**IS545L - Scripting Languages Lab Test 1**

**Term: 28 Aug to 20 Dec 2017**

**Part – A**

1. Write a python program to read in a list of elements. Create a new list that holds all the elements minus the duplicates (Use functions).
2. Write a python program to count the frequency of words in a given file.
3. Write a python program to find the longest words in a file.
4. Write a python program to read in a list of numbers. Use one-line comprehensions of create a new list of even numbers. Create another list reversing the elements.
5. Write a python program to define a student class that includes name, usn and marks of 3 subjects. Write functions calculate() - to calculate the sum of the marks print() to print the student details.
6. Write a python program that uses a recursive function to find the maximum of ‘n’ numbers.

**Part – B**

1. Write a temperature converter python program, which is menu driven. Each such conversion logic should be defined in separate functions. The program should call the respective function based on the user’s requirement. The program should run as long as the user wishes so. Provide an option to view the conversions stored as list of tuples with attributes - from unit value , to unit value sorted by the user’s choice (from-value or to-value).
2. Write a python program to read contents of a file (filename as argument) and store number of occurrences of each word in a dictionary. Display the top 10 words with most number of occurrences in descending order. Store the length of each of these words in a list and display the list. Write a one-line reduce function to get the average length and one-line list comprehension to display squares of all odd numbers and display both.
3. Write a python class to reverse a sentence (initialized via constructor) word by word. That is: “I am here” should be reversed as “here am I”. Create instances of this class for each of the three strings input by the user and display the reversed string for each, in descending order of number of vowels in the string.
4. Load the Titanic Dataset into one of the data structures (*NumPy* or *Pandas*). Do the following for this data set:
5. Display header rows and description of the loaded dataset.
6. Remove unnecessary features (E.g. drop unwanted columns) from the dataset.
7. Manipulate data by replacing empty column values with a default value.
8. How many entries does this dataset have?
9. How many attributes does this data set have?
10. List the attributes
11. What are the data types of the attributes?
12. What is the minimum and maximum age of the passengers in the data set?
13. What is the mean value of the "Age" attribute?
14. Plot a histogram depicting the number of people of a particular age
15. Label the x and y axis of this plot
16. What is the default graph plotted by a dataframe?
17. Do the following to the Weather Dataset that you downloaded:
18. Change the Column Attributes in Dataframe to read as:

|  |  |  |  |
| --- | --- | --- | --- |
| **Old Attribute** | **New Attribute** | **Old Attribute** | **New Attribute** |
| EDT | date | MeanDew PointF | mean\_dew |
| Max TemperatureF | max\_temp | Min DewpointF  --- | min\_dew |
| Mean TemperatureF | mean\_temp | Max Humidity   ---- | max\_humidity |
| Min TemperatureF | min\_temp | Mean Humidity  ---- | mean\_humidity |
| Max Dew PointF | max\_dew | Min Humidity  --- | min\_humidity |
| Max Sea Level PressureIn | max\_pressure | Min Sea Level PressureIn | min\_pressure |
| Mean Sea Level PressureIn | mean\_pressure | Max VisibilityMiles | max\_visibilty |
| Mean VisibilityMiles | mean\_visibility | Mean Wind SpeedMPH | mean\_wind |
| Min VisibilityMiles | min\_visibility | Max Gust SpeedMPH | min\_wind |
| Max Wind SpeedMPH | max\_wind | PrecipitationIn | precipitation |
| CloudCover | cloud\_cover | Events | events |
| WindDirDegrees | wind\_dir |  |  |

1. Draw the histogram depicting mean temperature
2. Draw line graph with different colours depicting minimum & maximum temperatures
3. Make sure there are appropriate labels for it
4. Draw a line graph showing the maximum temperature of last 8 days
5. How many days did it rain?
6. What is the maximum temperature in New York?
7. What was the average speed of the wind during the month?