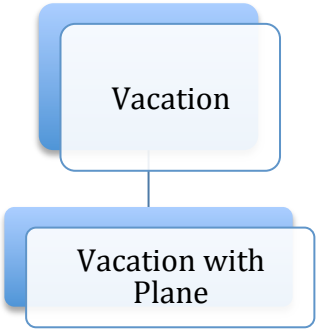
CS 202
COMPUTER SCIENCE II
SPRING 2016
Assignment #3

Due Date/Time: **03/01/2016 @ 11:59PM**
Total Points: **100**

Description
For this assignment you will design, implement, and test a class hierarchy of vacations as shown below:



Specifications

- ✓ The `Vacation` class is represented by
  - ❖ Destination city: `string`
  - ❖ Hotel name: `string`
  - ❖ Number of people: `int`
  - ❖ Number of nights: `int`
  - ❖ Price per night: `double`

- ✓ The `Vacation` class has the following member functions
  - ❖ Default constructor
  - ❖ Parameterized constructor
  - ❖ A function that returns the destination city
  - ❖ A function that returns the hotel name
  - ❖ A function that returns the number of people
  - ❖ A function that returns the number of nights
  - ❖ A function that returns the price per night
  - ❖ A function that calculates and returns the total cost of the vacation
  - ❖ A function that calculates and returns the cost of the vacation per person

- ✓ The `VacationWithPlane` class is derived from the `Vacation` class and is additionally represented by
  - ❖ Airline name: `string`
  - ❖ Airfare (per ticket): `double`

- ✓ The `VacationWithPlane` class has the following additional member functions
  - ❖ Default constructor
  - ❖ Parameterized constructor
  - ❖ A function that returns the airline name
  - ❖ A function that returns the airfare
  - ❖ A function that calculates and returns the total cost of the vacation
  - ❖ A function that calculates and returns the cost of the vacation per person

All programs must compile without errors and warnings on bobby.cs.unlv.edu using the g++ compiler. Programs that don't match these criteria will be given a zero (0).

No teamwork is allowed. All programs must be your own individual work.

Coding Style and Documentation

1. All submissions must have the following comment block at the top of their main program:

```
/*
 * Name: Your name, Class, Assignment number
 * Description: a brief description of the program.
 * Input: expected input to the program.
 * Output: expected output of the program. */
```

2. All functions and classes must have the following required documentation immediately above the function/class definition:

```
/*
 * function_identifier: brief description of what the function does.
 * parameters: what to pass into the function
 * return value: what the function returns, if any */

/*
 * class_identifier: brief description of the class
 * constructors: a list of constructor prototypes
 * public functions: a list of public function identifiers
 * private data members: a list of private data member identifiers
 * static variables: a list of any static variables */
```

3. All programs must employ proper indentation.

4. All programs must have reasonable comments throughout.

Submission
Submit your design document and source code files through WebCampus. You will submit the following six (6) files:

Design Document
- ✓ State the purpose and the functionality of your program.
- ✓ Include the specification of the class ADT for the `Vacation` and `VacationWithPlane` classes.
- ✓ Include a UML diagram for the `Vacation` and `VacationWithPlane` classes.

Vacation.h: Specification file for the `Vacation` Class

Vacation.cpp: Implementation file for the `Vacation` Class

VacationWithPlane.h: Specification file for the `VacationWithPlane` Class

VacationWithPlane.cpp: Implementation file for the `VacationWithPlane` Class

TestVacation.cpp
Write a program to test the functionality of `Vacation` and `VacationWithPlane` classes.

Example Run:
VACATION 1:
Vacation type: No Travel
Destination city: Las Vegas
Hotel name: Mandalay Bay
Number of people: 3
Number of nights: 6
Price per night: $206.85

Cost of vacation: $1241.10
Cost per person: $413.7

VACATION 2:
Vacation type: With Plane
Destination city: Chicago
Hotel name: Marriott
Number of people: 2
Number of nights: 3
Price per night: $199.99
Airline: United Airlines
Airfare: $274.13

Cost of vacation: $1148.23
Cost per person: $574.12