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CSA02 – C PROGRAMMING

1. Write a program that would sort a list of names in alphabetical order Ascending or Descending, choice get from the user?

Sample Input:
Banana
Carrot
Radish
Apple
Jack
Order(A/D) : A
Sample Output:
Apple
Banana
Carrot
Jack
Radish

2. Write a program for matrix multiplication?

Sample Input:

Mat1 = 1 2

5 3

Mat2 = 2 3

4 1

Sample Output:

Mat Sum = 10 5

22 18

3. Write a program to enter the marks of a student in four subjects out of centum. Then calculate the total and aggregate, display the grade obtained by the student. If the student scores an aggregate greater than 75%, then the grade is Distinction. If aggregate is 60>= and <75, then the grade is First Class. If aggregate is 50 >= and <60, then the grade is Second Class. If aggregate is 40>= and <50, then the grade is Third Class. Else the grade

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CSA02 – C PROGRAMMING

is Reappear. If all subjects are >= 50 marks then give the grade as Distinction with All Pass, First Class with All Pass, etc…

Sample Input & Output:

Enter the marks in Science: 90

Enter the marks in History: 91

Enter the marks in Mathematics: 92

Enter the marks in Language: 93

Total= 366

Aggregate = 91.5

Distinction with All Pass

Test cases:

1. 18, 76,9.3,65
2. 73,78,79,75
3. 98,106,120,95
4. 96,73, -85,95
5. 78,59.8,76,79

4. Write a program to print the following pattern

Sample Input:

Enter the number to be printed: 1.4

Max Number of time printed: 3

1.4

1.41.4

1.41.41.4

1.41.4

1.4

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CSA02 – C PROGRAMMING

1. Write a program to print unique permutations of a given number

Sample Input:
Given Number: 143
Sample Output:
Permutations are:
134
143
314
341
413
431

Test cases:
1. 0
2. 111
3. 505
4. -143
5. -598

2. Write a program to print consonants, vowels and repeated letters separately in the given word

Sample Input:
Given Word: Engineering
Sample Output:
Consonants: n g n r n g
Vowels: e i e e i
Repeated letters: e i n g

Test cases:
1. TRY
2. MEDIAN
3. ONE
4. KNOWLEDGE

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CSA02 – C PROGRAMMING

5. EDUCATION

3. Write a C Program to Create an Array of Tuples with the First Element as the Number and Second Element as the Square of the Number.

Sample Input:

Enter the lower range:45

Enter the upper range:49

Sample Output:

[(45, 2025), (46, 2116), (47, 2209), (48, 2304), (49, 2401)]

Test case:

1. Enter lower range: 50

   Enter upper range: 100

2. Enter lower range: 5

   Enter upper range: 8

3. Enter lower range: 10

   Enter upper range: 5

4. Enter lower range: 500

   Enter upper range: 500

5. Enter lower range: 0

   Enter upper range: -100

4. Write a program to print the Fibonacci series.

Sample Input:

Enter the n value: 6

Sample Output:

0 1 1 2 3 5

Test Condition: Implement negative Fibonacci series

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CSA02 – C PROGRAMMING

1. Write a program to print the below pattern

   1

   2 2

   3 3 3

   4 4 4 4

2. Write a program to find the square, cube of the given decimal number, not an integer.

Sample Input:
Given Number: 0.6
Sample Output:
Square Number: 0.36
Cube Number:0.216

Test cases:
1. 12
2. 0
3. -0.5
4. 14.25
5. -296

3. Program to Generate Random Numbers from A to B and put them to the List

   Sample Input & Output:

   Enter A Value: 30

   Enter B Value:60

   Enter number of elements:7

   Sample Input & Output:

   Randomized list is: [41, 39, 43, 34, 42, 59, 49]

   Test Case:

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CSA02 – C PROGRAMMING

1. A = 10, B = 0, Number of elements = 3
2. A = 100, B = 200, Number of elements = 30
3. A = 30, B = 270, Number of elements = 300
4. A = 0, B = 0, Number of elements = 5
5. A = -420, B = 420, Number of elements = -45

4. Write a program to print the given number is Perfect number or not?

Sample Input:

Given Number: 6

Sample Output:

Its a Perfect Number

Test cases:

1. 17
2. 26!
3. 143
4. 84.1
5. -963

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CSA02 – C PROGRAMMING

1. Write a program to convert the Binary to Decimal, Octal

Sample Input:
Given Number: 1101
Sample Output:
Decimal Number: 13
Octal:15

Test cases:
1. 211
2. 11011
3. 22122
4. 111011.011
5. 1010.0101

2. Write a program to find the number of special characters in the given statement

Sample Input:
Given statement: Modi Birthday @ September 17, #&$% is the wishes code for him.
Sample Output:
Number of special Characters: 5

3. Write a C Program to Print the Duplicate Items and Non Duplicate Items from a List

Sample Input:

Enter the number of elements in list:7
Enter element1:10
Enter element2:20
Enter element3:20
Enter element4:30
Enter element5:40

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CSA02 – C PROGRAMMING

Enter element6:40
Enter element7:50

Sample Output:

Non-duplicate items: [10, 30, 50]
Duplicate Items: [20, 40]

4. Find the factorial of n?

Sample Input:

N = 6

Sample Output:

6 Factorial = 720

Test cases:

1. N = 0
2. N = -5
3. N = 1
4. N = Q
5. N = 3A

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CSA02 – C PROGRAMMING

1. Write a program to print the below pattern

   0.01

   0.04 0.09

   0.16 0.25 0.36

   0.49 0.64 0.81 1.00

2. Write a program to find the number of composite numbers in an array of elements

   Sample Input;:

   Array of elements = {16, 18, 27, 16, 23, 21, 19}

   Sample Output:

   Number of Composite Numbers = 5

   Test cases:

   1.Array of elements = {26, 28, 37, 26, 33, 31, 29}

   2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, .19}

   3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}

   4. Array of elements = {200, 180, 180, 270, 270, 270, 190, 200}

   5. Array of elements = {100, 100, 100, 100, 100, 100, 100, 100}

3 Write a program to generate Negative Fibonacci series?

4 Find the maximum of three integers using looping.

Sample Input:

Register Number:

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CSA02 – C PROGRAMMING

Given Numbers: 1101, 1011, 1001
Sample Output:
Maximum Number: 1101

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CSA02 – C PROGRAMMING

1. Write a program to check if a given year is leap year or not. If it is leap year then print the next leap year, if it is non-leap year then print the previous leap year.

Sample Input:
Enter Date : 1947
Sample Output:
Given year is Non Leap Year
Leap Year: 1944

Test cases:
1. 19.47
2. 1936
3. 0
4. 2000
5. -1428

2. Find the n^{th} even number after n odd number

Sample Input:
N : 4
Sample Output:
4^{th} Even number after 4 odd numbers = 14

Test cases:
1. N = 0
2. N = -6
3. N = 2021
4. N = -14.5
5. N = -196

3. Write a program that finds whether a given character is present in a string or not. In case it is present it prints the index at which it is present. Do not use built-in find functions to search the character.

Sample Input:

Register Number:

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CSA02 – C PROGRAMMING

Enter the string: I am a programmer

Enter the character to be searched: p

Sample Output:

P is found in string at index: 8

Note: Check for non available Character in the given statement as Hidden Test case.

4. Write a program to print the below pattern

1

2 2

3 3 3

4 4 4 4

3 3 3

2 2

1

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CSA02 – C PROGRAMMING

1. Program to find whether the given number is Armstrong number or not

Sample Input:
Enter number : 153
Sample Output:
Given number is Armstrong number

Test cases:
1. 370
2. 1
3. 371
4. 145678
5. 0.21345

2. Write a program to find the Mean of first 'N odd numbers, even numbers, square numbers and cube numbers (using switch case)

Sample Input:
Enter N value : 5
Case: 2
Sample Output:
Mean of first 5 even numbers: 6

Test cases:
1. N = 16
2. N = -8
3. N = 0
4. N = -10.01
5. N = 11.22

3. Write a program that accepts a string from user and re displays the same string after removing vowels from it.

Sample Input & Output:

Register Number:

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CSA02 – C PROGRAMMING

Enter a string: we can play the game
The string without vowels is: w cn ply th gm

4. Write a program to print hollow Rectangle and Full rectangle Symbol pattern?

Get the symbol for hollow rectangle and full rectangle separately and the rectangle size from the user.

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CSA02 – C PROGRAMMING

1. Write a program to find the sum of digits of N digit number (sum should be single digit)

Sample Input:
Enter N value : 3
Enter 3 digit number: 143
Sample Output:
Sum of 3 digit number: 8

Test cases:

1. N = 2, 158
2. N = 3, 14
3. N = 4, 0148
4. N = 1, 0004
5. N = 4, 7263

2. Write a program to find the square root of a perfect square number(print both the positive and negative values)

Sample Input:
Enter the number : 6561
Sample Output:
Square Root: 81, -81

Test cases:

1. 1225
2. 9801
3. 1827
4. -100
5. 0

3. Write a program for matrix multiplication?

Sample Input:

Register Number:

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CSA02 – C PROGRAMMING

Mat1 = 1 2

5 3

Mat2 = 2 3

4 1

Sample Output:

Mat Sum = 10 5

22 18

4 Write a program to print inverted pyramid dollar pattern.

Register Number:

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CSA02 – C PROGRAMMING

1. Write a program to reverse an array
   Sample Input;:
   Array of elements = {16, 18, 27, 16, 23, 21, 19}
   Sample Output:
   Reverse Array elements = {19, 21 23, 16, 27, 18, 16}
   Test cases:
   1.Array of elements = {26, 28, 37, 26, 33, 31, 29}
   2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, .19}
   3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}
   4. Array of elements = {200, 180, 180, 270, 270, 270, 190, 200}
   5. Array of elements = {100, 100, 100, 100, 100, 100, 100, 100}

2. Write a program to find the given number is Harshad number or not .

Note: Harshad number means **an integer that is divisible by the sum of its digits when written in that base**

Sample Input:
Enter the number : 21
Sample Output:
Given number is Harshad number
Test cases:
1. 6804
2. 378
3. 111
4. 0
5. 145.678

3. Write a program to count all the prime and composite numbers entered by the user.

   Sample Input:

Register Number:

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CSA02 – C PROGRAMMING

Enter the numbers

4, 54, 29, 71, 7, 59, 98, 23

Sample Output:

Composite number:3

Prime number:5

Test cases:

1. 33, 41, 52, 61,73,90
2. TEN, FIFTY, SIXTY-ONE, SEVENTY-SEVEN, NINE
3. 45, 87, 09, 5.0 ,2.3, 0.4
4. -54, -76, -97, -23, -33, -98
5. 45, 73, 00, 50, 67, 44

4. Write a program to find whether the person is eligible for vote or not. And if that particular person is not eligible, then print how many years are left to be eligible.

Sample Input:

Enter your age:

7

Sample output:

You are allowed to vote after 11 years

Test cases:

1. 25
2. Eighteen
3. 12
4. -18
5. 34.5

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CSA02 – C PROGRAMMING

1. Write a program to arrange the letters of the word alphabetically in reverse order

Sample Input:

Enter the word : MOSQUE

Sample Output:

Alphabetical Order: U S Q O M E

Test Case:

1. HYPOTHECATION
2. MATRICULATION
3. MANIPULATION
4. SATISFACTION
5. DEDICATION

2. Write a program to print the given number even or odd

Sample Input:

Enter the number : 6561

Sample Output:

The given number is odd

Test cases:

1. 0
2. -1254
3. A144
4. 145.23
5. 23.456

3. Write a program to find whether the person is eligible for vote or not. And if that particular person is not eligible, then print how many years are left to be eligible.

Sample Input:

Enter your age:

7

Register Number:

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CSA02 – C PROGRAMMING

Sample output:

You are allowed to vote after 11 years

Test cases:

1. 25
2. Eighteen
3. 12
4. -18
5. 34.5

4. Write a program to print the total amount available in the ATM machine with the conditions applied.

Total denominations are 2000, 500, 200, 100, get the denomination priority fro the user and the total number of notes from the user to display the total available balance to the user

Sample Input:

Enter the 1st Denomination: 500

Enter the 1st Denomination number of notes: 4

Enter the 2nd Denomination: 100

Enter the 2nd Denomination number of notes: 20

Enter the 3rd Denomination: 200

Enter the 3rd Denomination number of notes: 32

Enter the 4th Denomination: 2000

Enter the 4th Denomination number of notes: 1

Sample Output:

Total Available Balance in ATM: 12400

Test Cases:

3 Hidden Test cases (Think Accordingly based on Denominations)

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CSA02 – C PROGRAMMING

1. Write a program to Print M multiples of N number

Sample Input:

M = 6

N = 3

Sample Output:

6 multiples of 3: 3, 6, 9, 12, 15, 18

Test cases:

1. M = 0, N = 5
2. M = 5, N = 0
3. M = -5, N = 4
4. M = A, N = 10
5. M = 3, N = P

2. Write a program to print the following pattern

```
        1
    +1      -1
  1     -2      1
1   -3      3     -1
```

3. Find the LCM and GCD of n numbers?

Sample Input:

N value = 2

Number 1 = 16

Number 2 = 20

Sample Output:

LCM = 80

GCD = 4

Register Number:

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CSA02 – C PROGRAMMING

Test cases:

1. N = 3, {12, 25, 30}
2. N = 2, {52, 25, 63}
3. N = 3, {17, 19, 11}
4. N = -2, {52, 60}
5. N = 2, {30, 45}

4. Write a program to find the number of student users in the college, get the total users, staff users details from the client. Note for every 3 staff user there is one Non teaching staff user assigned by default.

Sample Input:
Total Users: 856
Staff Users: 126
Sample Output:

Student Users: 688

Test Cases:

1. Total User: 0
2. Total User: -143
3. Total User: 1026, Staff User: 1026
4. Total User: 450, Staff User: 540
5. Total User: 600, Staff User: 450

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CSA02 – C PROGRAMMING

1. Write a program to find the prime number in the array of numbers
   Sample Input;:
   Array of elements = {16, 18, 27, 16, 23, 21, 19}
   Sample Output:
   Prime numbers in Array elements = {23, 19}
   Test cases:
   1.Array of elements = {26, 28, 37, 26, 33, 31, 29}
   2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, .19}
   3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}
   4.Array of elements = {200, 180, 180, 270, 270, 270, 190, 200}
   5. Array of elements = {100, 100, 100, 100, 100, 100, 100, 100}

2. Write a program to find the number of letters repeatedly present in the given word

Sample Input:
Enter the word : TEMPLE
Sample Output:
Number of repeated letters = 1
Test Case:
1. HYPOTHECATION
2. MATRICULATION
3. MANIPULATION
4. SIMPLIFICATION
5. DEDICATION

3. Write a program using function to calculate the simple interest. Suppose the customer is a senior citizen. He is being offered 12 percent rate of interest; for all other customers, the ROI is 10 percent.
Sample Input:

Register Number:

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CSA02 – C PROGRAMMING

Enter the principal amount: 200000
Enter the no of years: 3
Is customer senior citizen (y/n): n

Sample Output:

Interest: 60000

Test Cases:

1. Principal: 2000 , Years: 0
2. Principal: 20000 , Years: -2
3. Principal: -2000 , Years: 2
4. Principal: 2 , Years: 2000
5. Principal: 0 , Years: 5

4. Write a program to print number of factors and to print nth factor of the given number.

Sample Input:
Given Number: 100
N = 4
Sample Output:
Number of factors = 9
4^{th} factor of 100 = 5
Test Cases:
1. Given Number = 512 , N = 6
2. Given Number = 343 , N = 7
3. Given Number = 1024 , N = 0
4. Given Number = -6561 , N = 3
5. Given Number = 0 , N = 2

Register Number:

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CSA02 – C PROGRAMMING

1. Write a program to print the number of Odd numbers and number of even numbers in between M and N?

Sample Input:

M = 60

N = 300

Sample Output:

Number of Odd Numbers = 120

Number of Even Numbers = 119

Test cases:

1. M = 100, N = 100
2. M = 500, N = 100
3. M = -5, N = 4
4. M = A, N = 6
5. M = 12, N = -12

2. Write a program to print numbers from P to Q but except the digit R?

Sample Input:

P = 60

Q = 70

R = 3

Sample Output:

Numbers are = 60, 61, 62, 64, 65, 66, 67, 68, 69, 70

Test cases:

1. P = 200, Q = 200, R = 5
2. P = 100, Q = 200, R = 0
3. P = -100, Q = 100, R = 5
4. P = 1073, Q = 1075, R = 4
5. P = 444, Q = 499, R = 4

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CSA02 – C PROGRAMMING

3. Write a program to print rectangle star pattern.

4. Write a program to calculate tax given the following conditions:
   a. If income is less than or equal to 1,50,000 then no tax
   b. If taxable income is 1,50,001 – 3,00,000 the charge 10% tax
   c. If taxable income is 3,00,001 – 5,00,000 the charge 20% tax
   d. If taxable income is above 5,00,001 then charge 30% tax

Sample Input:

Enter the income:2000000

Sample Output:

Tax= 404999.7

Test cases:

1. 400700
2. 2789239
3. 150000
4. 00000
5. -125486

Register Number:

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CSA02 – C PROGRAMMING

1 Write a program to print the all Odd numbers and number of even numbers in between M and N?

Sample Input:

M = 6

N = 15

Sample Output:

All Odd Numbers = 7,9,11,13

All Even Numbers = 8,10,12,14

Test cases:

1. M = 100, N = 100
2. M = 500, N = 100
3. M = -5, N = 4
4. M = 72, N = -72
5. M = 0, N = 0

2 Write a program to print vowels and consonants from the given word in alphabetical order?

Sample Input:

Enter the word : EDUCATION

Sample Output:

Vowels in alphabetical order: A, E, I, O, U

Consonants in alphabetical order: C, D, N, T

Test cases:

1. HYPOTHECATION
2. MATRICULATION
3. MANIPULATION
4. SEDIMENTATION
5. EXPERIMENTATION

3. Write a program to print rectangle Symbol pattern. Get the symbol from the user.

Register Number:

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CSA02 – C PROGRAMMING

4. Write a program to print all the Non Prime numbers between a and b?

Sample Input:
A = 12
B = 19
Sample Output
14, 15, 16, 18
Test cases:
1. A = 11, B = 11
2. A = 20, B = 10
3. A = 0, B = 0
4. A = -5, B = 5
5. A = 7, B = -12

Register Number:

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CSA02 – C PROGRAMMING

1. Write a program to arrange the digits of the number in ascending or descending, get the choice from user.{Note: A - Ascending, D - Descending , B - Both}

Sample Input:

Enter the number : 7561

Enter your choice (A/D/B): B

Sample Output:

Ascending order = 1 5 6 7

Descending order = 7 6 5 1

Test cases:

1. 42424242
2. 12345678
3. 98784565
4. ADSSDDR
5. JK78SD98

2. Write a program to print the number of negative numbers in an array of numbers

Sample Input;:

Array of elements = {16, -18, 27, -16, 23, -21, 19}

Sample Output:

Number of negative numbers in Array elements = 3

Test cases:

1.Array of elements = {-26, 28, 37, -26, 33, -31, -29}

2. Array of elements = {1.6, 1.8, 2.7, -1.6, 2.3, -2.1, .19}

3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}

4. Array of elements = {-16, 2.8, -7, -1.5, 2.8, -2.8, -.19}

5. Array of elements = {-160, -160, -180, -270, -160, -230, -210, 1-90, 0}

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CSA02 – C PROGRAMMING

3. Write a program to print the Inverted Full Pyramid pattern?

4. Write a program to read a character until a $ is encountered. Also count the number of uppercase, lowercase, and numbers entered by the users.

Sample Input:
Enter $ to exit…
Enter any character: W
Enter any character: d
Enter any character: A
Enter any character: G
Enter any character: g
Enter any character: H
Enter any character: $
Sample Output:
Total count of lower case:2
Total count of upper case:4
Total count of numbers =0

Test cases:

1. 1,7,6,9,5,$
2. S, Q, l, K,7, j, M, $
3. M, j, L, &, @, G, $
4. $, D, K, I, 6, L, *
5. $, K, A, e, 1, 8, %, $

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CSA02 – C PROGRAMMING

1. Write a program to reverse a word using loop?

Sample Input:
String: MADAM
Sample Output:
Reverse String: MADAM

Test cases:
1. SIGN UP
2. AT-LEAST
3. 1245
4. !@#$%
5. 145*999=144855

2. Write a program to calculate Pow(x,n), Add(x,n), Sub(x,n), Mul(x,n), Div(x,n)? Get the input and choice from the user.

Sample Input:
X = 2
N = 4
Choice : 2
Sample Output:
Add(X,N) = 6

Test cases:

1. X = 0 , N = 4
2. X = 5 , N = 0
3. X = -3 , N = 3
4. X = 0 , N = 0
5. X = 123, N = 123

3. Write a program to count all the prime and composite numbers entered by the user.
4. And say which is maximum.

Sample Input:

Enter the numbers

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CSA02 – C PROGRAMMING

4

54

29

71

7

59

98

23

Sample Output:

Composite number: 3

Prime number: 5

Maximum: Prime

Test cases:

1. 33, 41, 52, 61,73,90
2. TEN, FIFTY, SIXTY-ONE, SEVENTY-SEVEN, NINE
3. 45, 87, 09, 5.0 ,2.3, 0.4
4. -54, -76, -97, -23, -33, -98
5. 45, 73, 00, 50, 67, 44

4 Write a program to check the entered user name is valid or not. Get both the inputs from the user.

Sample Input:

Enter the user name: Engineering@789

Reenter the user name: Engineering@786

Sample Output:

User name is Invalid

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CSA02 – C PROGRAMMING

1. Find the Mth maximum number and Nth minimum number in an array and then find the sum of it, difference of it and Product of it.

Sample Input:
Array of elements = {14, 16, 87, 36, 25, 89, 34}
M = 1
N = 3
Sample Output:
1st Maximum Number = 89
3rd Minimum Number = 25
Sum = 114
Difference = 64

Test cases:
1. {16, 16, 16 16, 16}, M = 0, N = 1
2. {0, 0, 0, 0}, M = 1, N = 2
3. {-12, -78, -35, -42, -85}, M = 3 , N = 3
4. {15, 19, 34, 56, 12}, M = 6 , N = 3
5. {85, 45, 65, 75, 95}, M = 5 , N = 7

2. Write a program to reverse a number using loop?(Get the input from user)

Sample Input:
Number: 14567
Sample Output:
Reverse Number: 76541

Test cases:

1. -45721
2. 000
3. AD1947
4. !@#$%
5. 145*999=144855

3. Write a program to find whether the person is eligible for vote or not. And if that particular person is not eligible, then print how many years are left to be eligible.

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CSA02 – C PROGRAMMING

Sample Input:

Enter your age:

7

Sample output:

You are allowed to vote after 11 years

Test cases:

1. 25
2. Eighteen
3. 12
4. -18
5. 14.5

4. Write a program to print the total amount available in the ATM machine with the conditions applied.

Total denominations are 2000, 500, 200, 100, get the denomination priority from the user and the total number of notes from the user to display the total available balance to the user

Sample Input:

Enter the 1st Denomination: 500

Enter the 1st Denomination number of notes: 4

Enter the 2nd Denomination: 100

Enter the 2nd Denomination number of notes: 20

Enter the 3rd Denomination: 200

Enter the 3rd Denomination number of notes: 32

Enter the 4th Denomination: 2000

Enter the 4th Denomination number of notes: 1

Sample Output:

Total Available Balance in ATM: 12400

Test Cases:

5 Hidden Test cases (Think Accordingly based on Denominations)

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CSA02 – C PROGRAMMING

1. Write a program using Switch case to check

   Case 1: Given string is palindrome or not

   Case 2: Given number is palindrome or not

   Sample Input:

   Case = 1

   String = MADAM

   Sample Output:

   Palindrome

   Test cases:

   1. MONEY

   2. 5678765

   3. MALAY12321ALAM

   4. MALAYALAM

   5. 1234.4321

2. Find the LCM and GCD of n numbers?

   Sample Input:
   N value = 2
   Number 1 = 16
   Number 2 = 20
   Sample Output:
   LCM = 80
   GCD = 4

   Test cases:

   1. N = 3, {12, 25, 30}

   2. N = 2, {52, 25, 63}

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CSA02 – C PROGRAMMING

3. N = 3, {17, 19, 11}

4. N = -2, {52, 60}

5. N = 2, {30, 45}

3. Write a program to print the following pattern. Get the number of rows from user.

```
1
21
321
4321
54321
```

4. Write a program to find the number of student users in the college, get the total users, staff users details from the client. Note for every 3 staff user there is one Non-teaching staff user assigned by default.

Sample Input:
Total Users: 856
Staff Users: 126
Sample Output:

Student Users: 688

Test Cases:

1. Total User: 0

2. Total User: -143

3. Total User: 1026, Staff User: 1026

4. Total User: 450, Staff User: 540

5. Total User: 600, Staff User: 450

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CSA02 – C PROGRAMMING

1. Write a program to convert Decimal number equivalent to Binary number and octal numbers?

Sample Input:
Decimal Number: 15
Sample Output:
Binary Number = 1111
Octal = 17

Test cases:
1. 111
2. 15.2
3. 0
4. B12
5. 1A.2

2. Write a program to print the below pattern?

```
        1
      1   1
    1   2   1
  1   3   3   1
1   4   6   4   1
```

3. In an organization they decide to give bonus to all the employees on New Year. A 5% bonus on salary is given to the grade A workers and 10% bonus on salary to the grade B workers. Write a program to enter the salary and grade of the employee. If the salary of the employee is less than $10,000 then the employee gets an extra 2% bonus on salary Calculate the bonus that has to be given to the employee and print the salary that the employee will get.

Sample Input:

Enter the grade of the employee: B

Enter the employee salary: 50000

Sample Output:

Salary=50000

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CSA02 – C PROGRAMMING

Bonus=5000.0

Total to be paid:55000.0

Test cases:

1. Enter the grade of the employee: A
   Enter the employee salary: 8000
2. Enter the grade of the employee: C
   Enter the employee salary: 60000
3. Enter the grade of the employee: B
   Enter the employee salary: 0
4. Enter the grade of the employee: 38000
   Enter the employee salary: A
5. Enter the grade of the employee: B
   Enter the employee salary: -8000

4. Write a program to print the first n perfect numbers. (Hint Perfect number means **a positive integer that is equal to the sum of its proper divisors)**

Sample Input:

N = 3

Sample Output:

First 3 perfect numbers are: 6 , 28 , 496

Test Cases:

1. N = 0

2. N = 5

3. N = -2

4. N = -5

5. N = 0.2

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CSA02 – C PROGRAMMING

1. A Pythagorean triplet is a set of three integers a, b and c such that $a^2 + b^2 = c^2$. Given a limit, generate all Pythagorean Triples with values smaller than given limit?

2. Write a program using function to calculate the simple interest. Suppose the customer is a senior citizen. He is being offered 12 percent rate of interest; for all other Female customers, the ROI is 10 percent and for all other male customers, the ROI is 8 percent.

   Sample Input:

   Enter the principal amount: 200000
   Enter the no of years: 3
   Is customer senior citizen (y/n): n
   Gender (m/f): f

   Sample Output:

   Interest: 60000

   Test Cases:

   1. Principal: 2000 , Years: 0 , Senior: y, Gender: m
   2. Principal: 20000 , Years: -2 , Senior: n, Gender: m
   3. Principal: -2000 , Years: 2 , Senior: n, Gender: m
   4. Principal: 2 , Years: 2000 , Senior: y, Gender: f
   5. Principal: 0 , Years: 5 , Senior: n, Gender: f

3. Write a program to print number of factors and to print nth factor of the given number.

Sample Input:
Given Number: 100
N = 4
Sample Output:
Number of factors = 9
4^{th} factor of 100 = 5
Test Cases:

Register Number:

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CSA02 – C PROGRAMMING

1. Given Number = 512 , N = 6
2. Given Number = 343 , N = 7
3. Given Number = 1024 , N = 0
4. Given Number = -6561 , N = 3
5. Given Number = 0 , N = 2

4. Write a program to print hollow square symbol pattern?
Get the symbol and Square size as input from the user.

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CSA02 – C PROGRAMMING

1. Write a program to merge two lists to the third list?

2. Write a program to print the first n perfect numbers. (Hint Perfect number means **a positive integer that is equal to the sum of its proper divisors)**

Sample Input:

N = 3

Sample Output:

First 3 perfect numbers are: 6 , 28 , 496

Test Cases:

1. N = 0
2. N = 5
3. N = -2
4. N = -5
5. N = 0.2

3. Write a program to print Rectangle Symbol pattern?
   Get the symbol and Rectangle size as input from the user.

4. Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, display the grade obtained by the student. If the student scores an aggregate greater than 75%, then the grade is Distinction. If aggregate is 60>= and <75, then the grade is First Division. If aggregate is 50 >= and <60, then the grade is Second Division. If aggregate is 40>= and <50, then the grade is Third Division. Else the grade is Fail.

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CSA02 – C PROGRAMMING

Sample Input & Output:

Enter the marks in python: 90

Enter the marks in c programming: 91

Enter the marks in Mathematics: 92

Enter the marks in Physics: 93

Total= 366

Aggregate = 91.5

DISTINCTION

Test cases:

1. 18, 76,93,65
2. 73,78,79,75
3. 98,106,120,95
4. 96,73, -85,95
5. 78,59.8,76,79

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CSA02 – C PROGRAMMING

1. Write a program to print the numbers from M to N by skipping K numbers in between?
   Sample Input:
   M = 50
   N = 100
   K = 7
   Sample Output:
   50, 58, 65, 72, …..
   Test cases:
   1. M = 15, N = 05, K = 02
   2. .M = 25, N = 50, K = 04
   3. M = 15, N = 100, K = -02
   4. M = 0 , N = 0 , K = 2
   5. M = 200 , N = 200 , K = 50

2. Write a program for matrix addition?

Sample Input:

Mat1 = 1 2

5 3

Mat2 = 2 3

4 1

Sample Output:

Mat Sum = 3 5

9 4

3. Write a program to print rectangle symbol pattern.
   Get the symbol as input from user

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CSA02 – C PROGRAMMING

4. Write a program to calculate tax given the following conditions:
    a. If income is less than or equal to 1,50,000 then no tax for Male or Female
    b. If taxable income is 1,50,001 – 3,00,000 then charge 5% tax for Female, 10% tax for Male
    c. If taxable income is 3,00,001 – 5,00,000 then charge 15% tax for Female, 20% tax for Male
    d. If taxable income is above 5,00,001 then charge 25% tax for Female, 30% tax for Male

Sample Input:

Enter the income:200000

Gender (M/F): M

Sample Output:

Tax= 20000

Test cases:

1. 400700 , Gender: M
2. 2789239 , Gender: K
3. 150000 , Gender: F
4. 00000 , Gender: M
5. -125486 , Gender: M

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CSA02 – C PROGRAMMING

1. Write a program to print the special characters separately and print number of Special characters in the line?

2. Write a program to print all the composite numbers between a and b?

   Sample Input:
   A = 12
   B = 19
   Sample Output
   14, 15, 16, 18
   Test cases:
   1. A = 11, B = 11
   2. A = 20, B = 10
   3. A = 0, B = 0
   4. A = -5, B = 5
   5. A = 7, B = -12

3. Write a program to print the multiplication table of number m up to n.

   Sample Input:
   M = 4
   N = 5
   Sample Output:
   1x4=4
   2x4=8
   3x4=12
   4x4=16
   5x4=20
   Test cases:
   1. M = 6, N = -3
   2. M = -3, N = 5
   3. M = 4, N = 0
   4. M = 0, N = 0

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CSA02 – C PROGRAMMING

5. M = -5, N = -5

4. Write a program to read the numbers until -1 is encountered. Find the average of positive numbers and negative numbers entered by user.

Sample Input:

Enter -1 to exit…
Enter the number: 7
Enter the number: -2
Enter the number: 9
Enter the number: -8
Enter the number: -6
Enter the number: -4
Enter the number: 10
Enter the number: -1

Sample Output:

The average of negative numbers is: -5.0
The average of positive numbers is: 8.67

Test cases:

1. -1,43, -87, -29, 1, -9
2. 73, 7-6,2,10,28,-1
3. -5, -9, -46,2,5,0
4. 9, 11, -5, 6, 0,-1
5. -1,-1,-1,-1,-1

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CSA02 – C PROGRAMMING

1. Program to remove duplicates from the sorted array
   Sample Input:
   Array = {15, 14, 25, 14, 32, 14, 31}
   Sample Output:
   Sorted Array = {14, 15, 25, 31, 32}
   Test cases:
   1. {16, 16, 16 16, 16}
   2. {0, 0, 0, 0}
   3. {-12, -78, -35, -42}
   4. {1,2,3,7,8,9,4,5,6}
   5. {1-2,2-3,3-4,4-5,5-6}

2. Write a program to print m prime numbers after n^{th} Prime number
   Sample Input:
   N = 3, M= 4
   Sample Output:
   3^{rd} Prime number is 5
   4 prime numbers after 5 are: 7, 11, 13, 17
   Test cases:
   1. N = P , M = 2
   2. N = 0 , M = -4
   3. N = -4 , M = 23
   4. N = 11 , M = 12
   5. N = 7.2 , M = 5

3. Write a program to print the Inverted Full Pyramid pattern?

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CSA02 – C PROGRAMMING

4. Write a program to read a character until a # is encountered. Also count the number of uppercase, lowercase, and numbers entered by the users.
   Sample Input:
   Enter # to exit…
   Enter any character: W
   Enter any character: d
   Enter any character: A
   Enter any character: G
   Enter any character: g
   Enter any character: H
   Enter any character: #
   Sample Output:
   Total count of lower case:2
   Total count of upper case:4
   Total count of numbers =0

   Test cases:

   1. 1,7,6,9,5, #
   2. S, Q, l, K,7, j, M, #
   3. M, j, L, &, @, G, #
   4. D, K, I, 6, L, #
   5. #, K, A, e, 1, 8, %, *

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CSA02 – C PROGRAMMING

1. Find the Mean, Median, Mode of the array of numbers?
   Sample Input;:
   Array of elements = {16, 18, 27, 16, 23, 21, 19}
   Sample Output:
   Mean = 20
   Median = 19
   Mode = 16
   Test cases:
   1.Array of elements = {26, 28, 37, 26, 33, 31, 29}
   2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, .19}
   3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}
   4. Array of elements = {200, 180, 180, 270, 160, 270, 270, 190, 200}
   5. Array of elements = {100, 100, 100, 100, 100, 100, 100, 100, 100}

2. Find the factorial of n?
   Sample Input:
   N = 4
   Sample Output:
   4 Factorial = 24
   Test cases:
   1. N = 0
   2. N = -5
   3. N = 1
   4. N = Q
   5. N = 3A

3. Write a C Program to create a list of all numbers in a range which are perfect squares and the sum of the digits of the number is less than 10.
   Sample Input & Output:

   Enter lower range: 1

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CSA02 – C PROGRAMMING

Enter upper range: 40

[1, 4, 9, 16, 25, 36]

Test case:

1. Enter lower range: 50

   Enter upper range: 100

2. Enter lower range: 5

   Enter upper range: 8

3. Enter lower range: 10

   Enter upper range: 5

4. Enter lower range: 500

   Enter upper range: 500

5. Enter lower range: 0

   Enter upper range: -100

4 . Write a program to print the following pattern

Sample Input:

Enter the Character to be printed: %

Max Number of time printed: 3

%

% %

% % %

Register Number:

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CSA02 – C PROGRAMMING

1. Find the year of the given date is leap year or not

Sample Input:

Enter Date : 04/11/1947

Sample Output:

Given year is Non Leap Year

Test cases:

1. 04/11/19.47
2. 11/15/1936
3. 31/45/1996
4. 64/09/1947
5. 00/00/2000

2. Find the number of factors for the given number

Sample Input:

Given number: 100

Sample Output:

Number of factors = 9

Test cases:

1. 343
2. 1080
3. -243
4. 101010
5. 0

3. Write a program to calculate the factorial of number using recursive function.

Sample Input & Output:

Enter the value of n: 6

Sample Input & Output:

The factorial of 6 is: 720

Test cases:

Register Number:

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CSA02 – C PROGRAMMING

1. N = 0
2. N = -5
3. N = 1
4. N = M
5. N = %

4. Python Program to Find the Nth Largest Number in a List

Sample Input:

List : {14, 67, 48, 23, 5, 62}

N = 4

Sample Output:

4th Largest number: 23

Test cases:

1. N = 0
2. N = -5
3. N = 1
4. N = M
5. N = %

Register Number:

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CSA02 – C PROGRAMMING

1. Write a program to print the given number is Perfect number or not?

Sample Input:
Given Number: 6
Sample Output:
Its a Perfect Number

Test cases:
1. 17
2. 26!
3. 143
4. 84.1
5. -963

2. Write a program to print the number of vowels, number of consonants in the given statement and print which is minimum?

Sample Input:
Saveetha School of Engineering
Sample Output:
Number of vowels = 12
Number of Consonants = 15
Minimum = Vowels

Test cases:
1. India is my country
2. All are my brothers and sisters
3. Why dry sky
4. Shy Try Cry
5. EDUCATION

3. Write a program to print number of factors and to print nth factor of the given number.

Sample Input:

Register Number:

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CSA02 – C PROGRAMMING

Given Number: 100
N = 4
Sample Output:
Number of factors = 9
4^{th} factor of 100 = 5
Test Cases:
1. Given Number = 512 , N = 6
2. Given Number = 343 , N = 7
3. Given Number = 1024 , N = 0
4. Given Number = -6561 , N = 3
5. Given Number = 0 , N = 2

4. Write a program to print hollow square and full square symbol pattern? Get the different symbol for Hollow Square and Full Square from user.