



School of Computer Science

Assessment Component Briefing Document

Title:

CMP2067M Advanced Software Development
Assessment Component 1 of 2

Indicative Weighting:

50%

Learning Outcomes:

1. [LO1] review concepts of advanced software development and programming methods;
2. [LO2] critically apply appropriate software development concepts;

This assessment addresses two of the four module Learning Outcomes (LOs) and is the first of two assessment components for the module; First component is weighted at 20%, Second component is weighted at 80%.

Requirements**Overview**

The objective of this assignment is to design and implement “Nearest-Neighbour Search”, one of the most well celebrated algorithms in Computer Science, as well as to write a technical report that summarises your approach. We will consider an application of Nearest-Neighbour Search (NN-S) to the area of Computer Vision: we will use NN-S to find which part of a test image match another given template image. More specifically, 2 tasks will be considered

- Task 1 – Jigsaw solving
Write a C++ program to restore a shuffled picture of the University of Lincoln Logo
- Task 2 – Template matching
Write a C++ program to detect the location of a template image in a cluttered scene (test image)

Because images are 2D matrices, the implementation of NN-S should be based on the Matrix Class, developed in the workshops. You will also be asked to research two C++ programming topics: A) “Should operators in C++ be virtual?” B) “Is Square a Rectangle?” A detailed presentation of the assignment will take place in one of the Lectures.

Your report must be NO MORE than 8 pages long (not including source code) and should contain the following sections:-

- i. Introduction: Your understanding of the aims of the problem.
- ii. Methods: Design (e.g. the interface of your library, that is, the .h file with Class definitions) and Pseudo-Code for both tasks.
- iii. Results: Evidence of your program running with the expected output.
- iv. Future work – Extensions: Research on two C++ programming topics (please see above).
- v. A list of references used.
- vi. Attach your source code to the report as Appendix.

Demonstration of Submissions

There will be a demonstration activity associated with this assignment, the exact time/place of which will be communicated to you by the teaching team. Not attending the allocated session, will incur an immediate 60% presentation penalty.

Submission Instructions

The deadline for submission of this work is included in the School Submission dates on Blackboard. You must make an electronic submission of your work as a single ZIP file containing the following items:-

- Source code for C++ - file named with your student number and the task number
- A PDF of your report

DO NOT include this briefing document with your submission.

CRG and marking

This assessment is an individually assessed component. Your work must be presented according to the School of Computer Science guidelines. Please make sure that you have a clear understanding of the grading principles for this component as detailed in the relevant Criterion Reference Grid. If you are unsure about any aspect of assessment component, please seek the advice of the module teaching team.