Shantilal Shah Engineering College, Bhavnagar

Information Technology Department

Python Programming

Date: 19/02/2018 Submission Date: 26/02/2018

Practical -3: List, Dictionary, and Set

1) A group of statisticians at a local college has asked you to create a set of functions that compute the median and mode of a set of numbers. Define these functions in a module named **stats.py**. Also include a function named mean, which computes the average of a set of numbers. Each function should expect a list of numbers as an argument and return a single number. Each function should return 0 if the list is empty. Include a main function that tests the three statistical functions with a given list.
2) Write a program that allows the user to navigate the lines of text in a file. The program should prompt the user for a filename and input the lines of text into a list. The program then enters a loop in which it prints the number of lines in the file and prompts the user for a line number. Actual line numbers range from 1 to the number of lines in the file. If the input is 0, the program quits. Otherwise, the program prints the line associated with that number.
3) Write a program to convert each decimal number given in list to a fixed size binary and generate a dictionary containing binary value as key and decimal number as value.
4) Define a function decimalToRep that returns the representation of an integer in a given base. The two arguments should be the integer and the base. The function should return a string. It should use a lookup table that associates integers with digits. Include a main function that tests the conversion function with numbers in several bases.
5) Write a program that inputs a text file. The program should print all of the unique words in the file in alphabetical order.
6) A file concordance tracks the unique words in a file and their frequencies. Write a program that displays a concordance for a file. The program should output the unique words and their frequencies in alphabetical order.
7) Write a Python program to convert list to list of dictionaries.
   Sample lists: ["Black", "Red", "Maroon", "Yellow"], ["#000000", "#FF0000", "#800000", "#FFFF00"]

Expected Output: [{'color_name': 'Black', 'color_code': '#000000'}, {'color_name': 'Red', 'color_code': '#FF0000'}, {'color_name': 'Maroon', 'color_code': '#800000'}, {'color_name': 'Yellow', 'color_code': '#FFFF00'}]

8) Write a Python program to remove duplicates from a list of lists.
   Sample list : [[10, 20], [40], [30, 56, 25], [10, 20], [33], [40]]
   New List : [[10, 20], [30, 56, 25], [33], [40]]