

Assignment-1

Programming and Problem Solving with C

Github: https://github.com/raushankr10a-cyber/CSIC103_Assignment_1

Conditional & Looping Constructs

1. Check Even or Odd

```
ENTER NUMBER TO CHECK EVEN OR ODD: 26  
NUMBER IS EVEN
```

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2. Find Greatest of Three Numbers

```
ENTER FIRST NUMBER :24  
ENTER SECOND NUMBER :13  
ENTER THIRD NUMBER :26  
GREATEST NUMBER IS 26.000000
```

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3. Check for Leap Year

```
ENTER YEAR :2024  
YEAR IS LEAP YEAR
```

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4. Sum of Natural Numbers

```
enter number to add till it: 5
sum of first 5 natural numbers is 15
```

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5. Multiplication Table

```
ENTER NUMBER TO GET ITS TABLE:9
```

```
9×1=9
```

```
9 X 2=18
```

```
9 X 3=27
```

```
9 X 4=36
```

```
9 X 5=45
```

```
9 X 6=54
```

```
9 X 7=63
```

```
9 X 8=72
```

```
9 X 9=81
```

```
9 X 10=90
```

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6. Reverse a Number

```
Enter any digit number: 1234
The reverse of 1234 is: 4321
```

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7. Simple Calculator (using switch)

```
ENTER FIRST NUMBER:24
ENTER SECOND NUMBER:25
ENTER YOUR OPRETION TYPE-
1 FOR ADDITION
2 FOR SUBTRACTION
3 FOR MULTIPLICATION
4 FOR DIVISION
1
SUM OF BOTH NUMBERS IS 49.000000
```

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8. Find Factorial of a Number

```
ENTER NUMBER TO FINT FACTORIAL:5
FACTORIAL IS 120
```

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9. Check for Palindrome Number

```
Enter a number: 12321
Number is palindrome.
```

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Arrays (1D & 2D)

1. Find Greatest in Array

How many numbers do you want to compair:4

1. ENTER NUMBER : 12

2. ENTER NUMBER:54

3. ENTER NUMBER :2

4. ENTER NUMBER:34

54 is greatest among them

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2. Calculate Sum and Average of Array Elements

```
ENTER NUMBER OF ELEMENTS:3
ENTER NUMBER 1: 12
ENTER NUMBER 2: 34
ENTER NUMBER 3: 54
SUM OF ALL NUMBERS 100 AND AVERAGE IS 33.000000
```

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3. Sort Array in Ascending Order

```
Enter number of elements: 4
Enter 4 elements:
12
54
11
9
Array in ascending order:
9 11 12 54
```

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4. Count Frequency of Array Elements

```
ENTER NUMBER OF ELEMENTS: 4
ENTER NUMBER 1: 1
ENTER NUMBER 2: 2
ENTER NUMBER 3: 1
ENTER NUMBER 4: 4
1 COMES 2 TIMES
2 COMES 1 TIMES
4 COMES 1 TIMES
```

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5. Merge Two Arrays

```
ENTER NUMBER OF ELEMENTS IN FIRST ARRAY: 2
ENTER NUMBER OF ELEMENTS IN SECOND ARRAY: 3
FOR FIRST ARRAY
ENTER ELEMENT 1: 1
ENTER ELEMENT 2: 4
FOR SECOND ARRAY
ENTER ELEMENT 1: 3
ENTER ELEMENT 2: 2
ENTER ELEMENT 3: 5
NEW ARRAY IS:
1
4
3
2
5
```

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6. Add Two Matrices (2D Array)

```
enter number of rows:2
enter number of columns:2
for first matrix
enter number in (0,0):1
enter number in (0,1):2
enter number in (1,0):4
enter number in (1,1):3
for second matrix
enter number in (0,0):7
enter number in (0,1):6
enter number in (1,0):5
enter number in (1,1):4
first matrix is-
1 2
4 3
second matrix is-
7 6
5 4
sum of both matrices is-
8 8
```

9 7

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7. Find Transpose of a Matrix

```
enter number of rows:2
enter number of columns:3
enter number in (0,0):1
enter number in (0,1):3
enter number in (0,2):2
enter number in (1,0):4
enter number in (1,1):6
enter number in (1,2):5
matrix is-
1 3 2
4 6 5
transpose of matrix is-
1 4
3 6
2 5
```

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8. Sum of Diagonal Elements of a Matrix

```
enter number of rows/columns:2
enter number in (0,0):1
enter number in (0,1):9
enter number in (1,0):8
enter number in (1,1):4
matrix is-
1 9
8 4
sum is 22
```

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Structures

1. Student Details using Structure

```
student's details-  
name: RAUSHAN KUMAR  
roll no.: 125113012  
marks: 100
```

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2. Find Student with Maximum Marks

```
NUMBER OF STUDENTS:3  
FOR STUDENT 1  
ENTER NAME OF STUDENT: RAUSHAN  
ENTER MARKS OF STUDENT:100  
FOR STUDENT 2  
ENTER NAME OF STUDENT: Vaibhav  
ENTER MARKS OF STUDENT : 90  
FOR STUDENT 3  
ENTER NAME OF STUDENT: Tanish  
ENTER MARKS OF STUDENT :80  
STUDENT WITH MAXIMUM MARKS -  
NAME: RAUSHAN  
MARKS: 100
```

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3. Book Details using Structure Array

```
NUMBER OF BOOKS:3  
FOR BOOK 1  
ENTER NAME OF BOOK: MATHS  
ENTER PRICE OF BOOK:800  
FOR BOOK 2  
ENTER NAME OF BOOK: PHYSICS  
ENTER PRICE OF BOOK:400  
FOR BOOK 3  
ENTER NAME OF BOOK: CHEMISTRY
```

ENTER PRICE OF BOOK:10

BOOK NAME "MATHS" AND PRICE IS 800

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4. Calculate Average Marks of Students

```
NUMBER OF STUDENTS:3
FOR STUDENT 1
ENTER MARKS OF STUDENT : 100
FOR STUDENT 2
ENTER MARKS OF STUDENT:90
FOR STUDENT 3
ENTER MARKS OF STUDENT : 80
AVERAGE MARKS OF ALL STUDENTS ARE 90.000000
```

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5. Calculate Gross Salary

```
ENTER BASIC SALARY: 100000
ENTER DA SALARY: 20000
ENTER HRA SALARY: 10000
GROSS SALARY OF EMPLOYEE IS 130000.000000
```

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6. Employee Details

```
ENTER EMPLOYEE NAME: RAUSHAN
ENTER EMPLOYEE POST: MANAGER
ENTER EMPLOYEE ADDRESS: JAIPUR
ENTER EMPLOYEE SALARY: 100000
EMPLOYEE DETAILS-
NAME: RAUSHAN
ADDRESS: JAIPUR
POST: MANAGER
SALARY: 100000.000000
```

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7. Student Details with Date of Birth

```
Enter student name: RAUSHAN
Enter roll number: 125113012
Enter date of birth (DD MM YYYY): 10 07 2008
```

```
Student Details
Name: RAUSHAN
Roll: 125113012
DOB: 10-07-2008
```

```
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```

8. Sort Student Records by Roll Number

```
Enter number of students: 3
Enter details of student 1:
Roll Number: 125113012
Name: RAUSHAN
Marks: 100
Enter details of student 2:
Roll Number: 125113039
Name: VAIBHAV
Marks: 90
Enter details of student 3:
Roll Number: 125113047
Name: TANISH
Marks: 80
Student Records (Sorted by Roll Number)
Roll: 125113039 Name: VAIBHAV Marks: 90.000000
Roll: 125113012 Name: RAUSHAN Marks: 100.000000
Roll: 125113047 Name: TANISH Marks: 80.000000
```

```
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```

Pointer

1. Swap Two Numbers using Pointers (Call by Reference)

```
Enter first number: 23
Enter second number: 12
Before swaping a=23 and b=12
After swaping a a=12 and b=23
```

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2. Sum of Array Elements using Pointers

```
Enter number of elements: 4
Enter 4 elements:
12
13
56
3
Sum of array elements = 84
```

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3. Find Length of String using Pointers

```
Enter string: KURUKSHETRA
string length is 11
```

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4. Copy String using Pointers

```
Enter string: RAUSHAN
Second string is RAUSHAN
```

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5. Pass Structure to a Function using Pointers

```
Enter name: RAUSHAN
Enter roll number: 125113012
Enter marks: 95
Student Details
Name: RAUSHAN
Roll: 125113012
Marks: 95.000000
```

```
After bonus marks:  
Updated Marks: 100.000000
```

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6. Find Largest and Smallest in Array using Pointers

```
Enter number of elements: 3  
Enter elements 1: 12  
Enter elements 2: 50  
Enter elements 3: 1
```

```
Largest number = 50  
Smallest number = 1
```

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7. Print Array Elements using Pointer Arithmetic

```
Enter number of elements: 3  
Enter elements 1: 12  
Enter elements 2: 45  
Enter elements 3: 23  
Array elements using pointer arithmetic:  
Element 1=12  
Element 2=45  
Element 3=23
```

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8. Print Value and Address

```
Enter number: 10  
value of number is 10
```

```
address of number 6422296
address of pointer 6422292
```

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Functions

1. Check Prime Number using Function

```
Enter your number: 17
number is prime
```

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2. Factorial using Function

```
Enter a number: 5
Factorial of 5 is 120
```

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3. GCD of Two Numbers using Function

```
enter first number:60
enter second number:12
gcd is 12
```

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4. Reverse a Number using Function

```
Enter a number: 12345
Reversed number: 54321
```

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5. Sum of Digits using Function

```
Enter a number: 12345
Sum of digits is: 15
```

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6. Check Palindrome String using Function

```
Enter string: naman
String is palindrome.
```

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7. Add Two Matrices using Function

```
enter number of rows:2
enter number of columns:2
for first matrix
enter number in (0,0):1
enter number in (0,1):4
enter number in (1,0):3
enter number in (1,1):2
for second matrix
enter number in (0,0):8
enter number in (0,1):7
enter number in (1,0):5
enter number in (1,1):2
```

```
first matrix is
1 4
3 2
second matrix is
8 7
5 2
sum of both matrices is
9 11
8 4
```

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8. Average of Array using Function

```
Enter number of elements: 4
Enter element: 12
Enter element: 87
Enter element: 34
Enter element: 15
Average of all numbers is 37.000000
```

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9. Illustrate Call by Value (Implied from the last code block in Function section)

```
number is 10
number is 10
```

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File Handling

1. Write Text to a File

```
Enter text that you want to write in file:
I
am RAUSHAN KUMAR.
```

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2. Read Content from a File

```
Reading content from file:
I
am RAUSHAN KUMAR.
```

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3. Count Words, Characters, and Lines in a File

```
Total Words: 7
Total Characters (excluding spaces): 29
Total Lines: 4
```

```
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```

4. Write Text to File Successfully Message

```
Text written to file successfully.
```

```
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```

5. Append Content to a File

```
CONTENT OF FILE:
I
am RAUSHAN KUMAR.
I
an from JAIPUR.
```

```
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```

6. Write and Read Student Records to/from File

```
Enter number of students: 2
Enter details of student 1
Enter name: RAUSHAN
Enter branch: VLSI
Enter roll no.: 125113012
Enter marks: 100
Enter details of student 2
Enter name: VAIBHAV
Enter branch: VLSI
Enter roll no.: 125113039
Enter marks: 90
Student 1 details:
Name: RAUSHAN
Branch: VLSI
Roll: 125113012
Marks: 100.000000
Student 2 details:
Name: VAIBHAV
Branch: VLSI
Roll: 125113039
Marks: 90.000000
```

```
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```

7. Read Numbers from File and Calculate Sum/Average

```
Total numbers read: 5
Sum = 15.000000
Average = 3.000000
```

```
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```

8. Merge Two Files

```
Contents of file1.txt and file2.txt successfully merged into
```

file3.txt

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