



**THE SUPERIOR University, LAHORE**  
**Department: Computer Science & Information Technology**

**Subject: Programming Fundamentals**

**Assignment 1**

**Instructor: Eng. HM Zahid**

**Note:**

- ❖ You have to write and run your code in Dev C++ and code along with screenshots of output should be included in submission copy. (Assignment should be in proper format and should submit before 5 Dec or 4 December 11:59pm)
- ❖ Each question carries equal marks. Weightage of assignment would be decided at the end of the semester.

1. Write a program that inputs temperature from the user in Fahrenheit and converts it into Celsius degree using formula  $C = \frac{5}{9}(F - 32)$ .
2. Write a program that inputs miles from the user and converts miles into kilometers. One mile is equal to 1.609 kilometer.
3. Write a program that inputs 4 numbers and calculates the sum, average and product of all the numbers.
4. Write a program that displays the following output:

Number	Square	Cube
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125

(Hint: Use escape sequences)

5. Write a program to find out the area of triangle when three sides a, b and c of the triangle are given. Use appropriate statements to input the values a, b and c from the keyboard. Formula for the area of triangle is  $area = \sqrt{s(s-a)(s-b)(s-c)}$  where  $s = (a + b + c) / 2$ . (Hint: Use sqrt() function provided in math.h library)

6. Write a program that calculates the electricity bill. The rates of electricity per unit are as follows:

- If the units consumed are  $\leq 300$ , then the cost is Rs. 2 per unit.
- If the units consumed are  $>300$  and  $\leq 500$ , then the cost is Rs. 5 per unit.
- If the units consumed exceed 500 then the cost per unit is Rs. 7

A line rent Rs. 150 is also added to the total bill and a surcharge of 5% extra if the bill exceeds Rs. 2000. Calculate the total bill with all the conditions given above.

7. Write a program that inputs three numbers and displays whether all the numbers are equal or not by using nested if condition.

8. Write a program that inputs a value and type of conversion. The program should then display the output after conversion. The program should include following conversions:

- 1 cm = .394 inches
- 1 liter = .264 gallons
- 1 kilometer = .622 miles
- 1 kilogram = 2.2 pounds

Make sure that the program accepts only valid choices for the type of conversion.

9. Write a program that allows the user to enter any character through the keyboard and determines whether it is a capital letter, small case letter, a digit number or a special symbol. (Hint: Capital letter means letter is greater than or equal to 'A' and less than or equal to 'Z'. Similarly small letter means letter is  $\geq$  'a' and  $\leq$  'z' and for digit letter,  $\geq$  '0' and  $\leq$  '9'. If a letter/character doesn't satisfy above three conditions it means character is a symbol)
10. Write a program that gets the number and a letter as input. If the letter entered by user is 'f', the program should treat the number entered as temperature in degrees Fahrenheit and convert it to the temperature in degree Celsius and print a suitable message. If the letter is 'c', the program should consider the number as Celsius temperature and convert it to Fahrenheit temperature and print a suitable message. The program should display error message and then exit if the user enters any other letter.
11. Write a C++ program to input basic salary of an employee and calculate its Gross salary according to following:  
Basic Salary  $\leq$  10000 : HRA = 20%, DA = 80%  
Basic Salary  $\leq$  20000 : HRA = 25%, DA = 90%  
Basic Salary  $>$  20000 : HRA = 30%, DA = 95%
12. Write a C++ program to input electricity unit charges and calculate total electricity bill according to the given condition:  
For first 50 units Rs. 0.50/unit  
For next 100 units Rs. 0.75/unit  
For next 100 units Rs. 1.20/unit  
For unit above 250 Rs. 1.50/unit  
An additional surcharge of 20% is added to the bill

**BEST OF LUCK**