National University of Computer and Emerging Sciences

Lab Manual # 11

Programming Fundamentals

(Section BCS-1H1&1H2)

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Objectives:

After performing this lab, students will be able to solve programming problems using
character arrays
structure

50 marks

Question no 1:

Write a function in C++ named Upper that takes as input a character array and converts all the lower-case alphabets in a sentence (input by the user) to upper case.
Sample Input: The weather is cold
Sample Output: THE WEATHER IS COLD

Question no 2:

Write a function in C++ called
int search (char paragraph [], char substring [])
that accepts a paragraph and a substring as C-string arguments and returns the number of times the substring appears in that paragraph. So e.g., if the user enters "programming is taught in programming fundamentals lab. Students find programming interesting" and the substring to search within this sentence is "programming" then your function should return the value 3 as it appears thrice in this paragraph. Demonstrate the function in a program that asks the user to input a paragraph and a word to look for within the sentence and then passes them as arguments to the function and later displays the value returned by the function.

Question no 3:

Write a program that stores data about a circle in a structure.
Ask user to for diameter of a circle. Calculate and print its radius and area.

Question no 4:

Write a program that uses a structure to store the following data on a company division:
Division Name (such as East, West, North, or South)
First-Quarter Sales
Second-Quarter Sales
Third-Quarter Sales
Fourth-Quarter Sales
Total Annual Sales
Average Quarterly Sales
The program should use four variables of this structure. Each variable should represent one of the following corporate divisions: East, West, North, and South. The user should be asked for the four quarters' sales figures for each division. Each division's total and average sales should be calculated and stored in the appropriate member of each structure variable. These figures should then be displayed on the screen.
Input Validation: Do not accept negative numbers for any sales figures.

Question no 5:

A student has established the following monthly budget:

Housing	500.00
Utilities	150.00
Household Expenses	65.00
Transportation	50.00
Food	250.00
Medical	30.00
Insurance	100.00
Entertainment	150.00
Clothing	75.00
Miscellaneous	50.00

Write a program that has a MonthlyBudget structure designed to hold each of these expense categories. The program should pass the structure to a function that asks the user to enter the amounts spent in each budget category during a month. The program should then pass the structure to a function that displays a report indicating the amount over or under in each category, as well as the amount over or under for the entire monthly budget.