**Practical No:01**

**Implement the following:**

1. **Read the two arrays from the user and merge them and display the elements in sorted order. [Menu Driven]**

**Code:**

#include<iostream>

using namespace std;

int main()

{

int i,j,k,n1,n2,merge[10],a[10],b[10],ch;

cout<<"Enter size for first array: ";

cin>>n1;

cout<<"Enter element for first array: ";

for(i=0;i<n1;i++)

{

cin>>a[i];

}

for(i=0;i<n1;i++)

{

merge[i]=a[i];

}

k=i;

cout<<"Enter size for second array: ";

cin>>n2;

cout<<"Enter element for second array: ";

for(i=0;i<n2;i++)

{

cin>>b[i];

}

for(i=0;i<2;i++)

{

merge[k]=b[i];

k++;

}

cout<<"merge array is:\n ";

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

{

cout<<merge[i]<<" ";

}

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

{

for(j=i+1;j<k;j++){

if(merge[i]>merge[j]){

int temp=merge[i];

merge[i]=merge[j];

merge[j]=temp;

}

}

}

cout<<"\nafter sorting: \n";

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

{

cout<<merge[i]<<" ";

}

}

**Output:**

**….……………………………………………..**

Enter size for first array: 5

Enter element for first array: 45 31 67 89 43

Enter size for second array: 5

Enter element for second array: 63 90 21 3 69

merge array is:

45 31 67 89 43 63 90

after sorting:

31 43 45 63 67 89 90

**….……………………………………………..**

1. **Write a program to store the elements in 1-D array and perform the operations like searching, sorting and reversing the elements. [Menu Driven].**

**Code:**

#include<iostream>

using namespace std;

searching(int a[],int n){

int ele,i,f=0;

cout<<"Which element you want to search? ";

cin>>ele;

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

if(a[i]==ele){

f=1;

break;

}

}

cout<<"The result is: ";

if(f==1){

cout<<ele<<" is found in array";

}

else{

cout<<ele<<" is not found in array";

}

}

sorting(int a[],int n){

int i,j;

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

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

if(a[i]>a[j]){

int temp=a[i];

a[i]=a[j];

a[j]=temp;

}

}

}

cout<<"\nAfter sorting: \n";

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

cout<<a[i]<<" ";

}

}

reversing(int a[],int n){

int i=0,j=n-1,temp;

while(i<j){

temp=a[i];

a[i]=a[j];

a[j]=temp;

i++;

j--;

}

cout<<"Reversing array is:\n";

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

cout<<a[i]<<" ";

}

}

int main()

{

int n,i,j,ch,a[20];

cout<<"Enter size for array: ";

cin>>n;

cout<<"Enter element for first array: ";

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

cin>>a[i];

}

cout<<"Enter number for\n1.Searching\n2.Sorting\n3.Reversing:\n";

cin>>ch;

switch(ch){

case 1:

searching(a,n);

break;

case 2:

sorting(a,n);

break;

case 3:

reversing(a,n);

break;

}

}

**Output:**

**….……………………………………………..**

1. **For searching**

Enter size for array: 5

Enter element for first array: 45 63 18 93 33

Enter number for

1.Searching

2.Sorting

3.Reversing:

1

Which element you want to search? 45

The result is: 45 is found in array

1. **For sorting**

Enter size for array: 5

Enter element for first array: 45 63 18 93 33

Enter number for

1.Searching

2.Sorting

3.Reversing:

2

After sorting:

18 33 45 63 93

1. **For reversing**

Enter size for array: 5

Enter element for first array: 45 63 18 93 33

Enter number for

1.Searching

2.Sorting

3.Reversing:

3

Reversing array is:

33 93 18 63 45

**….……………………………………………..**

1. **Write a program to perform the Matrix addition, Multiplication and Transpose Operation. [Menu Driven].**

**Code:**

#include<iostream>

using namespace std;

void addition(){

int i,j,size;

cout<<"Enter size for first matrix: ";

cin>>size;

int a[size][size],b[size][size];

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

for(j=0;j<size;j++){

cin>>a[i][j];

}

}

cout<<"first array is: \n";

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

for(j=0;j<size;j++){

cout<<a[i][j]<<" ";

}

cout<<endl;

}

cout<<"Enter size for second matrix: ";

cin>>size;

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

for(j=0;j<size;j++){

cin>>b[i][j];

}

}

cout<<"second array is: \n";

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

for(j=0;j<size;j++){

cout<<b[i][j]<<" ";

}

cout<<endl;

}

cout<<"Addition of matrix is: \n";

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

for(j=0;j<size;j++){

cout<<a[i][j]+b[i][j]<<" ";

}

cout<<endl;

}

}

void multiplication()

{

int i,j,k,size;

cout<<"Enter size for first matrix: ";

cin>>size;

int a[size][size],b[size][size],mul[size][size];

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

for(j=0;j<size;j++){

mul[i][j]=0;

}

}

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

for(j=0;j<size;j++){

cin>>a[i][j];

}

}

cout<<"first array is: \n";

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

for(j=0;j<size;j++){

cout<<a[i][j]<<" ";

}

cout<<endl;

}

cout<<"Enter size for second matrix: ";

cin>>size;

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

for(j=0;j<size;j++){

cin>>b[i][j];

}

}

cout<<"second array is: \n";

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

for(j=0;j<size;j++){

cout<<b[i][j]<<" ";

}

cout<<endl;

}

cout<<"Multiplication of matrix is: \n";

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

for (j= 0;j<size;j++){

for (k=0;k<size;k++){

mul[i][j] += a[i][k]\*b[k][j];

}

}

}

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

for(j=0;j<size;j++){

cout<<mul[i][j]<<" ";

}

cout<<endl;

}

}

void transpose()

{

int i,j,size;

cout<<"Enter size for matrix: ";

cin>>size;

int a[size][size];

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

for(j=0;j<size;j++){

cin>>a[i][j];

}

}

cout<<"first array is: \n";

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

for(j=0;j<size;j++){

cout<<a[i][j]<<" ";

}

cout<<endl;

}

cout<<"Transpose of matrix is: \n";

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

for(j=0;j<size;j++){

cout<<a[j][i]<<" ";

}

cout<<endl;

}

}

int main()

{

int choice,ch;

do{

cout<<"Enter which you want"<<endl;

cout<<"1.Addition\n2.Multiplication\n3.Transpose\n";

cin>>choice;

switch(choice)

{

case 1:

addition();

break;

case 2:

multiplication();

break;

case 3:

transpose();

break;

}

cout<<"Do you want to continue? ";

cout<<"\n1.Yes\n2.No\n";

cin>>ch;

}

while(ch!=2);

}

**Output:**

**….……………………………………………..**

Enter which you want

1.Addition

2.Multiplication

3.Transpose

1

Enter size for first matrix: 2

1 2 3 4

first array is:

1 2

3 4

Enter size for second matrix: 2

1 2 3 4

second array is:

1 2

3 4

Addition of matrix is:

2 4

6 8

Do you want to continue?

1.Yes

2.No

1

Enter which you want

1.Addition

2.Multiplication

3.Transpose

2

Enter size for first matrix: 2

1 2 3 4

first array is:

1 2

3 4

Enter size for second matrix: 2

1 2 3 4

second array is:

1 2

3 4

Multiplication of matrix is:

7 10

15 22

Do you want to continue?

1.Yes

2.No

1

Enter which you want

1.Addition

2.Multiplication

3.Transpose

3

Enter size for matrix: 2

1 2 3 4

first array is:

1 2

3 4

Transpose of matrix is:

1 3

2 4

Do you want to continue?

1.Yes

2.No

2

**….……………………………………………..**