

CET214/SET213 – Data Structures and Algorithms

Course Project

Objectives

- ✓ To enhance analytical and problem-solving skills and expressing them into algorithms
- ✓ To build a software application utilizing taught concepts Data Structures

Course Learning Outcome (CLO) assessment

CLO3

Group Policy

The assignment may be carried out by a group of maximum two (02) students. The information can be submitted to the instructor using the form available on page 4 of this document.

Project Description

The group has to come out with a software mini project that can be implemented through C++.

Additionally, the group has to submit the framework for the software including:

- ✓ **The Data Structures used**
- ✓ **The algorithm, and**
- ✓ **The Flowchart.**

Prepare a 6-8 page (Title page is not included) about the project. Students have to describe, in details, only the information regarding the task/operation related to the project. The introduction of the project can be summarized in a paragraph.

Please note that the selection of project is on groups' choice but the approval of the instructor is necessary. For any help, please consult your course teacher.

The proposed framework submitted by the group should be implemented in C++. The submission of the code would be followed by viva of the implemented code.

Project Submission Components

- ✓ Assignment Report
- ✓ C++ source code of the project (both soft copy and the hard copy)

Important deadlines

- ✓ Project selection and group information submission: Friday, 06 December, 2024.
- ✓ Project submission: on or before Tuesday 31 December, 2024.

Plagiarism Policy

Groups are advised to select a unique topic for their report and must not copy the material from other group(s). If such case(s) found; the penalty may be the cancellation of the assignment.

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Report Structure

1. Title page

Contains:

- i. Project Title
- ii. Subject Name
- iii. Group Members' Name
- iv. Instructor's name

2. Introduction

A paragraph of not more than 200 words describing the summary of the software project.

3. The implementation

Detail explanation of the implementation/application of the software through algorithm and flowcharts.

4. Description of Data Structure used

5. Source code of the project

6. Sample output screenshots

Font Details

- i. Heading shall be written using "Calibri" font with font-size = 14 and "**Bold**".
- ii. Sub-heading shall be written using "Calibri" font with font-size = 12 and "**Bold**".
- iii. Text shall be written using "Calibri" font with font-size = 11. Line spacing shall be "single Line".

Instructions

- ✓ *Projects shall be made on group basis (maximum three students per group).*
 - ✓ *Projects shall be marked after verification of their working.*
 - ✓ *You should write the code by yourselves, we will judge that. In case of any doubt, at the time of submission, your capabilities could be checked/verified. Be mentally prepared for that.*
 - ✓ *Project marks are included in theory as well as laboratory work.*
 - ✓ *Project will be evaluated by Lab instructor and theory instructor separately.*
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Project Assessment Rubric

Performance Parameters	Unsatisfactory 0	Partially Satisfactory 1	Satisfactory 2
Problem Understanding and Analysis	No clear problem understanding or analysis.	Good understanding of the problem, with some analysis gaps or missing minor details.	Clear and thorough problem understanding, including detailed problem analysis and requirements. Demonstrates insight and creativity in approach.
Algorithm Design and Implementation	Incorrect algorithm; poorly chosen or misused data structures.	Partially correct algorithm; moderate inefficiencies; some appropriate use of data structures.	Correct, efficient, and well-optimized algorithm; incorporates appropriate data structures; excellent use of concepts.
Code Quality and Documentation	Poorly structured code with minimal or no documentation.	Functional but messy code with limited documentation.	Clean, well-organized code with proper formatting, modularity, and comments/documentation explaining logic and methods
Project Report	Unable to describe in words the procedure adopted and/or task performed. Report format has not properly followed.	Weakly describe the procedure and performed task. Format of the report has been properly followed.	Procedure described with reasoning and concrete justification using appropriate language vocabulary. Report is complete in every respect.
Project Viva	Group did not have the idea about the project at all	Group explain the basics of the implementation but lacks in explaining details	Group explained the implemented project in sufficient details with reasoning and discuss the possible alternatives.

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Group Information

Project Title

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Group Number (to be filled by teacher)	
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Group Members

Student Name	Roll Number
1.	
2.	

Suggested Projects (but not limited to):

- ✓ Expression Tree
- ✓ Solving postfix expressions using stack
- ✓ Graphical representation of Towers of Hanoi using recursion

Groups may suggest their own project ideas and discuss for implementation.