

## BCSE102P Structured and Object-Oriented Programming Lab

### LAB 1 Programs

1. Write a C program to calculate the simple Interest  
Declare 3 integers P,N,R  
Formula :  $PNR/100$
2. Write a C program to convert the Fahrenheit to Celsius and Celsius to Fahrenheit

CELSIUS TO FAHRENHEIT

$$T_F = \left( \frac{9}{5} T_C \right) + 32$$

FAHRENHEIT TO CELSIUS

$$T_C = \frac{5}{9} (T_F - 32)$$

3. Write a C program to calculate the area of a circle, square, triangle, and rectangle.
4. Write a C program to check whether the given number is divisible by 2 and 3.
5. Write a C program to check whether the given number is odd or even.
6. Write a C program to check whether the person is eligible to vote or not.
7. There are two categories of challenges in a coding competition: Simple problems are worth one point each, and complex problems are worth two points each. An participant must receive at least X points to advance to the next round. Shenna completed both A Easy and B Hard tasks. Shenna could be eligible or not.
8. Ravi has a party for his pals arranged. Ravi brought X Rupees with him and was certain that this would be plenty to cover the cost. The waiter delivered a Y rupee bill at the conclusion. Print YES if Ravi has enough cash to cover the tab, or NO; if he has to borrow from a friend and risk hurting that friend's feelings.
9. Write a C program to get the basic salary of an employee from the user. Calculate the gross salary on the following basis:

Basic	HRA	DA
1 - 4000	10%	50%
4001 - 8000	20%	60%
8001 - 12000	25%	70%
12000 and above	30%	80%

10. Write a C program that calculates the user's body mass index (BMI) based on their height(meters) and weight(kg) and categorizes it as underweight, normal, overweight, or obese, based on the following table for Disease Control.(Note:To calculate BMI use this formula  $BMI = \text{weight}/(\text{height}*\text{height})$ - Prompt the user to enter weight in kilogram and height in meter).

BMI	Weight Status
Below 18.5	Underweight
18.5–24.9	Normal
25.0–29.9	Overweight
30.0	Obese

11. A school offers scholarships for meritorious students. Students can take six subjects (English, Language, Mathematics, Physics, Chemistry and Computer Science), to apply for awards. The requirements are below. Write a C program to find the award for a particular student.

Scholarship	Scholarship Application Requirements
Ramanujan scholarship	80 or above in mathematics
Einstein Scholarship	90 or above in both Physics and Mathematics
Pragati Scholarship	90 or above in all subjects
Gaurav Foundation Scholarship	85 or above in computer science but less than 95
Shakespeare Scholarship	75 or above in English but less than 85
Prathiba Memorial Scholarship	90 or above in chemistry(only for girl students)
Genius kid Scholarship	If eligible for more than 2 scholarship listed above , no score less than 50,and overall percentage > 70

12. The National Earthquake Information Center has the following criteria to determine the earthquake damages. Here is the given richter scale serve as an input data and the characterization as output information.

RICHTER NUMBER (N)

CHARACTERIZATION

$N < 5.0$

little or no damage

$5.0 \leq N < 5.5$	some damage
$5.5 \leq N < 6.5$	serious damage
$6.5 \leq N < 7.5$	Disaster
Higher	Catastrophe

Write a C program to characterize the input data as per above scale.

13. Write the program to calculate the Electricity Bill for the customers as per the requirements given below.

For first 100 units	80p per unit
For next 200 units	1.20p per unit
Others	1.50p per unit

14. Write a C program to calculate roots of a quadratic equation.

If determinant > 0,	$\text{root1} = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$ $\text{root2} = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$
If determinant = 0,	$\text{root1} = \text{root2} = \frac{-b}{2a}$
If determinant < 0,	$\text{root1} = \frac{-b}{2a} + i \frac{\sqrt{-(b^2 - 4ac)}}{2a}$ $\text{root2} = \frac{-b}{2a} - i \frac{\sqrt{-(b^2 - 4ac)}}{2a}$

15. Write a program to count the number of digits in a given integer.
16. Write a program to reverse a given integer.
17. Write a program to print number in reverse order with a difference of 2.
18. Write a program to print the sum of digits of a number using for loop.
19. Write a program to check whether a number is Palindrome or not.
20. Write a program to generate Fibonacci series.
21. If a four-digit number is input through the keyboard, write a program to obtain the sum of the first and last digit of this number.