

**CDAC Hyderabad**  
**PG-DAC March 2023**  
**Logical Building & Problem Solving**  
**Assignment 4**



1. Write a C Program to calculate the absolute value of an integer.

**Ex -** 1) Input = 100  
          **Expected Output** = 100  
      2) Input = -200  
          **Expected Output** = 200

2. Write a C Program to Calculate the Average of a Set of Grades and Counting the Number of Failing Test Grades (Take Grade as fail if less than 65)

- A) Use for loop
- B) Use While loop
- C) Use Do-While

**Ex -      Expected Output :**  
Enter the number of grades : 7  
Enter grade #1 : 93  
Enter grade #2 : 63  
Enter grade #3 : 87  
Enter grade #4 : 65  
Enter grade #5 : 62  
Enter grade #6 : 88  
Enter grade #7 : 76  
Grade Average = 76.29  
Number of failures = 2

3. Write a program to create a simple calculator to perform Addition, Subtraction, Multiplication and Division using switch statement. Take the required operation as input from the user.
4. Write a program to find out the sum of first n natural numbers.  
Take n as input from the user.
5. Write a C Program to find the Greatest Common Divisor using the functions.

**Expected Output**

- 1) Enter the numbers : 150,35  
The Greatest Common Divisor of 150 and 35 is 5
- 2) Enter the numbers : 1026,405  
The Greatest Common Divisor of 1026 and 405 is 27
- 3) Enter the numbers : 83,240  
The Greatest Common Divisor of 83 and 240 is 1

6. Write a C Program to find the Absolute Value using the functions.

**Expected Output**

- 1) Enter the number : 100  
The Absolute Value of 100 is 100
- 2) Enter the number : -200  
The Absolute Value of -200 is 200

7. Write a C program to check whether the given number is perfect number or not using functions  
A number is called as a perfect number if the sum of the factors of that number is equal to the same number.

**Expected Output**

- 1) Enter the number : 6  
The number entered is Perfect Number
- 2) Enter the number : 24  
The number entered is not a Perfect Number

8. Write a C Program to find the factorial of a given number using functions.

**Expected Output**

- 1) Enter the number : 7  
The Factorial of 7 is 5040
- 2) Enter the number : 0  
The Factorial of 0 is 1

9. Write a C Program to find the power of a given number using functions.

**Expected Output**

- 1) Enter the base number : 2  
Enter the power number : 3  
 $2^3 = 8$
- 2) Enter the base number : 5  
Enter the power number : 0  
 $5^0 = 1$

10. Write a C Program to swap 2 numbers without using third variable using pointers

**Expected Output :**

Enter number1 : 10  
Enter number2 : 20  
Before Swap : number1 is 10 and number2 is 20  
After Swap : number1 is 20 and number2 is 10

11. Write a C Program to swap 2 numbers with using third variable and use call by reference.

**Expected Output :**

Enter number1 : 50  
Enter number2 : 60  
Before Swap : number1 is 50 and number2 is 60  
After Swap : number1 is 60 and number2 is 50

12. Write a C program that declares and initializes (to any value you like) a char, an int, a double and a float.

Your program should then print the address of, and value stored in, each of the variables. Use the format string `"%u"` [%p in hex] to print the addresses as unsigned integers.

**Hint:** You can use the character `"&";` to find addresses.

13. Write a C program to declare an integer and an integer pointer to it.

Initialize the integer variable. Print the value of the int variable using pointer variable.

**Hint:** You can use dereferencing operator `*`.

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