CS211FZ (Algorithms & Data Structures 2)

Assignment 6

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Released date: Sunday, 22nd June 2025

Deadline: Sunday, 22nd June 2025, before 17:00 Beijing time

This is an open-book, graded assignment. You may only use the module's slides and textbooks to help with the Assignment. Please cite all references as comments in your submissions. You cannot directly reuse a solution from online sources. You must not engage with another student, in person or electronically (via phone, social media, etc.), to secure assistance with this Assignment. If you do so, you will receive an automatic failure (0%), and it will also be reported to the Executive Vice-Dean of MIEC and/or Maynooth University Plagiarism board. We will perform similarity checks on submitted assignments to check for collaborative efforts. The lecturer reserves the right to interview you about your submission in special cases.

Question 6.1 [100 marks]

Huffman Coding involves the following steps:

1. Build Frequency Table
2. Initialize Priority Queue
3. Build Huffman Tree
4. Generate Huffman Codes
5. Encode the Input

This is a Java Programming task. For this task you must take the test string “Huffman is lossless” and use Huffman coding to generate a Huffman tree. You should display this tree and the Huffman codes.
A template is given to help you but you don’t have to use it..
Marks will be awarded for efficient use of a priority queue, correct algorithm application and accurate output. You will be asked questions about your code so be sure you understand it.
This is a live programming task so much be completed and demonstrated before the deadline. DO NOT leave it to the last minute as TA’s or Lecturer may already be busy.

Important submission details

Please indicate the Operating System (Linux/Windows/MacOS/Online), IDE (e.g. Eclipse, Visual Studio Code), and Java SDK version used for testing in your submission. If you use an online IDE, please specify the IDE (http://repl.it) and provide a link where possible.

You MUST demo your solution to your TA before 5pm. Your mark will be decided by the TA. You must also submit your

All work must be submitted via Moodle (see "Assignments" section for submission). Work submitted via other means will not be accepted unless you have prior arrangements with the lecturer. All work MUST be submitted by the due date deadline. Late submissions will not be accepted.

Your submission should be one single PDF file, also including your Java codes. Submitting in any other format cannot be accepted.

Note: You should type your answers in a text editor like Microsoft Word, and then convert it to PDF. You MUST NOT take pictures from answers and then make a PDF from the pictures.