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CS 313 Advanced Programming Language

Lab2 : Control Structures

Computer Science Department

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Lab Objectives:

In this lab, the student will practice:

- ✓ How to create variables .
- ✓ How to read non-string data from the user.
- ✓ How to use if statements and Loops.
- ✓ Creating console applications .

Lab Exercise 1:

Problem Description

Create console application that reads 10 integers numbers from the keyboard and outputs the maximum number and counts even and odd numbers separately.

Sample output

```
Please Enter 10 integer numbers:
11
2
3
55
6
67
8
9
10
1
Maximum number is:67
Numbers of Evens is:4
Numbers of Odds is:6
```

Code Skelton

```
namespace Lab02{
    class Program{
        static void main( String[] args ){
            {
                // declare and initialize needed variables
                // number of Odds
                // number of Evens
                // Max value
```

```

// prompt user for input 10 integers numbers
Console.WriteLine( "Please Enter 10 integers numbers: ");

// obtain values and process integers numbers using a counter-
//controlled loop
for (
    )
{
    // write the needed conditions to update counters

    // find the current maximum

} // end for

// display results
Console.WriteLine( "Maximum number is:{0}\n Numbers of Evens
is:{1}\n Numbers of Odds is:{2}", /*max value*/,/*even counter*/,
/*odd counter*/);

} // end main

} // end Program

```

Follow-up Questions and Activities

Modify the above program to use a **while** loop instead of the **for**.

Lab Exercise 2:

Problem Description

Create Simple calculator that reads two numbers and operator from the keyboard. The operator should be one of the four basic operations (+,-,*,/) otherwise an error message: “**Invalid Operator!**” Should be displayed.

Sample output

```
Enter first Number: 4
Enter second Number: 2
Enter operator: +
Result is: 6
```

```
Enter first Number: 4
Enter second Number: 2
Enter operator: &
Invalid Operator!
```

Code Skelton

```
namespace Lab02{
    class Program{
        static void main( String[] args ){
            {
                // declare needed variables

                // read the expression from the user input

                // process two numbers and operator using switch statement
                switch( /*expression*/ )
                {

                } // end switch

            } // end main
        } // end Program
    }
}
```

Follow-up Questions and Activities

Modify the above program to allow the user to input as much operations as he wants until he enters -9999 as the first number.

Assignment problems:

Q1:

Write the program that print all the non vowel letters between a and z.

Hint:

The vowel letters are : a, e, i, u, o.

Q2:

Write a program that finds the temperature, as an integer, that is the same in both Celsius and Fahrenheit. The formula to convert from Celsius to Fahrenheit is:

$$Fahrenheit = 9/5 \text{ Celsius} + 32$$

Your program should create two integer variables for the temperature in Celsius and Fahrenheit. Initialize the temperature to 100 degrees Celsius. In a loop, decrement the Celsius value and compute the corresponding temperature in Fahrenheit until the two values are the same.