**Programing Assignment 1**

**Problem Submission Rules:**

1. **Detection of plagiarism will result in Failing grade. Students must do this assignment by themselves.**
2. **After completion, your work must be submitted to an assignment folder in D2L by a corresponding deadline.**

The aim of this assignment is to implement a text conversion program (Let’s call this “text converter”), which is comprised of the three functions described below. Pre/post conditions (inputs and outputs) for the text converter are defined as follows:

**Function 1 (String List of characters):** it takes as input an arbitrary length string and outputs a list of characters, or vice versa. For example,

Input string: “hello world”

Output list: [‘h’, ‘e’, ‘l’, ‘l’, ‘o’, ‘ ‘, ‘w’, ‘o’, ‘r’, ‘l’, ‘d’]

, or

Input list: [‘h’, ‘e’, ‘l’, ‘l’, ‘o’, ‘ ‘, ‘w’, ‘o’, ‘r’, ‘l’, ‘d’]

Output string: “hello world”

You can check a type of input or use the second parameter to let the function know the type of input.

**Function 2 (List of characters ASCII):** it takes as input a list of characters and outputs a list of corresponding ASCII codes, or vice versa. For example,

Input list: [‘h’, ‘e’, ‘l’, ‘l’, ‘o’, ‘ ‘, ‘w’, ‘o’, ‘r’, ‘l’, ‘d’]

Output list: [104, 101, 108, 108, 111, 32, 119, 111, 114, 108, 100]

, or

Input list: [104, 101, 108, 108, 111, 32, 119, 111, 114, 108, 100]

Output list: [‘h’, ‘e’, ‘l’, ‘l’, ‘o’, ‘ ‘, ‘w’, ‘o’, ‘r’, ‘l’, ‘d’]

**Function 3 (ASCII Binary)**: it takes as input a list of ASCII codes and outputs a list of binary numbers, or vice versa. For example,

Input list: [104, 101, 108, 108, 111, 32, 119, 111, 114, 108, 100]

Output list: [1101000, 1100101, 1101100, 1101100, 1101111, 100000, 1110111, 1101111, 1110010, 1101100, 1100100]

, or

Input list: [1101000, 1100101, 1101100, 1101100, 1101111, 100000, 1110111, 1101111, 1110010, 1101100, 1100100]

Output list: [104, 101, 108, 108, 111, 32, 119, 111, 114, 108, 100]

**More instructions:**

The text converter must be implemented using Python version 3.9.x or higher. Students must use Python official libraries that are accessible from the webpage (<https://docs.python.org/3/library/index.html>).

You can freely use existing libraries, but all used libraries and their purpose should be described in the report. Also, the report must have some test codes and execution results (screenshots) that demonstrate the correctness of your implementation.

**Submission instructions:**

Please submit your deliverables to D2L Assignments folder: PA 1. You need to submit 4 different things. ***Do not submit zip files. You will get zero if you do.***

1. Your Python code saved as yourlastname.py
2. Your Python code saved as yourlastname.txt - copy and paste your entire Python code, save
3. Your report yourlastname\_Report\_PA1.doc as a word document
4. A short video demo: (3-5 minutes)
   1. Explaining your code
   2. Use your first and last name as an input strings and show the output as:
      1. List of characters
      2. ASCII list
      3. Binary list
   3. Use your first and last name a binary list and show the outputs as:
      1. Output strings
      2. List of characters
      3. ASCII list
   4. Do b and c for a sentence of your choice.

Once you submit, D2L will perform a similarity check for your submission and show you the result. Your similarity score on your code as txt file must be lower than 40% unless something essential is described in the report. *Otherwise, 5 points will be deducted for every additional 5% similarity*. For example, you would get a maximum 95 if your similarity is between 41% and 45%.

**Project Report:**

The report does not have any specific format. Three things you must include:

1. What you did for the project, i.e., explain the project with your own word.
2. Explain your program/code.
3. Explain output, include screen shot.

You could add anything else you like.