

LAURENTIAN UNIVERSITY
BHARTI SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

COSC 2006 – Data Structures I

ASSIGNMENT 1

Due date: Saturday, October 5, 2024

Files that you must write and turn in:

- implementation of the program described below. You must submit electronic copy of all your source codes. Use D2L (drop box section) to submit your code
 - a detailed documentation (using Javadoc) of all your implemented programs (submit via D2L)
 - a README file to explain (in full detail) how to run your program (submit via D2L)
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The Assignment

Design and implement a *Set*, like the one you are familiar from your math background. You must include at least the following common set operations:

- check whether an element belongs (\in) to the set or not (\notin)
- for any given sets A and B, find $A \cup B$, $A \cap B$, $A - B$, and check whether $A \subset B$ or not.
- find the cardinality of a set $|A|$.

You may assume that your set will hold integer values. However, the use of generic type is encouraged. Use *Javadoc* to provide full documentation for your design. Follow the same style discussed in class (e.g. preconditions, postconditions, etc).

Create a program (tester) to demonstrate your designed *Set*, and all its supported operations. Discuss the complexity of all operations.

Marking details

Documentation (Javadoc) / README file	20 Marks
Comments/ Neatness/ Style	5 Marks
Implementation: <ul style="list-style-type: none">• Correct output in all test cases: 100%• Correct output in most cases: 80%• Correct output for some test cases: 60%• Lots of errors: 20%• Program does not compile: 5%	75 Marks

Bonus 10 marks for using generic type.