



**Department of Computer Science**  
**COMP2421 (Fall Semester 2024/2025)**

*Project#1 Due Date: Thursday (14 November 2025)*

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You have to implement a common application to Linked List: Polynomial ADT. In this project you have to implement Multiplication, Addition, and Subtraction of polynomials.

Your application should read a file that contains a series of polynomials. Each polynomial will be represented as a linked a list. Each node contains a coefficient and an exponent of each term. The coefficients can be negative but assume all exponents are positive.

Once you read the file of polynomials, all polynomials should be stored in a stack. The operations will be executed in pairs. For example, assume you have three polynomials, p, q, r, then adding them will be as  $x = \text{add}(q, r)$ , then  $\text{add}(p, x)$ .

Example of input file:

```
31x^5-2x^3+x^2+4
-x^2-3x^4
8x^2-9
```

Your application should have the following menu:

1. Load the polynomials' file
2. Print the polynomials
3. Add the polynomials
4. Subtract the polynomials
5. Multiply the polynomials
6. Print the results to the screen
7. Print the results to file
8. Exit

The deadline of this assignment is on Thursday 14 November 2025. Late submissions will not be accepted for any reason. Please make sure that your application is running properly on your laptop before the lecture. Project discussions will take place in the lecture room.

**Grading policy:**

1. Your application should have all functionalities working properly. **Twenty** marks will be graded for the functionality of the project;
2. The following notes will make up the remaining 10 marks of the grade:
  - a. There has to be adequate documentation and comments in the code (i.e., functions, loops, etc.);
  - b. Your code should follow the code convention (i.e., spaces, indentations, etc.); and
  - c. Your application should contain a menu to allow the user to select which option (s) he would like to run.

**Notes and submission instructions:**

1. **This is individual work.** It should represent your own efforts. It is fine to discuss your work and to ask your colleagues, but you are not allowed to copy/paste the work of others or give your work to anyone else. You are not allowed to post/copy from other websites and/or social media and this will be considered as cheating. Using AI tools to assist writing the code will result in zero grade.
2. Any **plagiarized** code will not be marked.
3. **Document format.** Please submit only the code file (**c** file) containing the code of your project. Please rename it as follows: **"P1\_YourStudentID\_FirstNameLastName\_SectionNo.c"**.
4. **Input/output file name.** Make sure that the input/output file names are the same as in the specifications.
5. Include your full name, student ID, and section number in the beginning of your file.
6. Please do not compress the file, only the C-file is needed.
7. Files not following the convention in point 2 will not be marked.

Good luck!