CSC10003 – Object Oriented Programming

Week 01
Review

Department of Software Engineering-FIT-VNU-HCMUS

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Notes

Create a single solution/folder to store your source code in a week.

Then, create a project/sub-folder to store your source code of each assignment.

The source code in an assignment should have at least 3 files:

- A header file (.h): struct definition, function prototypes/definition.
- A source file (.cpp): function implementation.
- Another source file (.cpp): named YourID_Ex01.cpp, main function. Replace 01 by id of an assignment.

Make sure your source code was built correctly. Use many test cases to check your code before submitting to Moodle.

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Content

In this lab, we will review the following topics:

- Define structures and implement functions having structures in C++.

3 Assignments

A: YY: 01

H: YY: 03

Implement the following structures and functions in C++ language.

3.1. Fraction

Structure: Fraction

Attribubtes:

1. Numerator
2. Denominator

Functions:

1. Input
2. Output
3. Add 2 fractions
4. Substract 2 fractions
5. Multiply 2 fractions
6. Divide 2 fractions. throw; if divided by zero
7. Reduce
8. Compare
9. IsPositive
10. IsNegative
11. IsZero

3.2. Triangle

Structure: Point.

Attributes:

1. x
2. y

Function:

1. Input
2. Output
3. Distance from point A to point B
4. Distance to Ox
5. Distance to Oy

Structure: Triangle

Attributes:

1. Point A
2. Point B
3. Point C

Functions:

1. Input
2. Output
3. IsValidTriangle
4. Type of a triangle.
    a. https://www.dkfindout.com/us/math/geometry/types-triangle/
5. Perimeter
6. Area
7. Center G

3.3. Queue / LinkedList

Structure: LinkedListQueue

Attributes:

1. Node *head
2. Node *tail
3. int capacity: max number of elements in the queue
4. int num: current number of elements in the queue

Functions:

1. init(int capacity)
2. enqueue(x) / push(x)
3. int x = dequeue()
4. peek(): return the top element but do not enqueue
5. isEmpty
6. isFull
7. clear