Department of Computer Science
The City College of CUNY

CSc 22100 F (37716): Software Design Laboratory [Spring 2017]

Exercise 2

A printout showing the codes developed and outputs produced for the tests indicated is due during and before the end of the class on Wednesday, 29 March 2017. The deadline is strictly observed. Demonstration of the code in person is required.

Implement a Java class HistogramLetters that calculates the n most frequent letters in the dictionary file "*xWords.txt*" and their probabilities. The HistogramLetters class includes a method *drawPieChart* that draws a pie chart of the HistogramLetters Object. The probability of letters in the "*xWords.txt*" file is given by the equation:

$$Probability\ of\ letter = \frac{Frequency\ of\ letter}{\sum\ Frequencies\ of\ all\ letters}$$

a. Use appropriate graphic components to build a GUI to input the number of letters, n, and display the pie chart together with the letter probabilities;

b. In the pie chart:

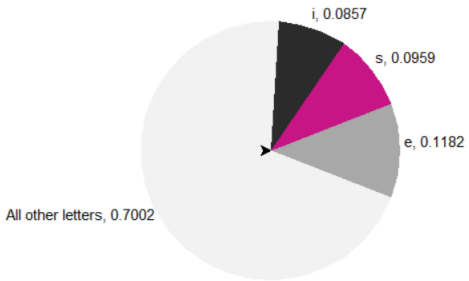
i. The area of each segment is proportional to the probability of the corresponding letter:

$$Probability\ of\ letter = \frac{Central\ angle\ of\ segment}{2\pi}$$

ii. Each segment has a different color;

iii. Each segment has a legend showing the letter and its probability;

iv. The last segment represents "All Other Letters" and their cumulative probability. In the graph below, n = 3, and the probability of All Other Letters is *one* minus the sum of the probabilities of letters *e*, *s*, and *i*;



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20 March 2017