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CS 313 Advanced Programming Language

Lab3 : Arrays & methods

Computer Science Department

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Lab Objectives:

In this lab, the student will practice:

- ✓ Creating, initializing and using arrays.
- ✓ Defining methods that takes arrays as parameters
- ✓ Loops and conditions

Lab Exercise:

Problem Description

Given the following data representing 10 student grades, write a C# program that computes their average and find the maximum and minimum grade. Use arrays to store the grades and define at least three methods.

Sample output

```
Welcome to the grade book for
CS101 Introduction to C# Programming!

The grades are:

Student 1: 87
Student 2: 68
Student 3: 94
Student 4: 100
Student 5: 83
Student 6: 78
Student 7: 85
Student 8: 91
Student 9: 76
Student 10: 87

Class average is 84.90
Lowest grade is 68
Highest grade is 100
```

Code Skelton

```
// package import

//creat your namespace and class

//the main method
static void Main(string[] args){

    //allocate the space needed to store the grades
    int[] grades = {87, 68, 94, 100, 83, 78, 85, 91, 76, 87};

    //call your methods

    //display results
    Console.WriteLine("Class Average is " + \* Avg grade*\);
    Console.WriteLine("Lowest grade is " + \* min grade*\);
    Console.WriteLine("Highest grade is " + \* max grade*\);

}

//declare your methods
public static double Average(int[] array)
{
    double sum=0;
    //Compute and return the average
    foreach (/* expression */){

    }

}

public static int Max(int[] array)
{
    //find and return the maximum value among the elements
    // of the array

}

//What about minimum?

} //end of class
```

Follow-up Questions and Activities

- ✓ Modify your code in order to allow the user to enter the 10 students' grades.
- ✓ Modify your code to allow the user to enter as many grades as needed. The input process should stop with a sentinel value (-1).

Assignment Problem(s)

Q1: Array Search

Write a method `IsFound` that searches the content of its input array parameter for a target value and returns true if the value exist in the arrays and false otherwise. Write an application that creates an array, fill it with random values (0 - 100) , asks the user to enter a number and check if it exists in the array or not.

Q2: Sales Commissions

Use a one-dimensional array to solve the following problem: A company pays its salespeople on a commission basis. The salespeople receive \$200 per week plus 9% of their gross sales for that week. For example, a salesperson who grosses \$5000 in sales in a week receives \$200 plus 9% of \$5000, or a total of \$650. Write an app (using an array of counters) that determines how many of the salespeople earned salaries in each of the following ranges (assume that each salesperson's salary is an integer). Summarize the results in tabular format.

- a) \$200–299
- b) \$300–399
- c) \$400–499
- d) \$500–599
- e) \$600–699
- f) \$700–799
- g) \$800–899
- h) \$900–999
- i) \$1000 and over