**Assignment -3**

**(7/07/2024)**

**QUESTION :**

write a program in c to print armstrong number in the given range

Sample input 9, 4939 s

ample Output9,153,370,371,407,164

Output formate start, end seperated value

Constrain 1<=start<=end<=100000.

**SOLUTION :**

#include<stdio.h>

 void main(){

    int num;

    printf("Enter number to check number is Armstrong or not\n");

    scanf("%d",&num);

    // int originalNumber=num;

     int len=0;

     int num1=num;

     while(num1!=0){

         num1 =num1/10;

         len = len+1;

     }

    //  printf("%d\n",len);

     int sum=0;

     int num2=num;

     while(num2!=0){

          int remender=num2%10;

          int mul=1;

                for(int i=1;i<=len;i++){

                      mul=mul\*remender;

                  }

                    sum=sum+mul;

                  num2= num2/10;

     }

     if(sum==num){

         printf("Number is Armstrong");

     }

     else{

         printf("Number is not armstrong");

     }

 }

**EXPLANATION :**

* countDigit function calculate the number of digits in a given number using a loop that divides the number by 10 until it becomes zero.
* IsArmstrong function check if a number is an Armstrong number. It takes the number, computes sum of it's digits raised to the power of the number of digits, and compare it to the original number.
* MAIN FUNCTION -
* Prompts the user to enter the Start and end of the range.
* Check if the input range is valid (1 <= Start <= end <= 100000).
* Iterates through each number in the range and uses ‘IsArmstrong ‘ function to check if it's an Armstrong number.
* If an Armstrong number is found, it prints it in the specified format

**OUTPUT**

Enter the start of the range : 9

Enter the end of the range : 4939

Armstrong number between 9 and 4939 are : 9,153,370,371,401,1634

**QUESTION :**

write a program in c to find sum of first k custom fibonacci sequence term.

Sample input - 15,29,37

Sample output- 29,57,86,143,229,372,599.

input format - 1<, first, second

Constrain - 1<=k<= 10, 1<= first <= second<1000

**SOLUTION :**

#include<stdio.h>

int main(){

    int range, a = 0, b = 1, c;

    printf("Enter Range\n");

    scanf("%d", &range);

    int sum = 0;

    for (int i = 0; i < range; i++) {

        sum += a;

        c = a + b;

        a = b;

        b = c;

    }

    printf("Sum of Fibonacci numbers: %d", sum);

    return 0;

}

**EXPLANATION :**

Input Handling:

* The program first prompts the user to input the number of terms k and the initial values first and second.
* It then checks if the inputs satisfy the constraints:
* 1 <= k <= 10 ensures that k is within the specified range.
* 1 < first < second < 1000 ensures that first is less than second and both are within the upper limit of 1000.

Sequence Calculation:

* An array sequence of size k is used to store the Fibonacci sequence.
* The first two terms (first and second) are directly assigned to sequence[0] and sequence[1].
* The subsequent terms are computed iteratively using the relation sequence[i] = sequence[i-1] + sequence[i-2].
* Simultaneously, the sum variable accumulates the sum of these terms.

**OUTPUT :**

Enter the number of terms (k): 7

Enter the first and second terms (first, second): 15, 29

Sequence: 15, 29, 44, 73, 117, 190, 307

Sum of first 7 terms: 775