CSC10003 – Object Oriented Programming

Week 09
Template

Cảm ơn thầy Trần Duy Quang đã cung cấp template cho môn học

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1

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.
- Image of commit list

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

Name of your submission: **StudentID_W07_XX.zip**. XX: number of assignments you have done. XX: 00 – 99.

2

Content

In this lab, we will review the following topics:

- How to create your own class template

3

Assignments

A: YY = 01

H: YY = 02

3.1. Assignment MyVector

Define the following methods for your own class, MyVector, a class template.

In the main() function, create a vector of integers and a vector of fractions to test your defined methods.

Apply exception handling mechanism by throw exceptions in specific methods and try…catch… in the main() function.

```
template<class T>
class MyVector{
private:
        T *arr;
        int size;
public:
        // empty array
        MyVector();

        // n zeros
        MyVector(int n);

        MyVector(T *a, int n);
        MyVector(const MyVector &v);

        ~MyVector();

        int getSize();
        T getItem(int index);
        void setItem(T value, int index);

        void add(T value);
        void addRange(T *a, int n);
        void clear();
        bool contains(T value);
        void toArray(T *arr, int &n);
        bool equals(const MyVector &v);
        int indexOf(T value);
```

```
        int lastIndexOf(T value);
        void insert(T value, int index);
        void remove(T value);
        void removeAt(int index);
        void reverse();
        string toString();

        void sortAsc();
        void sortDesc();
};
```

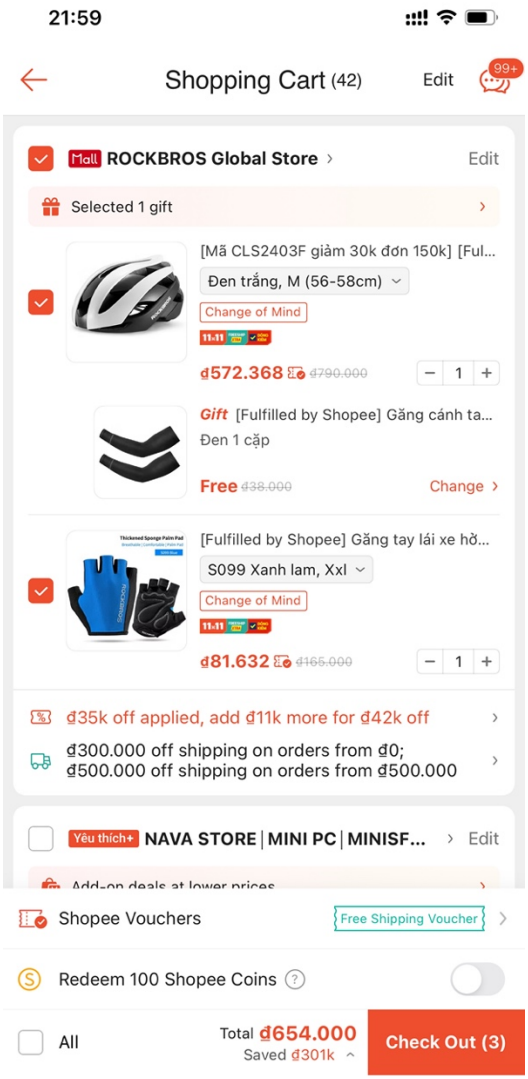
3.2. Assignment 2

Draw a class diagram and write a simple console application in C++ to simulate the following screens.

Write a report to explain your solution.

New requirements:

- Add another type of promotion.



3.3. Assignment 3 – Polymorphism and Interface in Python

Write a presentation (Powerpoint / Google Slides) with at least 20 slides to explain the following OOP concepts in Python:

- Polymorphism
- Interface