ITU Computer Engineering Department
BLG252E Object Oriented Programming
1st Homework

Due Date: March 11, 2012 23.59 PM

In this assignment, you will design C++ classes for the following real-world objects. Each actor's information (**Actor**) is maintained with the following attributes: name (string), birth year (int) and nationality (string). Each **Movie** class will include a pointer to an actor array (actor*), name (string), year, duration, number of actors (int), country (string), oscar (bool) and imdb rating (double). Default constructor of movie class will ask user input on the movie. Note that default constructor will not add cast members to movie. In main, actors will be added with add_cast() method. An example of this constructor will be given below. Other constructor will not do the same. It will initialize object's attributes with given parameters.

In order for you to understand the classes, a test program is given. You can test your code using that test program.

Write only necessary methods. **Do not** write extra constructors or destructors. Be careful with the methods which are supposed to be constant. **Do not** use friend relations in your homework and make sure that all of your class attributes are private.

You should use string library in your homework. Examine string library and see how its copy constructor works.

Also you should define static integer variables in each class you implemented as in 4.18 of Feza Buzluca's slides. This variables store number of calls to constructors (copy constructors included) and destructors.

At the end of execution, statements as below should be seen (Numbers below are given to give you an idea. They are not the exact numbers that you should see.);

```
……Other print messages……

There has been 10 constructor calls for Actor class.

There has been 10 destructor calls for Actor class.

There has been 12 constructor calls for Movie class.

There has been 12 destructor calls for Movie class.
```

Test code (included in the archive file):

```
#include <iostream>
#include <string>

int main()
{
	// sets actor name,birth year and nationality
	Actor a1("Leonardo DiCapr", 1974, "American");
	string n("Leonardo Di Caprio");
	// sets name of a1
	a1.set_name(n);
	// prints actor's information
	a1.print();
	// create new actor and initiliaze with a1's information
	Actor a2 = a1;
	a2.print();
	Actor a3("Kate Winslet", 1975, "American");
	// sets film name, year, duration, number of casts, country, oscar information and
	imdb points
	Movie m1("Titanic", 1997, 180, 5, "United States", true, 7.1);
	// tries to add a cast (a1) to m1
	if(m1.add_cast(a1))
		cout << "Cast has been added" << endl;
	else
		cout << "Max cast has been reached, you can not add cast.." << endl;
	if(m1.add_cast(a3))
		cout << "Cast has been added" << endl;
	else
		cout << "Max cast has been reached, you can not add cast.." << endl;
	// print m1's information
	m1.print();
	/* create a new movie and initiliaze with m1's information */
	Movie m2(m1);
	m2.print();
	Movie *mp;
	/* default constructor of movie will ask user input on the film and assigns initial
	values to name of the film, year, duration, number of casts, oscar status and imdb
	rating */
	mp = new Movie[3];
	Actor a4("Sam Worthington", 1976, "British");
	Actor a5("Actor Name1", 1975, "Australian");
	Actor a6("Actor Name2", 1980, "American");
	// add casts to movies
	mp[0].add_cast(a4);
	mp[1].add_cast(a5);
	mp[2].add_cast(a6);
	// find these actors' films and prints these films to the screen
	find_actors_movie(mp,"Sam Worthington");
	find_actors_movie(mp,"Actor Name2");
	// find the movie with the highest imdb rating and prints that movie to the screen
	find_best_movie(mp);
	/* add such statements that will print your constructor and destructor counters to the
	screen */
	delete[] mp;
	return 0;
}
```

An example default constructor call would take information from user like this;

```
Please enter film's name:
Avatar
Please enter film's year:
2009
Please enter film's duration (min):
162
Please enter number of actors:
5
Please enter film's country:
United States
Does the film have Oscar (0 or 1):
1
Please enter imdb rating of the film:
8.1
Film added!
```

For any questions, send Aycan Atak (ataka@itu.edu.tr) or Doğan Altan (daltan@itu.edu.tr) an e-mail.

Submission Procedure:

1. Your source code archive should contain **Actor.h**, **Actor.cpp**, **Movie.h**, **Movie.cpp**, and **main.cpp** files and also a **makefile**.
2. Make sure you write your name and number to all the header files of your project with the following format.

```
/*
 *
 *  BLG252E
 *  2012 Spring
 *  1st Homework
 *
 */

/*
 * @Author
 * Student Name: !! enter here !!
 * Student ID  : !! enter here !!
 * Date:
 */
```

3. Make sure that GNU C++ Compiler (g++) compiles your project and the application runs in Unix smoothly. This is important because we will evaluate your homework in Unix using g++.
4. Use comments wherever necessary in your code to explain what you did.
5. After you make sure that everything is compiled smoothly, archive all files into a zip file. Submit this file through www.ninova.itu.edu.tr. Ninova enables you to change your submission before the submission deadline.

Academic dishonesty including but not limited to cheating, plagiarism, collaboration is unacceptable and subject to disciplinary actions. Any student found guilty will get grade F.