**Assignment: Data Organization and Frequency Distribution**

1. Consider the following data obtained in a study of food additives and hyperactive behavior in 3-yearold children. The 17 children whose scores are listed below each consumed 85% or more of the active mix (food additive) drinks during the three weeks of the study. These data represent scores on an ADHD rating scale (higher scores indicate less attentive/more hyperactive):

25, 23, 18, 24, 14, 21, 17, 12, 19, 15, 6, 22, 16, 20, 20, 21, 18 1.

* 1. Construct an ungrouped frequency distribution for these data.
  2. In a single table: Construct a grouped frequency distribution for these data, using class intervals of size 2.
  3. Construct a relative frequency distribution for the grouped data using %f.
  4. Construct a cumulative percentage frequency distribution for the grouped data.
  5. Using MS Excel, create a histogram for these data.

1. Consider these ADHD scores obtained in the same study from 30 children who consumed 85% or more of the placebo drinks during the three weeks of the study. 7, 8, 15, 11, 25, 17, 9, 21, 10, 13, 6, 9, 8, 6, 11, 8, 11, 5, 7, 8, 10, 15, 10, 8, 6, 12, 7, 6, 3, 10 4.
   1. Construct a grouped frequency distribution for these data, using a class interval of size 2.
   2. Create columns for cumulative frequency and cumulative percent for these data. Plot the cumulative percentage in a cumulative percentage polygon.
   3. Construct a relative frequency distribution for comparing the ADHD scores of the children in the experimental group with those of the children in the placebo group.
   4. Construct a relative frequency polygon to display these relative frequencies. Interpret this graph – what does it tell you, generally?
2. Make the stem and leaf plot for the given data. Determine the minimum value, maximum value, key, median, mode, mean and range of the data for each one.
   1. 31, 48, 29, 34, 94, 36, 41, 45, 27, 49, 56, 49, 36, 52, 48, 96, 50, 54, 30, 29
   2. 48.3, 53.5, 38.9, 48.4, 53.7, 38.5, 53, 48.6, 25.6, 48.9, 38, 53.8, 48.1, 48.5, 38.7
   3. 523, 369, 700, 834, 953, 366, 528, 645, 950, 526, 365
3. The stem-and-leaf plot shows the number of digs for the top 15 volleyball players at a recent women’s AVP Miami Open.
   1. How many players had more than 60 digs?
   2. Find the mean, median, mode, and range of the data.
   3. Describe the distribution of the data.
   4. Which data value is the outlier? Describe how the outlier affects the mean.

Stem | leaf

4 | 1 1 3 3 5

5 | 0 2 3 4

6 | 2 3 3 7

7 | 5

8 |

9 | 7

Key : 5 | 0 = 50

**Implement the following two programs in any language:**

1. Write a program to calculate mean, median, mean deviation, mode, variance and standard deviation for the given input numbers. Find how many percent of the data will be within the range of standard deviation using Chebyshev’s formula. 2

2. Write a program to create grouped frequency distribution. Calculate group mean, group standard deviation also

**Assignment: Sampling Distribution**

1. A rowing team consists of four rowers who weigh 152, 156, 160, and 164 pounds. Find all possible random samples with replacement of size two and compute the sample mean for each one. Use them to find the probability distribution, the mean, and the standard deviation of the sample mean.
2. Random samples of size 225 are drawn from a population with mean 100 and standard deviation 20. Find the mean and standard deviation of the sample mean.
3. Random samples of size 64 are drawn from a population with mean 32 and standard deviation 5. Find the mean and standard deviation of the sample mean.
4. A population has mean 75 and standard deviation 12.
   1. Random samples of size 121 are taken. Find the mean and standard deviation of the sample mean.
   2. How would the answers to part (a) change if the size of the samples were 400 instead of 121?
5. A population has mean 5.75 and standard deviation 1.02.
   1. Random samples of size 81 are taken. Find the mean and standard deviation of the sample mean.
   2. How would the answers to part (a) change if the size of the samples were 25 instead of 81?