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➢ Laboratory *Assignment 1*

Q1.C PROGRAM TO PRINT ALL-NATURAL NUMBERS FROM 1 TO N AND THEIR SUM.

Ans:

```
#include<stdio.h>
int sum(int n)
{
  int add = 0;
  for(int i=1; i<=n; i++)
  {
    add += i;
  }
  return add;
}
int main()
{
  int range, result;
  printf("Upto which number you want to find sum: ");
  scanf("%d", &range);
  result = sum(range);
  printf("1+2+3+....+%d+%d = %d",range-1, range, result);
}
```

OUTPUT =>

Upto which number you want to find sum: 50

1+2+3+….+49+50 = 1275

...Program finished with exit code 0

Press ENTER to exit console.

Q2. C PROGRAM TO PRINT ALL EVEN NUMBERS FROM 1 TO N AND ALSO DISPLAY THEIR SUM.

Ans:

```
#include<stdio.h>
void even( int n)
{
   int sum=0;
   for(int i=1;i<=n;i++)
   {
      if(i%2==0)
      {
         sum=sum+i;
         printf("%d \n",i);
      }
   }
   printf("sum of all even numbers are \n");
   printf("%d",sum);
}

int main(int n)
{
   printf("Enter a number:");
```

```
    scanf("%d",&n);
    even(n);
}
```

OUTPUT =>

Enter a number:50

2

4

6

8

10

12

14

16

18

20

22

24

26

28

30

32

34

36

38

40

42

44

46

48

50

sum of all even numbers are

650

...Program finished with exit code 0

Press ENTER to exit console.

Q3. C PROGRAM TO PRINT THE SUM OF ALL ODD NUMBERS IN GIVEN RANGE

Ans:

```
#include<stdio.h>
void odd( int a, int b)
{
   int sum=0;
   for(int i=a;i<=b;i++)
   {
      if(i%2==1)
      {
         sum=sum+i;

      }
   }
```

```
    printf("sum of all odd numbers are \n");
    printf("%d",sum);
}

int main(int a, int b)
{
    printf("Enter a range: ");
    scanf("%d%d",&a,&b);
    odd(a,b);
}
```

OUTPUT =>

Enter a range:55

100

sum of all odd numbers are

1771

...Program finished with exit code 0

Press ENTER to exit console.

Q4. C PROGRAM TO PRINT MULTIPLICATION TABLE OF A NUMBER

Ans:

```
#include<stdio.h>
void tables(int);
int main()
```

```
{
   int num;

   printf("Enter a positive number\n");
   scanf("%d", &num);
   printf("\nMultiplication Table for %d is:\n", num);
   tables(num);
   return 0;
}
void tables(int num)
{
   int count;

   for(count = 1; count <= 10; count++)
   {
      printf("%d x %d = %d\n", num, count, num*count);
   }
}
```

OUTPUT =>

```
Enter a positive number
19

Multiplication Table for 19 is:
19 x 1 = 19
19 x 2 = 38
19 x 3 = 57
```

19 x 4 = 76

19 x 5 = 95

19 x 6 = 114

19 x 7 = 133

19 x 8 = 152

19 x 9 = 171

19 x 10 = 190

...Program finished with exit code 0

Press ENTER to exit console.

Q5. C PROGRAM TO COUNT NUMBER OF DIGITS IN AN INTEGER NUMBER AND DISPLAY THEIR SUM.

Ans:

```
#include <stdio.h>
#include <stdlib.h>
int countdig(int n){
        int count;
        while(n!=0)
        {
                n=n/10;
                count++;
        }
        return count;
```

```
}
int sumdig(int n)
{
        int mod,sum=0;
        while(n!=0){
                mod=n%10;
                sum=sum+mod;
                n=n/10;
        }
        return sum;
}
int main()
{
        int x,res1,res2;
        printf("Enter the given number : ");
        scanf("%d",&x);
        res1=countdig(x);
        res2=sumdig(x);
        printf("the number contains %d digits and their sum is %d",res1,res2);
        return 0;
}
```

OUTPUT =>

Enter the given number : 897456245

the number contains 9 digits and their sum is 50

...Program finished with exit code 0

Press ENTER to exit console.

Q6. C PROGRAM TO CHECK WHETHER A NUMBER IS PALINDROME OR NOT

Ans:

```
#include<stdio.h>
 int checkPalindrome(int number)
 {
   int temp, remainder, sum=0;

   temp = number;

   while( number!=0 )
   {
      remainder = number % 10;
      sum = sum*10 + remainder;
      number /= 10;
   }

   if ( sum == temp ) return 0;

   else return 1;
 }

 int main()
```

```
{
    int number;

    printf("Enter the number: ");
    scanf("%d", &number);

    if(checkPalindrome(number) == 0)
    printf("%d is a palindrome number.\n",number);
    else
    printf("%d is not a palindrome number.\n",number);

    return 0;
}
```

OUTPUT =>

Enter the number: 16461

16461 is a palindrome number.

...Program finished with exit code 0

Press ENTER to exit console.

Q7. C PROGRAM TO COUNT FREQUENCY OF DIGITS IN A GIVEN NUMBER

Ans:

```
#include <stdio.h>
#include <stdlib.h>
```

```
#include <math.h>
int freqDig(int n,int d)
{
	int fod=0,r;
	while(n>0)
	{
		r=n%10;
		if(d==r)
		{
			fod++;
		}
		n=n/10;
	}
	return fod;
}
int main()
{
	int fod,n,d;
	printf("Enter the integer number:");
	scanf("%d",&n);
	printf("Enter a digit : ");
	scanf("%d",&d);
	fod=freqDig(n,d);
	printf("\nNumber of digits = %d \n",fod);

}
```

OUTPUT =>

Enter the integer number:1100121

Enter a digit : 1

Number of digits = 4

...Program finished with exit code 0

Press ENTER to exit console.

Q8. C PROGRAM TO FIND POWER OF ANY NUMBER

Ans:

```
#include<stdio.h>
void calculate_power(int,int);

int main()
{
   int b,e;
   printf("Enter the base\n");
   scanf("%d",&b);
   printf("Enter the exponent\n");
   scanf("%d",&e);
   calculate_power(b,e);
}

void calculate_power(int b,int e)
```

```
{
   int power=1;
   while(e>0)
   {
      power=power*b;
      e--;
   }
   printf("The power of the no = %d",power);
}
```

OUTPUT =>

Enter the base

125

Enter the exponent

3

The power of the no = 1953125

...Program finished with exit code 0

Press ENTER to exit console.

Q9. C PROGRAM TO PRINT ALL FACTORS OF A NUMBER

Ans:

```
#include<stdio.h>
 void findFactors(int n)
 {
  for(int i=1; i<=n/2; i++)
```

```
  {
    if(n%i==0)
    printf("%d\t", i);
  }
}
int main()
{
    int number;

    printf("Enter number: ");
    scanf("%d",&number);

    findFactors(number);

    return 0;
}
```

OUTPUT =>

Enter number: 100

1 2 4 5 10 20 25 50

...Program finished with exit code 0

Press ENTER to exit console.

Q10. C PROGRAM TO CALCULATE FACTORIAL OF A NUMBER

Ans:

```
#include<stdio.h>
long int Factori(int);
int main()
{
        long int fact;
        int numbr;

        printf("Enter a number: ");
        scanf("%d",&numbr);
        fact= Factori(numbr);
        printf("Factorial of %d is: %ld",numbr,fact);
        return 0;
}

long int Factori(int n){
        int i;
        long int factorial;
        factorial =1;
        for(i=1;i<=n;i++)
        factorial=factorial*i;
        return(factorial);
   }
```

OUTPUT =>

Enter a number: 10

Factorial of 10 is: 3628800

...Program finished with exit code 0

Press ENTER to exit console.

Q11.C PROGRAM TO FIND HCF & LCM OF TWO NUMBERS

Ans:

```
#include <stdio.h>
#include <stdlib.h>
int GCD(int a,int b)
{
        int n;
        while(b!=0)
        {
                n=a%b;
                a=b;
                b=n;
        }
        return a;
}
int LCM(int a,int b,int g)
{
        int l;
        l=a*b;
```

```
        l=l/g;
        return l;
}
int main()
{
        int a,b,g,l;
        printf("Enter the numbers : ");
        scanf("%d %d",&a,&b);
        g=GCD(a,b);
        l=LCM(a,b,g);
        printf("the GCD and LCM is %d and %d",g,l);
        return 0;
}
```

OUTPUT =>

Enter the numbers : 9

24

the GCD and LCM is 3 and 72

...Program finished with exit code 0

Press ENTER to exit console.

Q12. C PROGRAM TO WHETHER A NUMBER IS PRIME NUMBER OR NOT

Ans:

```
#include<stdio.h>
```

```
int check_prime(int);
int main()
{
  int n, result;

  printf("Enter an integer to check whether it is prime or not.\n");
  scanf("%d",&n);

  result = check_prime(n);

  if ( result == 1 )
    printf("%d is prime.\n", n);
  else
    printf("%d is not prime.\n", n);

  return 0;
}

int check_prime(int a)
{
  int c;

  for ( c = 2 ; c <= a - 1 ; c++ )
  {
    if ( a%c == 0 )
   return 0;
```

```
  }
  return 1;
}
```

OUTPUT =>

Enter an integer to check whether it is prime or not.

191

191 is prime.

...Program finished with exit code 0

Press ENTER to exit console.

Q13. C PROGRAM TO FIND SUM OF PRIME NUMBERS IN GIVEN RANGE AND ALSO DISPLAY THEIR SUM.

Ans:

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int checkprime(int a)
{
        for(int i=2;i<=sqrt(a);i++)
        {
                if(a%i!=0)
                {
                        continue;
                }
```

```
            else
            return 1;
        }
        return 0;
}
void primenumbersrange(int a,int b)
{
        int x,sum=0;
        printf("the prime numbers are :\n");
        for (int i=a;i<=b;i++)
        {
            x=checkprime(i);
            if (x==0)
            {
                printf("%d ",i);
                sum=sum+i;
            }
        }
        printf("and their sum is %d",sum);
}
int main()
{
        int a,b,g,l;
        printf("Enter the range : ");
        scanf("%d %d",&a,&b);
        primenumbersrange(a,b);
```

```
    return 0;
}
```

OUTPUT =>

Enter the range : 102

507

the prime numbers are :

103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199 211 223 227 229 233 239 241 251 257 263 269 271 277 281 283 29

3 307 311 313 317 331 337 347 349 353 359 367 373 379 383 389 397 401 409 419 421 431 433 439 443 449 457 461 463 467 479 487 491 499 503 and

their sum is 20878

...Program finished with exit code 0

Press ENTER to exit console.

Q14. C PROGRAM TO FIND ALL PRIME FACTORS OF A GIVEN NUMBER

Ans:

```
#include<stdio.h>
void primeFactors(int n) {
  int i;
  while(n % 2 == 0) {
    printf("%d, ", 2);
    n = n/2;
  }
  for(i = 3; i*i<=n; i=i+2){
```

```
    while(n % i == 0) {
      printf("%d, ", i);
      n = n/i;
    }
  }
  if(n > 2) {
    printf("%d, ", n);
  }
}
int main() {
  int n;
  printf("Enter a number: ");
  scanf("%d", &n);
  primeFactors(n);
}
```

OUTPUT =>

Enter a number: 100

2, 2, 5, 5,

...Program finished with exit code 0

Press ENTER to exit console.

Q15. C PROGRAM TO CHECK ARMSTRONG NUMBER

Ans:

```
#include <stdio.h>
int power(int, int);
```

```
int main()
{
  int n, sum = 0, t, remainder, digits = 0;

  printf("Input an integer\n");
  scanf("%d", &n);

  t = n;

  while (t != 0) {
    digits++;
    t = t/10;
  }

  t = n;

  while (t != 0) {
    remainder = t%10;
    sum = sum + power(remainder, digits);
    t = t/10;
  }

  if (n == sum)
    printf("%d is an Armstrong number.\n", n);
  else
```

```
    printf("%d isn't an Armstrong number.\n", n);

  return 0;
}

int power(int n, int r) {
  int c, p = 1;

  for (c = 1; c <= r; c++)
    p = p*n;

  return p;
}
```

OUTPUT =>

Input an integer

1634

1634 is an Armstrong number.

...Program finished with exit code 0

Press ENTER to exit console.

Q16. C PROGRAM TO GENERATE ARMSTRONG NUMBERS IN A GIVEN RANGE

Ans:

```c
#include <stdio.h>
int isArmstrong(int num);
void printArmstrong(int start, int end);
int main()
{
   int start, end;
   printf("Enter lower limit to print armstrong numbers: ");
   scanf("%d", &start);
   printf("Enter upper limit to print armstrong numbers: ");
   scanf("%d", &end);
   printf("All armstrong numbers between %d to %d are: \n", start, end);
   printArmstrong(start, end);
   return 0;
}
int isArmstrong(int num)
{
   int temp, lastDigit, sum;
   temp = num;
   sum = 0;
   while(temp != 0)
   {
      lastDigit = temp % 10;
      sum += lastDigit * lastDigit * lastDigit;
      temp /= 10;
   }
   if(num == sum)
```

```
        return 1;
    else
        return 0;
}
void printArmstrong(int start, int end)
{
    while(start <= end)
    {
        if(isArmstrong(start))
        {
            printf("%d, ", start);
        }
        start++;
    }
}
```

OUTPUT =>

Enter lower limit to print armstrong numbers: 1

Enter upper limit to print armstrong numbers: 1000

All armstrong numbers between 1 to 1000 are:

1, 153, 370, 371, 407,

...Program finished with exit code 0

Press ENTER to exit console.

Q17: C PROGRAM TO CHECK WHETHER A NUMBER IS PERFECT NUMBER OR NOT

Ans:

```
#include<stdio.h>
 int perfect(int);
 int main()
 {
        int num,s;
        printf("Give an integer number: ");
        scanf("%d",&num);
        s = perfect(num);
        if(s == num)
        printf("\nThe given number %d is a perfect number",num);
        else
        printf("\nThe given number %d is not a perfect number",num);

        return 0;
        }

 int perfect(int numbr){
        int a=1, sum=0;
        while(a< numbr){
        if(numbr % a == 0)
        sum=sum+a;
        a++;
        }
        return(sum);
        }
```

OUTPUT =>

Give an integer number: 496

The given number 496 is a perfect number

...Program finished with exit code 0

Press ENTER to exit console.

Q18. C PROGRAM TO PRINT ALL PERFECT NUMBERS BETWEEN 1 TO N AND ALSO DISPLAY THEIR SUM.

Ans:

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int perfect(int n)
{       int sum=0,i;
        for(i=1;i<=n/2;i++)
        {
                if(n%i==0)
                {
                        sum =sum + i;
                }
        }
        if(n==sum)
        {
```

```
            return 1;
        }
        else return 0;
}
void range(int a,int b)
{
        int x,sum=0;
        for(int i=a;i<=b;i++)
        {
            x=perfect(i);
            if (x==1)
            {
                printf("%d ",i);
                sum += i;
            }
        }
        printf("\nthe sum of perfect numbers is %d",sum);
}
int main()
{
        int a,b;
        printf("Enter the range : ");
        scanf("%d %d",&a,&b);
        printf("the perfect numbers are :\n");
        range(a,b);
        return 0;
```

```
}
```

OUTPUT =>

```
Enter the range : 5
10000
the perfect numbers are :
6 28 496 8128
the sum of perfect numbers is 8658

...Program finished with exit code 0
Press ENTER to exit console.
```

Q19. C PROGRAM TO CHECK WHETHER A NUMBER IS STRONG NUMBER OR NOT

Ans:

```
#include<stdio.h>
int factorial(int value)
{
    int count, fact = 1;
    for(count = 1; count <= value; count++)
    {
        fact = fact * count;
    }
    return fact;
}
```

```
int main()
{
    int num, count, result, rem, sum = 0, temp;
    printf("Enter a Number:\t");
    scanf("%d", &num);
    temp = num;
    for(temp = num; num > 0; num = num / 10)
    {
        count = 1, result = 1;
        rem = num % 10;
        result = factorial(rem);
        sum = sum + result;
    }
    if(sum == temp)
    {
        printf("%d is a Strong Integer\n\n", temp);
    }
    else
    {
        printf("%d is Not a Strong Integer\n\n", temp);
    }
    return 0;
}
```

OUTPUT =>

Enter a Number: 40585

40585 is a Strong Integer

...Program finished with exit code 0

Press ENTER to exit console.

Q20. C PROGRAM TO PRINT STRONG NUMBERS IN GIVEN RANGE AND ALSO DISPLAY THEIR SUM.

Ans:

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int factorial(int n)
{
        int i,f=1;
   for(i=1;i<=n;i++)
   {
        f=f*i;
        }
        return f;
}

int strong(int n)
{
        int mod,num,f,sum=0;
        num=n;
        while(num!=0)
        {
```

```
            mod=num%10;
            f=factorial(mod);
            sum += f;
            num /= 10;
        }
        if (sum==n)
        {
            return 1;
        }
        else return 0;
}
void range(int a,int b)
{
        int x,sum=0;
        for(int i=a;i<=b;i++)
        {
            x=strong(i);
            if (x==1)
            {
                printf("%d ",i);
                sum += i;
            }
        }
        printf("\nThe sum of all strong numbers is %d",sum);
}
```

```
int main()
{
        int a,b;
        printf("Enter the range : ");
        scanf("%d %d",&a,&b);
        printf("the strong numbers are :\n");
        range(a,b);
        return 0;
}
```

OUTPUT =>

Enter the range : 1

150

the strong numbers are :

1 2 145

The sum of all strong numbers is 148

...Program finished with exit code 0

Press ENTER to exit console.

Q21. C PROGRAM TO PRINT FIBONACCI SERIES UP TO N TERMS

Ans:

```
#include<stdio.h>
 void fibonacciSeries(int range)
 {
```

```
  int a=0, b=1, c;
  while (a<=range)
  {
    printf("%d\t", a);
    c = a+b;
    a = b;
    b = c;
  }
}

int main()
{
  int range;

  printf("Enter range: ");
  scanf("%d", &range);

  printf("The fibonacci series is: \n");

  fibonacciSeries(range);

  return 0;
}
```

OUTPUT =>

Enter range: 105

The fibonacci series is:

```
0    1    1    2    3    5    8    13    21    34
5

5    89


...Program finished with exit code 0
Press ENTER to exit console.
```

Q22. C PROGRAM TO CONVERT BINARY NUMBER SYSTEM TO DECIMAL NUMBER SYSTEM

Ans:

```
#include <stdio.h>
#include <math.h>
int binaryToDecimal(long binarynum)
{
   int decimalnum = 0, temp = 0, remainder;
   while (binarynum!=0)
   {
      remainder = binarynum % 10;
      binarynum = binarynum / 10;
      decimalnum = decimalnum + remainder*pow(2,temp);
      temp++;
   }
   return decimalnum;
}
```

```
int main()
{
   long binarynum;
   printf("Enter a binary number: ");
   scanf("%ld", &binarynum);

   printf("Equivalent decimal number is: %d", binaryToDecimal(binarynum));
   return 0;
}
```

OUTPUT =>

Enter a binary number: 10101010

Equivalent decimal number is: 170

...Program finished with exit code 0

Press ENTER to exit console.

Q23. C PROGRAM TO CONVERT FROM DECIMAL TO BINARY NUMBER SYSTEM

Ans:

```
#include <stdio.h>
void decToBinary(int);
int main()
{
   int number;
   printf("Enter number to convert to binary: ");
```

```
    scanf("%d", &number);
    decToBinary(number);
        return 0;
}
void decToBinary(int num)
{
    if (num == 0)
    {
       return ;
    }
    decToBinary(num / 2);
    printf("%d", num % 2);
}
```

OUTPUT =>

Enter number to convert to binary: 56

111000

...Program finished with exit code 0

Press ENTER to exit console.