**National University of Computer and Emerging Sciences**



**Lab Manual 12**

**Object Oriented Programming**

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| Section | BCS-2H |
| Semester | Spring 2023 |

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# **Objectives**

After performing this lab, students shall be able to:

* Write templated classes in C++.
* Perform exception handling.

# **Exercise 1: Exception Handling Practice**

Consider the following C++ code:

int numOfItems;

double unitCost;

try

{

cout << "Enter the number of items: ";

cin >> numOfItems;

cout << endl;

if (numOfItems < 0)

throw numOfItems;

cout << "Enter the cost of one item: ";

cin >> unitCost;

cout << endl;

if (unitCost < 0)

throw unitCost;

cout << "Total cost: $"

<< numOfItems \* unitCost << endl;

}

catch (int num)

{

cout << "Negative number of items: " << num

<< endl;

cout << "Number of items must be nonnegative."

<< endl;

}

catch (double dec)

{

cout << "Negative unit cost: " << dec

<< endl;

cout << "Unit cost must be nonnegative."

<< endl;

}

Answer the following:

1. What is the output if the input is 25 5.50?
2. What is the output if the input is -55 2.8?
3. What is the output if the input is 37 -4.5?
4. What is the output if the input is -10 -2.5?

# **Exercise 2: Exception Class Practice**

Define an exception **class** called **tornadoException**. The class should have two constructors including the default constructor. If the exception is thrown with the default constructor, the method **what** should return **"Tornado: Take cover immediately!"** The other constructor has a single parameter, say **m**, of the **int** type. If the exception is thrown with this constructor, the method **what** should return **"Tornado: m miles away; and approaching!"** Write a C++ driver program to test the **class tornadoException.**

# **Exercise 3: Exception Handling Problem**

Write a program that prompts the user to enter a person’s date of birth in numeric form such as 8-27-1980. The program then outputs the date of birth in the form: August 27, 1980. Your program must contain three exception classes: **invalidDay, invalidMonth,** and **invalidYear**. If the user enters an invalid value for day, then the program should throw and catch an **invalidDay** object. Follow similar convention for the invalid values of month. Handle leap year value with **invalidYear** exception.