

**Lab Report on Structured Programming**

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**1.**

**//**Write a program in C to store elements in an array and print it.

#include <stdio.h>

void main()

{

int arr[10];

int i;

printf("\n\nRead and Print elements of an array:\n");

printf("Input 10 elements in the array :\n");

for(i=0; i<10; i++)

{

printf("element - %d : ",i);

scanf("%d", &arr[i]);

}

printf("\nElements in array are: ");

for(i=0; i<10; i++)

{

printf("%d ", arr[i]);

}

printf("\n");

}

**2.**

**//**Write a program in C to read n number of values in an

Array and display it in reverse order.

#include <stdio.h>

void main()

{

int i,n,a[100];

printf("\n Input n number of values in an array and display it in reverse order:\n");

printf("Input the number of elements to store in the array :");

scanf("%d",&n);

printf("Input %d number of elements in the array :\n",n);

for(i=0;i<n;i++)

{

printf("element - %d : ",i);

scanf("%d",&a[i]);

}

printf("\nThe values store into the array are : \n");

for(i=0;i<n;i++)

{

printf("% 5d",a[i]);

}

printf("\nThe values store into the array in reverse are :\n");

for(i=n-1;i>=0;i--)

{

printf("% 5d",a[i]);

}

printf("\n");

}

------------------------------------------------------------------------------

**3.**

**//** Write a program in C to find the sum of all elements of the array.

#include <stdio.h>

void main()

{

int a[100];

int i, n, sum=0;

printf("\n\nFind sum of all elements of the array:\n");

printf("Input the number of elements to be stored in the array :");

scanf("%d",&n);

printf("Input %d elements in the array :\n",n);

for(i=0;i<n;i++)

{

printf("element - %d : ",i);

scanf("%d",&a[i]);

}

for(i=0; i<n; i++)

{

sum += a[i];

}

printf("Sum of all elements stored in the array is : %d\n\n", sum);

}

-----------------------------------------------------------------------------

**4.**

**//**Write a program in C to merge two arrays of same size sorted in decending order.

#include <stdio.h>

void main()

{

int arr1[100], arr2[100], arr3[200];

int s1, s2, s3;

int i, j, k;

printf("\n\nMerge two arrays of same size sorted in decending order.\n");

printf("Input the number of elements to be stored in the first array :");

scanf("%d",&s1);

printf("Input %d elements in the array :\n",s1);

for(i=0;i<s1;i++)

{

printf("element - %d : ",i);

scanf("%d",&arr1[i]);

}

printf("Input the number of elements to be stored in the second array :");

scanf("%d",&s2);

printf("Input %d elements in the array :\n",s2);

for(i=0;i<s2;i++)

{

printf("element - %d : ",i);

scanf("%d",&arr2[i]);

}

s3 = s1 + s2;

for(i=0;i<s1; i++)

{

arr3[i] = arr1[i];

}

for(j=0;j<s2; j++)

{

arr3[i] = arr2[j];

i++;

}

for(i=0;i<s3; i++)

{

for(k=0;k<s3-1;k++)

{

if(arr3[k]<=arr3[k+1])

{

j=arr3[k+1];

arr3[k+1]=arr3[k];

arr3[k]=j;

}

}

}

printf("\nThe merged array in decending order is :\n");

for(i=0; i<s3; i++)

{

printf("%d ", arr3[i]);

}

printf("\n\n");

}

------------------------------------------------------------------------------

**5.**

**//** Write a program in C to find the maximum and minimum element in an array.

#include <stdio.h>

void main()

{

int arr1[100];

int i, mx, mn, n;

printf("\n\nFind maximum and minimum element in an array :\n");

printf("Input the number of elements to be stored in the array :");

scanf("%d",&n);

printf("Input %d elements in the array :\n",n);

for(i=0;i<n;i++)

{

printf("element - %d : ",i);

scanf("%d",&arr1[i]);

}

mx = arr1[0];

mn = arr1[0];

for(i=1; i<n; i++)

{

if(arr1[i]>mx)

{

mx = arr1[i];

}

if(arr1[i]<mn)

{

mn = arr1[i];

}

}

printf("Maximum element is : %d\n", mx);

printf("Minimum element is : %d\n\n", mn);

}

------------------------------------------------------------------------------

**6.**

**//** Write a program in C to sort elements of array in ascending order.

#include <stdio.h>

void main()

{

int arr1[100];

int n, i, j, tmp;

printf("\n\nsort elements of array in ascending order :\n ");

printf("Input the size of array : ");

scanf("%d", &n);

printf("Input %d elements in the array :\n",n);

for(i=0;i<n;i++)

{

printf("element - %d : ",i);

scanf("%d",&arr1[i]);

}

for(i=0; i<n; i++)

{

for(j=i+1; j<n; j++)

{

if(arr1[j] <arr1[i])

{

tmp = arr1[i];

arr1[i] = arr1[j];

arr1[j] = tmp;

}

}

}

printf("\nElements of array in sorted ascending order:\n");

for(i=0; i<n; i++)

{

printf("%d ", arr1[i]);

}

printf("\n\n");

}

---------------------------------------------------------------------------------------------------------------------

**7.**

**// Write a program in C for addition of two Matrices of same size.**

#include <stdio.h>

void main()

{

int arr1[50][50],brr1[50][50],crr1[50][50],i,j,n;

printf("\n\nAddition of two Matrices :\n");

printf("\n");

printf("Input the size of the square matrix (less than 5): ");

scanf("%d", &n);

printf("Input elements in the first matrix :\n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

printf("element - [%d],[%d] : ",i,j);

scanf("%d",&arr1[i][j]);

}

}

printf("Input elements in the second matrix :\n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

printf("element - [%d],[%d] : ",i,j);

scanf("%d",&brr1[i][j]);

}

}

printf("\nThe First matrix is :\n");

for(i=0;i<n;i++)

{

printf("\n");

for(j=0;j<n;j++)

printf("%d\t",arr1[i][j]);

}

printf("\nThe Second matrix is :\n");

for(i=0;i<n;i++)

{

printf("\n");

for(j=0;j<n;j++)

printf("%d\t",brr1[i][j]);

}

for(i=0;i<n;i++)

for(j=0;j<n;j++)

crr1[i][j]=arr1[i][j]+brr1[i][j];

printf("\nThe Addition of two matrix is : \n");

for(i=0;i<n;i++){

printf("\n");

for(j=0;j<n;j++)

printf("%d\t",crr1[i][j]);

}

printf("\n\n");

}

-----------------------------------------------------

**8**

**// Write a program in C to display the n terms of odd natural number and their sum.**

#include <stdio.h>

void main()

{

int i,n,sum=0;

printf("Input number of terms : ");

scanf("%d",&n);

printf("\nThe odd numbers are :");

for(i=1;i<=n;i++)

{

printf("%d ",2\*i-1);

sum+=2\*i-1;

}

printf("\nThe Sum of odd Natural Number upto %d terms : %d \n",n,sum);

}

**9.**

**// Write a program in C to display the n terms of harmonic series and their sum.**

#include <stdio.h>

void main()

{

int i,n;

float s=0.0;

printf("Input the number of terms : ");

scanf("%d",&n);

printf("\n\n");

for(i=1;i<=n;i++)

{

if(i<n)

{

printf("1/%d + ",i);

s+=1/(float)i;

}

if(i==n)

{

printf("1/%d ",i);

s+=1/(float)i;

}

}

printf("\nSum of Series upto %d terms : %f \n",n,s);

}

----------------------------------------------------------------------------------------------

**10.**

**//Write a C program to determine whether a given number is prime or not.**

#include <stdio.h>

int main() {

int n, i, flag = 0;

printf("Enter a positive integer: ");

scanf("%d", &n);

// 0 and 1 are not prime numbers

// change flag to 1 for non-prime number

if (n == 0 || n == 1)

flag = 1;

for (i = 2; i <= n / 2; ++i) {

if (n % i == 0) {

flag = 1;

break;

}

}

if (flag == 0)

printf("%d is a prime number.", n);

else

printf("%d is not a prime number.", n);

return 0;

}

**-----------------------------------------------------**

**11.**

**// Write a program in C to find the number and sum of all integer between 100 and 200 which are divisible by 9.**

#include <stdio.h>

void main()

{

int i, sum=0;

printf("Numbers between 100 and 200, divisible by 9 : \n");

for(i=101;i<200;i++)

{

if(i%9==0)

{

printf("% 5d",i);

sum+=i;

}

}

printf("\n\nThe sum : %d \n",sum);

}

-----------------------------------------------------------------------------------------------

**12.**

**// Write a program in C to find the sum of the series 1 +11 + 111 + 1111 + .. n terms**

#include <stdio.h>

void main()

{

int n,i;

long sum=0;

long int t=1;

printf("Input the number of terms : ");

scanf("%d",&n);

for(i=1;i<=n;i++)

{

printf("%ld ",t);

if (i<n)

{

printf("+ ");

}

sum=sum+t;

t=(t\*10)+1;

}

printf("\nThe Sum is : %ld\n",sum);

}

**-----------------------------------------------------**

**13.**

**//Write the code to find the factorial of that number.**

#include <stdio.h>

int main() {

int n, i;

unsigned long long fact = 1;

printf("Enter an integer: ");

scanf("%d", &n);

if (n < 0)

printf("Error! Factorial of a negative number doesn't exist.");

else {

for (i = 1; i <= n; ++i) {

fact \*= i;

}

printf("Factorial of %d = %llu", n, fact);

}

return 0;

}

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**14.**

**//Enter a six digit number and print the number in reverse order and find the sum of those number.**

#include<stdio.h>

int main()

{

int number,a,b,c,d,e,f,d1,d2,d3,d4,d5,d6,sum;

printf("enter a number=");

scanf("%d",&number);

a=number/10;

d6=number%10;

b=a/10;

d5=a%10;

c=b/10;

d4=b%10;

d=c/10;

d3=c%10;

e=d/10;

d2=d%10;

f=e/10;

d1=e%10;

sum=d1+d2+d3+d4+d5+d6;

printf("sum=%d\n",sum);

printf("reverse order=%d %d %d %d %d %d\n",d6,d5,d4,d3,d2,d1);

return 0;

}

**---------------------------------------------------------------------------------------**

**15.**

**//Write a menu driven program which has the following options.**

**I )Factorial**

**ii) Prime or not**

**iii) odd**

**iv) Even**

**v) Exit**

#include<stdio.h>

int main()

{

int c=0, num, res, n, flag=0, i;

while(c!=4)

{

printf("\n1. Factorial of a number\n2. Prime or not\n3. Odd or even\n4. Exit\n");

printf("\nEnter your choice:");

scanf("%d", &c);

switch(c)

{

case 1:

printf("Enter an integer: ");

scanf("%d", &num);

n=num;

res=num;

while(num>1)

{

res = res\*(num-1);

num = num-1;

}

printf("\nFactorial of %d is %d. \n\n",n, res);

break;

case 2:

printf("Enter an integer: ");

scanf("%d", &num);

n=num;

for(i=2;i<=n/2;i++)

{

if(num%i==0)

{

flag=1;

break;

}

}

if(num==1)

printf("\n1 is neither prime nor composite");

else

{

if(flag==0)

printf("\n%d is Prime Number.\n\n", n);

else

printf("\n%d is not a Prime Number.\n\n", n);

}

break;

case 3:

printf("Enter an integer: ");

scanf("%d", &num);

n=num;

if(num%2==0)

printf("\n%d is Even Number.\n\n",n);

else

printf("\n%d is Odd Number.\n\n",n);

break;

case 4:

printf("\nExit");

break;

}

}

}

**----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------**

**END**