

ORGANIZING, SUMMARIZING, AND PRESENTING DATA

Objective: To demonstrate the knowledge in organizing and summarizing categorical and numerical data and presenting automatically the summaries either in the form of a summary table or a frequency distribution table (FDT) implemented in a computer program with the feature to generate automatically the corresponding pie chart or histogram, respectively.

Instructions: The exercise should be accomplished in pairs – peer learning approach. You choose your own partner/team-mate in the same lab section where you belong.

To log-in to the shared network storage drive where you will save your program files (executable and source code files), execute the **'Run'** command in Windows and type the following in the next prompt: **'\\172.17.1.58\type your Campus ID here'**. Then, click **'OK'**. In the next prompt, type your **'Campus ID'** again for your password.

To access the 'Faculty Postings' folder where the lab exercises are saved under the CMSC105 sub-folder, execute the '**Run**' command again in Windows and type the following in the next prompt: `"\\172.17.1.58\faculty_postings"`.

Name your program files as **StudentIDAnsLab2.???** (with file extension depending on type of file your creating - '.EXE' for executable file and '.C' or '.java' for source code file, for example).

EXERCISE 2: Write a program, either in C- or Java programming language, which accepts input from the console and automates the construction of a Summary Table for categorical data and Frequency Distribution Table (FDT) for numerical data. The program also offers options to automatically generate the corresponding pie chart (for categorical data) or histogram (for numerical data). Specifically, the following requirements must be met:

1. Program shows menu where the user chooses the type of data to summarize and present, i.e. either 'Categorical' or 'Numerical'. The menu heading should be: 'Summarizing and Presenting Data'. The menu should include a 'Quit' option as the last menu item;
2. After the user selects a menu item, except for 'Quit', the program asks the user to input a brief title that describes the data set about to be entered;
3. The user then enters the sample data until the user enters a terminating character or string. *You may specify first a maximum number of inputs (i.e. specifying a sample size first) before data entry if you do not want to use terminating character or string.* For categorical data, the program can accept either numeric labels, alphabetic characters, or string characters, while for numerical data, can be either integer or floating point types;
4. Program displays the inputted data in table format (i.e. in rows and columns) with the brief title as the heading;
5. Next, the program displays the corresponding table depending on type of data selected;

5.1. Categorical Data: Summary Table

Output format: VALUE LABELS (sorted) PERCENTAGE (based on 'n'*)

total %*

-- OR --

5.2. Numerical Data: Frequency Distribution Table

Output format:	CL	TRUE CL	MIDPOINTS	FREQ	%	CF	C%
				-----	-----		
				n =*	total %*		

- 5.2.1. The program offers the user an option to collapse the 1st and/or the last class limits, i.e. able to change value range labels into open-ended intervals. Accordingly, the corresponding midpoints/class marks will not be displayed and will be replaced with '-';
6. Then, program prompts the user whether to generate the corresponding graph for the previously displayed table;
 - 6.1. For categorical data: Pie Graph with appropriate title and data labels;
 - 6.2. For numerical data: Histogram with appropriate title, x and y axis labels;
 - 6.3. If user choice is 'NO', then program returns control to menu (i.e. #1);
7. Program asks the user whether to display again the table;
 - 7.1. If YES, program control returns to #5;
 - 7.2. If NO, program control returns to menu (i.e. #1);

NOTES: Implementation of error-catching or user-validation feature(s) is a given as well as 'proper' formatting in user's input and output, i.e. visually appealing.

*Calculated