CMPT 365 Programming Assignment 3 Submission Guidelines (Total: 12 mark)

In this assignment, we have provided 2 sample input txt files.

Assignment 3 requires you to submit a pdf report, and your code. Besides, you need to upload two additional text files created by you.

What to include in the report:

Question 1 (6 mark):

1. [2 mark] Read in the string in a3q1.txt, print out the lower and higher bounds of the final interval in arithmetic coding. Please also fill out the following table for intermediate results (it would be easier if you directly print out these intermediate results to avoid any manual work):

Input Sequence	Range: [Low, High)
B	
BB	
BBB	
BBBA	
BBBAB	
BBBABA	
BBBABAA	
BBBABAAB	
BBBABAABB	
BBBABAABBA	
BBBABAABBAB	

BBBABAABBABA	
BBBABAABBABAA	
BBBABAABBABAAA	
BBBABAABBABAAAA	
BBBABAABBABAAAAB	

2. [1 mark] Generate your choice of another string consisting of letters A and B only, save it to a text file called a3q1-[your username].txt. This string must be **longer than 4 letters**. Print out the lower and higher bounds of the final interval in arithmetic coding. Please also make a table for intermediate results same as above.
3. [2 mark] Choose **one** of the followings to discuss:
    a. List at least one disadvantage of your implementation, discuss how you can improve it in the future
    b. List at least one special technique or optimization in your implementation, discuss how it positively impacts your program
4. [1 mark] Code correctness

Question 2 (6 mark):

One sample input has been given in a3q2.txt. Please also generate your choice of another input matrix, save it to a text file called a3q2-[your username].txt.

1. [1 mark] List the input matrices in your report, then print out the 2D DCT **coefficients** result with **rows first and then columns** for matrix in a3q2.txt and your own choice of input matrix
2. [1 mark] List the input matrices in your report, then print out the 2D DCT **coefficients** result with **columns first and then rows** for matrix in a3q2.txt and your own choice of input matrix
3. [2 mark] Clearly indicate how the operations were performed differently for row-first and for column-first. Please be specific and use the formula to illustrate different orders of operations between row-first and column-first

4. [1 mark] Discuss whether results (1) and (2) are identical. If yes, explain why this happens. If not, explain the potential problems
5. [1 mark] Code correctness

What to submit:

The files you shall upload to Canvas are listed below:

1. A report in .pdf format
2. A .zip file. This file should have the following structure:
    - {your-SFUID}/
        - code/
        - txt/

The code/ directory should contain all your source code (**including your executable file located under directory code/, and a file named README.txt also under directory code/ which simply describes the command/method to run your executable file**).

The txt/ directory should contain all your text files. There should be 4 text files, namely:

a3q1.txt

a3q1-[your username].txt

a3q2.txt

a3q2-[your username].txt

In assignment 3, the report and .zip file will be separately submitted on Canvas.