Exercise 1

Please use the following data set

$$1.6,\ 2.2,\ 6,\ 3,\ 0,\ 1.6,\ 5.2,\ 1.6,\ 1, 0.4,\ 1,\ 2.6,\ 0.6,\ 1.2,\ 0.4,\ 4.2,\ 4.4,\ 4.2,\ 3.8,\ 0.8,$$

in order to answer the questions/complete the tasks below:

(i) What are the minimum value, the maximum value and the range of the considered data set?

(ii) Calculate the first quartile, median, and third quartile of the given data set and then determine the IQR.

(iii) Use the information you obtained in (i)-(ii), in order to construct a boxplot for the given data. Can you observe any outliers?

(iv) Comment on the symmetry or skewness of the sample data using the boxplot in (iii).

Please note that all calculations / graphs are to be done by hand.

Exercise 2

We consider two climate zones with the following average (monthly) temperatures (in °C):

	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
zone A	6	6	7	8	11	13	15	15	14	10	8	7
zone B	-20	-7	-2	0	2	4	7	5	0	-1	-4	-18

(i) Derive the five number summary for each climate zone.

(ii) Draw side-by-side boxplots for the two climate zones. Be sure to include them on the same plot.

(iii) **Using the side-by-side boxplots in part (ii) and not the table above**, determine whether the following statements are true, false, or cannot be answered using the boxplots in (ii):

(iii.1) The coldest month in climate zone A is warmer than the coldest month in climate zone B.

(iii.2) Half of the months in climate zone A have an average temperature of at least 9°C.

(iii.3) The range of average temperatures in climate zone B is equal to three times the range of such temperatures in climate zone A.

(iii.4) The mean temperature in climate zone B is -1°C.

(iii.5) More than half of the months in climate zone B have an average temperature between 2°C and 10°C.

(iii.6) The sample data for climate zone B is positively skewed (skewed to the right).

Please note that all calculations / graphs are to be done by hand.