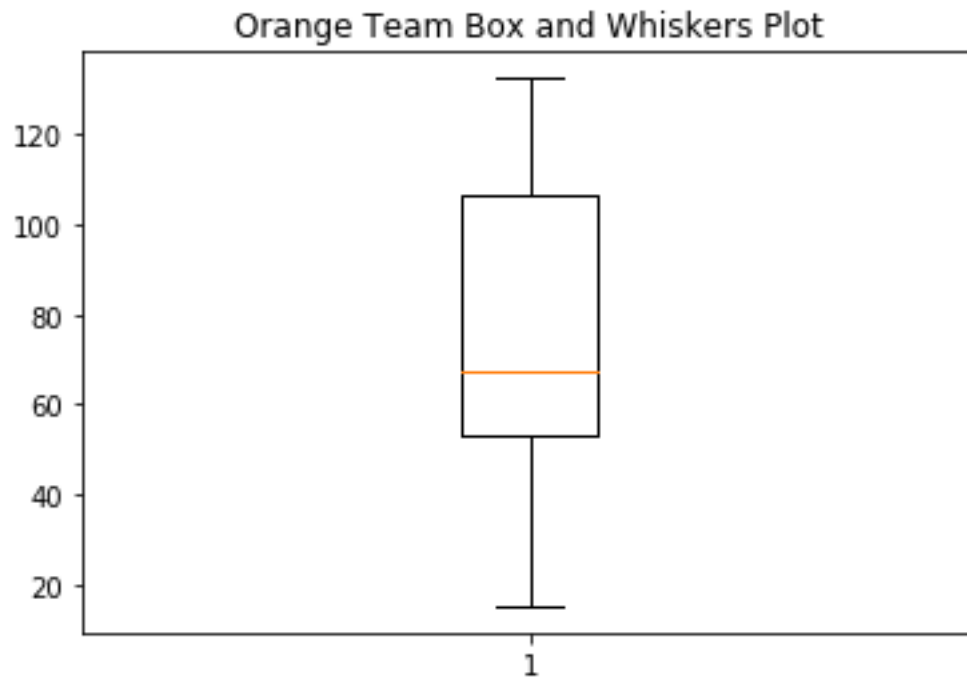
B. For each team manufacturing at least 5 origami boats, create a box-and-whiskers plot where whiskers show extremes within 1.5 IQR. For example, if three teams produced at least 5 boats each, your answer should have three separate box plots.

- Blue Team Box and Whiskers Plot



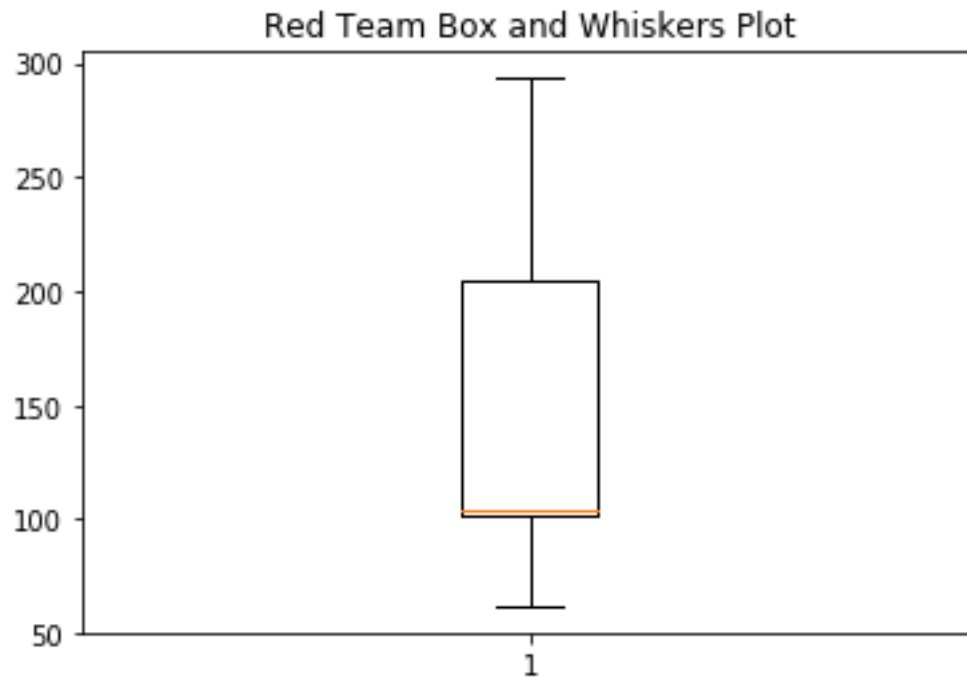
Minimum	2.36
Q1	32.2325
Median	62.29
Q3	166.62
Maximum	211.21
Mean	90.34666667
Range	208.85

- Orange Team Box and Whiskers Plot



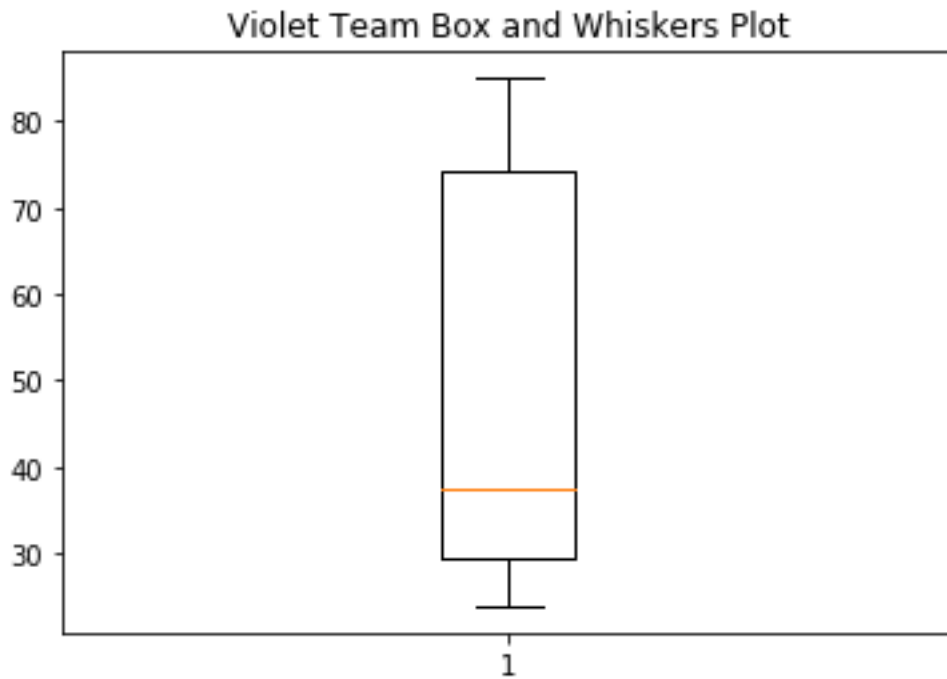
Minimum	15.17
Q1	53.16
Median	67.32
Q3	106.87
Maximum	132.61
Mean	74.83307692
Range	117.44

- Red Team Box and Whiskers Plot



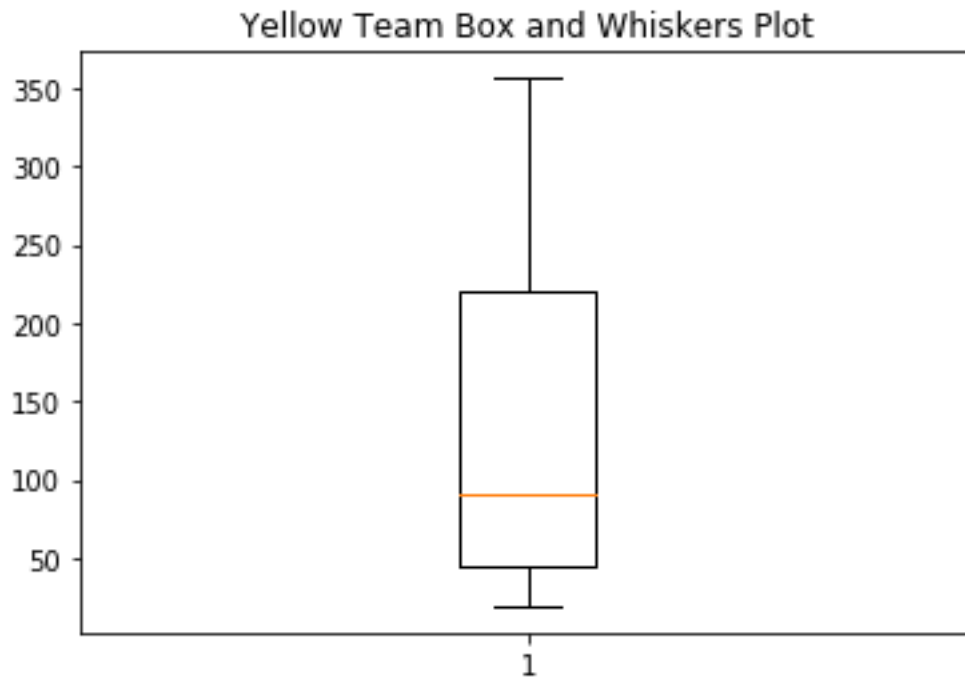
Minimum	62.01
Q1	102.16
Median	103.52
Q3	204.68
Maximum	293.34
Mean	153.142
Range	231.33

- Violet Team Box and Whiskers Plot



Minimum	23.84
Q1	29.3875
Median	37.57
Q3	74.3275
Maximum	85.01
Minimum	23.84
Mean	49.53833333
Range	61.17

- Yellow Team Box and Whiskers Plot



Minimum	19.21
Q1	44.735
Median	90.76
Q3	220.4875
Maximum	356.32
Mean	137.4025
Range	337.11

Question 2.2

Flip a coin $N = 30$ times. Record a "dummy" variable x for each toss indicating an outcome of either heads (1) or tails (0).

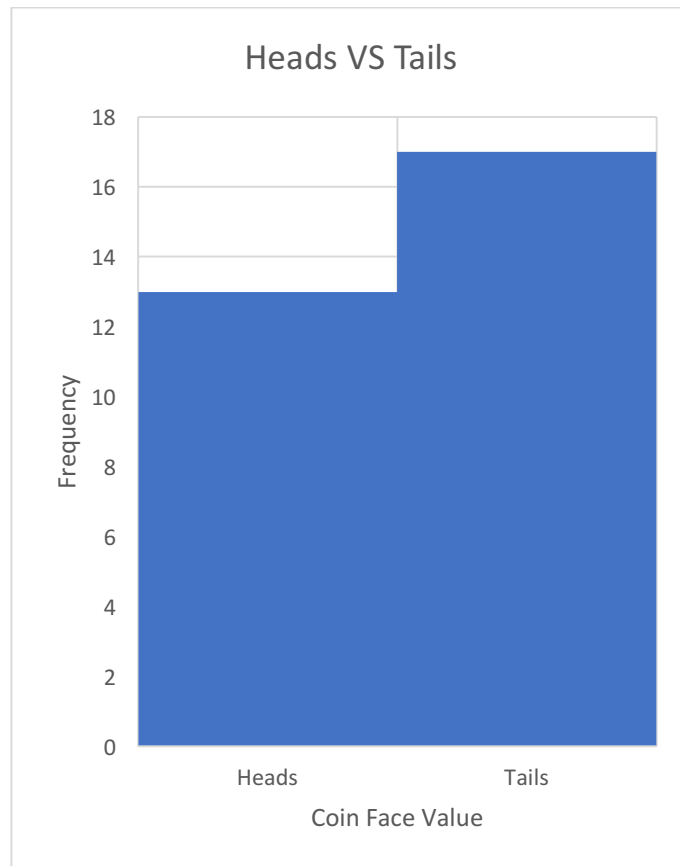
- Compute the sample mean (\bar{x}) and standard deviation (s^2).

Mean (\bar{x}) = 0.433333333

Standard Deviation (s^2) = 0.504006933

- Create a histogram with appropriate bins.

Heads	Tails
13	17



- What would you expect the population mean (μ) to be?

I would expect the population mean to be 0.5 or a value closest to 0.5 (considering heads = 1 and tails = 0).