

Assignment 1

Introduction to C

1. Accept radius of a circle and print the area and circumference of circle. (Hint: $\text{area} = \pi r^2$, $\text{circumference} = 2\pi r$)
2. Accept dimensions of a cylinder and print the surface area and volume. (Hint: $\text{surface area} = 2\pi r^2 + 2\pi rh$, $\text{volume} = \pi r^2 h$)
3. Accept temperatures in Fahrenheit(F) and print it in Celsius(C) and Kelvin (K). (Hint: $C = 5/9(F - 32)$, $K = C + 273.15$)
4. Accept initial velocity (u), acceleration (a) and time (t). Print the final velocity (v) and the distance (s) travelled. (Hint: $v = u + at$, $s = u + at^2$)
5. Accept two numbers and print arithmetic and harmonic mean of the two numbers. (Hint: $AM = (a+b)/2$, $HM = ab/(a+b)$)
6. Accept three dimensions length (l), breadth(b) and height(h) of a cuboid and print surface area and volume. (Hint: $\text{surface area} = 2(lb + lh + bh)$, $\text{volume} = lbh$)
7. Accept two integers from the user and interchange them. Display the interchanged numbers. Using temporary variable Without using temporary variable
 - a. Using + and – operator
 - b. Using / and * operator
8. The basic salary of an employee is decided at the time of employment, which may be different for different employees. Apart from basic, employee gets 10% of basic as house rent, 30% of basic as dearness allowance. A professional tax of 5% of basic is deducted from salary. Accept the employee id and basic salary for an employee and output the take home salary of the employee.
9. A cashier has currency notes of denomination 1, 5 and 10. Accept the amount to be withdrawn from the user and print the total number of currency notes of each denomination the cashier will have to give.
10. Accept the x and y coordinates of two points and compute the distance between the two points.
11. Consider a room having one door and two windows both of the same size. Accept dimensions of the room, door and window. Print the area to be painted (interior walls) and area to be whitewashed (roof).
12. Accept a character from the keyboard and display its previous and next character in order. Ex. If the character entered is 'd', display "The previous character is c", "The next character is e".
13. Accept a character from the user and display its ASCII value.

Assignment 2

IF -ELSE

1. Write a program to check whether given number is positive?
2. Write a program to check whether given number is positive or negative?
3. Write a program to check whether given number is even or odd (with if and conditional operator ?:)?
4. Accept the cost price and selling price from the keyboard. Find out if the seller has made a profit or loss and display how much profit or loss has been made?
5. Write a program to check whether given number is divisible by 5 and 7? (with && operator and with nested if)
6. Write a program to check whether given number is divisible by 5 or 7? (with || operator and with else if)
7. Write a program to accept three numbers and check whether the first is between the other two numbers. Ex: Input 20 10 30. Output: 20 is between 10 and 30
8. Accept a lowercase character from the user and check whether the character is a vowel or consonant. (Hint: a,e,i,o,u are vowels)
9. Accept any year as input through the keyboard. Write a program to check whether the year is a leap year or not. (Hint leap year is divisible by 4 and not by 100 or divisible by 400)
10. Accept three sides of triangle as input, and print whether the triangle is valid or not. (Hint: The triangle is valid if the sum of each of the two sides is greater than the third side).
11. Write a program to compare two numbers? (==,>,<)
12. Write a program to find maximum of three numbers? (3-4 logics) and (with conditional operator). Modify and find minimum of three numbers.

13. Accept the time as hour, minute and seconds and check whether the time is valid. (Hint: $0 \leq \text{hour} < 24$, $0 \leq \text{minute} < 60$, $0 \leq \text{second} < 60$) (3 logics)

14. Accept the x and y coordinate of a point and find the quadrant in which the point lies. (2 logics and origin condition)

15. Write a program, which accepts annual basic salary of an employee and calculates and displays the Income tax as per the following rules

1. Basic: $< 1,50,000$ Tax = 0
2. $1,50,000$ to $3,00,000$ Tax = 20%
3. $> 3,00,000$ Tax = 30%

16. Write a program to accept marks for three subjects and find the total marks secured, average and also display the class obtained. (Class I – above %, class II – % to %, pass class – % to % and fail otherwise)

17. Write a program to accept quantity and rate for three items, compute the total sales amount, Also compute and print the discount as follows: (amount $>$ – 20% discount, amount between to – 15% discount, amount between – to -- 8 % discount)

18. A library charges a fine for every book returned late. Accept the number of days the member is late, compute and print the fine as follows: (less than five days Rs fine, for 6 to 10 days Rs. Fine and above 10 days Rs. fine)

19. Write a Program to convert lowercase letter into uppercase letter and vice versa.

20. Write a program to check whether given character is a digit or a character in lowercase or uppercase alphabet. (Hint ASCII value of digit is between 48 to 57 and Lowercase characters have ASCII values in the range of 97 to 122, uppercase is between 65 and 90)

Assignment 3 Switch Case

1. Accept a single digit from the user and display it in words. For example, if digit entered is 9, display Nine.
2. Write a program, which accepts two integers and an operator as a character (+ - * /), performs the corresponding operation and displays the result.
3. Accept two numbers in variables x and y from the user and perform the following operations

Options	Actions
1: Equality	Check if x is equal to y
2: Less Than	Check if x is less than y
3: Quotient and Remainder	Divide x by y and display the quotient and remainder
4: Range	Accept a number and check if it lies between x and y (both inclusive)
5: Swap	Interchange x and y

4. Accept radius from the user and write a program having menu with the following options and corresponding actions

Options	Actions
1: Area of Circle	Compute area of circle and print
2: Circumference of Circle	Compute circumference of circle and print
3: Volume of Sphere	Compute volume of sphere and print

5. Write a program to accept the week day as number from user and display Monday to Sunday.

Assignment 4 Loop

1. Write a program to print hello 5 times
2. Write a program to print hello N times
3. Write a program to print 1 to 10
4. Write a program to print 100 to 150
5. Write a program to print 1 to N
6. Write a program to print x to y (both inclusive)
7. Write a program to find sum of 1 to 5 (sum of first 5 numbers)
8. Write a program to find sum of 100 to 150
9. Write a program to find sum of 1 to N (sum of first N numbers) (with and without loop)
10. Write a program to find sum of x to y (both inclusive)
11. Write a program to print even numbers from 1 to 10 (or odd numbers)
12. Write a program to print even numbers from 100 to 150 (or numbers)
13. Write a program to print even numbers from 1 to N (or numbers)
14. Write a program to print even numbers from x to y (both inclusive) (or odd numbers)
15. Write a program to find sum of even numbers from 1 to 10 (or odd numbers)
16. Write a program to find sum of even numbers from 100 to 200 (or odd numbers)

17. Write a program to find sum of even numbers from 1 to N (or odd numbers)
18. Write a program to find sum of even numbers from x to y (both inclusive) (or odd numbers)
19. Write a program to find factorial of N ($N!$). ($3! = 3*2*1$ or $1*2*3$)
20. Write a program to accept integers x and n compute x^n .
21. Write a program that accepts a number and print its all digits.
22. Write a program that accepts a number and count the number of digits in given number.
23. Write a program to accept an integer and count the number of even digits, odd and zero digits in given number.
24. Write a program to find sum of digits of given number.
25. Write a program to check whether a given number is Armstrong number.
26. Write a program to find reverse of given number.
27. Write a program to check whether given number is palindrome number.
28. Write a program which accepts a number and display each digit of number in words.
29. Write a program to print factors of a given number.
30. Write a program to print sum of factors of a given number
31. Write a program to count factors of a given number
32. Write a program to print, count and sum of factors
33. Write a program to check whether a given number is perfect number.
34. Write a program to check whether a given number is prime number.

Assignment 5

Nested Loop

1. Write list of programs to print various pattern.

i. 01010 01010 01010 01010 01010	ii. 5 54 543 5432 54321
iii. 11111 10001 10001 10001 11111	* ** * * * * *****
iv. 12345 12345 12345 12345 12345	* ** *** **** *****
v. 55555 54444 54333 54322 54321	***** **** *** ** *
vi. 12345 23451 34521 45321 54321	***** * * * * * * *

2. Write a program to print multiplication table between 1 to n.
3. Write a program to print Armstrong numbers between 1 to n.
4. Write a program to print prime numbers between 1 to n.
5. Write a program to print perfect numbers between 1 to n.

Assignment 6 Array

1. Write a program to accept n numbers and store in an array. Calculate Sum and Average of n numbers.
2. Write a program to accept n numbers in an array and find the largest and smallest number.
3. Write a for Linear Search, which accepts an array of n elements and a key as parameters and returns the position of key in the array and -1 if the key is not found. Accept n numbers from the user, store them in an array. Accept the key to be searched and search it using this function. Display appropriate messages.
4. Write a function, which accepts an integer array and an integer as parameters and counts the occurrences of the number in the array.
5. Write a program to accept n numbers and store in an array. Perform following operation on array using switch case. (Use Function for each operation)
 - a. Print Array elements
 - b. Calculate Average of Array elements
 - c. Find Max of Array
 - d. Search an element in Array
 - e. Count Occurrence of an element in Array
6. Write a function to sort an array of n integers. Accept n numbers from the user, store them in an array and sort them using this function. Write separate function to accept and display the array.
7. Write a program to reverse an array of n integers using function.
8. Write a program to copy one array into another array using function.
9. Write a program to compare two arrays using function using function.

10. Write a program to accept n numbers in the range of 1 to 25 and count the frequency of occurrence of each number.
11. Write a program to find the largest two numbers in a given array.
12. Write a program to find the second largest & smallest elements in an array.
13. Write a program to store even & odd elements of an array in two separate arrays.
14. Write a program to accept n numbers and store all prime numbers in an array called prime. Display this array.
15. Write a program to find the union and intersection of the two arrays. Store the result in another arrays.
16. Write a program to merge two sorted arrays into a third array such that the third array is also in the sorted order.
17. Write a program to accept n numbers from the user and store them in an array such that the elements are in the sorted order. Display the array. Write separate functions to accept and display the array.
18. Write a program to delete the specified Integer from an Array (using function).
19. Write a program to remove all duplicate elements from an array.
20. Write a program to accept a decimal number and convert it to binary, octal and hexadecimal number.