School of Information and Computer Technology Sirindhorn International Institute of Technology Thammasat University

CSS326 Database Programming Laboratory

Laboratory Assignment#1
Introduction to Database Programming

Objectives:	To introduce the basic components of database applications.
	To introduce necessary applications/software to learn databases.
	To introduce OOP concepts in C#.

1. Write a C# program that takes two numbers (integers) as input and calculates their sum, difference, product, and quotient (division result). Print the results to the console.

    Example output:

    ```
    Enter the first number: 10
    Enter the second number: 5
    Sum: 15
    Difference: 5
    Product: 50
    Quotient: 2
    ```

2. Write a C# program that takes a positive integer as input and calculates the sum of all numbers from 1 to that integer. Do the exercise with a while loop first and then a for loop to implement the solution.
    Example output:

    ```
    The sum of numbers from 1 to 5 is: 15
    ```

3. Write a C# program that does the following:
    (i)   Takes an array of integers as input from the user.
    (ii)   Calculates and prints the following:
             (a). The sum of all the elements in the array.
             (b). The maximum element in the array.
             (c). The minimum element in the array.
             (d). The average of all the elements in the array

    Example output:

    ```
    Enter the number of elements in the array: 5
    Enter 5 integer elements:
    Element 1: 10
    Element 2: 5
    ```

Element 3: 20
Element 4: 15
Element 5: 7

Sum of elements: 57
Maximum element: 20
Minimum element: 5
Average of elements: 11.4

4. Write a C# program to calculate the class average for a given number of students. The program should prompt the user to enter the number of students, and then take the scores of each student as input. Calculate and display the class average (create a method to calculate the class average).

Example output:

Enter the number of students: 5
Enter the score for student 1: 85
Enter the score for student 2: 92
Enter the score for student 3: 78
Enter the score for student 4: 88
Enter the score for student 5: 95
The class average is: 87.60

5. Let's create a C# program that simulates a shopping cart. We'll implement the basic functionalities of adding items to the cart, calculating the total price, and displaying the cart contents. Use classes to represent items and the shopping cart.

Expected output:
Shopping Cart Contents:
Shirt - $25.99
Jeans - $39.99
Shoes - $49.99
Total Price: $115.97

6. Create a C# program that acts as a simple DBMS for managing a list of students. Implement the following features:
   (i) Create a Student class with properties: Id (int), Name (string), and Age (int).
   (ii) Create a menu-based program that allows users to:
      a. Add a new student (Input: Name and Age).
      b. Display the list of all students.
      c. Search for a student by their ID.

Expected output:
===== Student Management System =====
1. Add a new student
2. Display all students
3. Search student by ID
4. Exit

Enter your choice: 1

Enter student's name: John Doe

Revised on 01/Aug/2023

```
Enter student's age: 20
Student added successfully!

Enter your choice: 1

Enter student's name: Jane Smith
Enter student's age: 22
Student added successfully!

Enter your choice: 2

----- List of Students -----
ID: 1, Name: John Doe, Age: 20
ID: 2, Name: Jane Smith, Age: 22

Enter your choice: 3

Enter student ID to search: 2
----- Student Found -----
ID: 2, Name: Jane Smith, Age: 22

Enter your choice: 3

Enter student ID to search: 3
Student with ID 3 not found.

Enter your choice: 4

Exiting the program...
```
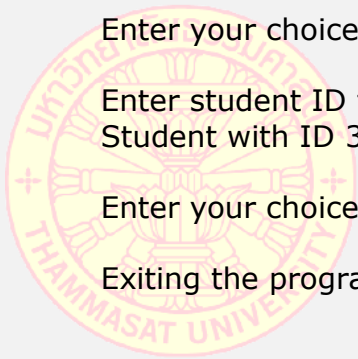
*** ***Sanitize the inputs as much as possible.***

Revised on 01/Aug/2023