

İTÜ Computer Engineering Department
BLG252E Object Oriented Programming
3rd Homework Templates and Exception Handling

Due date: 14 may 2018 23:59

The main objective of this homework is to practice the following **subjects: templates and exception handling**. You are expected to code a game simulation. You will create a number of Money objects and store it inside an array. If the total amount of money in the array is bigger than **100 TL** you will add to the sum of the array a **5 TL** bonus. If it is less than **100 TL** you will punish it with **5 TL**. If it equals to **100 tl** you will not change the sum of the array. You will apply the same scenario for integer and double arrays.

- In this homework you will implement a template class named as **GenericArray** which contains an array of elements of a selected type which can be built in types(int,double etc...) or user defined classes.
- As a user defined class, you will create a **Money** class to represent **lira** and **kurus** amounts.
- If money amount is less than 0 lira it should throw an exception (“Money cannot be less than zero”)
- **GenericArray** class will be template so its elements could be integer, double, or user defined class element such as **Money** class
- In your main function you should generate a number of money objects and you will store them in array also you will create a number of int or double variables which will be stored in another array then you will find sum of these arrays.
- You will design **GenericArray** class as a generic class template, so that it runs smoothly with the test programs provided.
- **GenericArray** class should have an attribute named total and if it is above than **100 TL** you will increase the total amount as **5 TL**
- You should design comparison operations in terms of operator overloading approach.
- **100 kurus= 1TL**

```

int main() {

    genericArray<int >m1(5);
    genericArray<double>m2(5);
    genericArray<Money>m3(5);

    Money d(-1,89);
    Money a(10,5);
    Money b(10,5);
    Money c(43,7);
    Money k(50,6);
    Money m(10,20);
    Money bonus(5,0);

    m3.elements[0]=a;
    m3.elements[1]=b;
    m3.elements[2]=c;
    m3.elements[3]=k;
    m3.elements[4]=m;

    m2.elements[0]=12,5;
    m2.elements[1]=11,6;
    m2.elements[2]=13,9;
    m2.elements[3]=23,7;
    m2.elements[4]=130,7;

    m1.elements[0]=1;
    m1.elements[1]=2;
    m1.elements[2]=5;
    m1.elements[3]=9;
    m1.elements[4]=90;

    m3.total=m3.sum();
    m2.total=m2.sum();
    m1.total=m1.sum();
}

```

```

The amount of money can not be below zero!
Your total amount for money objects array   123   lira :43kurus
You have won 5 tl bonus, your new amount is 128   lira :43 kurus

The total of integer array is 107
you have won 5 points bonus new total is   112

the total of double array is 189
you have won 5 points bonus new total is 194

```

Make sure that there is no memory leak in your code.

- You may want to implement additional private methods.
- **Be careful** with the methods/attributes that are supposed to be constant, static, private/public
- You can add getters/setters when they are necessary.
- Use comments wherever necessary in your code.
- Your program should compile and run on Linux environment using g++ (version 4.8.5 or later). You can test your program on ITU's Linux Server using **SSH** protocol. Include all

necessary header files to your code. **Do not** use precompiled header files and Windows specific header files and functions.

- **Submission Notes:**

- You should also **write a report** to explain reasons why you need to use private/public/static/constant variables/methods in your program. Please make it possible to understand what you did in your program?
- After that, you should compress all files into an archive file named “<your_student_number>.zip”. Do **NOT** include any executable or project files in the archive file. You should only submit necessary files.
- Submissions are made through the Ninova system and have a strict deadline. Assignments submitted after the deadline will **NOT** be accepted. If you send your homework via e-mail, you will **NOT** get any points. Don’t wait until the last minute. Upload whatever you have, you can always overwrite it afterwards.
- This is not a group assignment and getting involved in any kind of cheating is subject to disciplinary actions. Your homework **SHOULD NOT** include any copy-paste material (from the Internet or from someone else’s paper/thesis/project). Check the “**Academic honesty**” section in the syllabus.
- For any questions about the assignment, contact **Muhammet şahin** via e-mail **muhammetsahin@itu.edu.tr**

