//QUESTION 1

#include<iostream>

using namespace std;

int arr[1000];

int n;

void display(){

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

cout<<arr[i];

}

}

main(){

int option;

int choice;

cout<<"enter the size of array: ";

cin>>n;

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

cout<<"Element "<<i+1<<":";

cin>>arr[i];

}

display();

do{

cout<<"\nOption 1 : Insert element in array";

cout<<"\nOption 2 : Delete an element in array";

cout<<"\nOption 3 : Linear search ";

cout<<"\nOption 4 : Exit";

cout<<"\nWhich option you would choose ";

cin>>option;

switch(option){

case 1 :

int element,pos;

cout<<"enter the element you want to insert :";

cin>>element;

cout<<"enter the pos where you want to insert element :";

cin>>pos;

for(int i = n-1;i>=pos-1;i--){

arr[i+1] = arr[i];

}

arr[pos-1]=element;

n++;

display();

break;

case 2 :

int index;

display();

cout<<"\nenter the index of the element where you want to wish to delete : ";

cin>>index;

if(index > n +1 ){

cout<<"deletion not possible";

}

else{

for(int i = index-1;i<n-1;i++){

arr[i]=arr[i+1];

}

}

n--;

display();

break;

case 3 :

int item;

cout<<"Enter the element you want to search ";

cin>>item;

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

if(arr[i]==item){

cout<<"element found at position :"<<i+1;

}

else{

cout<<"element didnt found";

}

}

}

cout<<"\npress 0 for exit..press 1 for further ";

cin>>choice;

}while(choice == 1);

//QUESTION2

#include<iostream>

using namespace std;

int main(){

int n;

int pos;

int arr[1000];

cout<<"Enter the size of array : ";

cin>>n;

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

cout<<"Element "<<i+1<<":";6

cin>>arr[i];

}

//sorting

for(int i = 0;i<n-1;i++){

for(int j = 0;j<n-i-1;j++){

if(arr[j]>arr[j+1]){

int temp=arr[j];

arr[j]=arr[j+1];

arr[j+1]=temp;

}

}

}

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

if(arr[i-1]==arr[i]){

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

arr[j]=arr[j+1];

} n--;

}

else{

i++;

}

}

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

cout<<arr[i];

}

}

//QUESTION4

#include<iostream>

using namespace std;

main(){

int option;

cout<<"Option 1 : Reverse the array ";

cout<<"\nOption 2 : Matrix multiplication";

cout<<"\nOption 3 : Transpose of matrix ";

cout<<"\nEnter the option";

cin>>option;

switch(option){

case 1 :{

int arr[1000];

int n;

cout<<"Enter the size of array";

cin>>n;

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

cout<<"element "<<i+1<<":";

cin>>arr[i];

}

int start = 0;

int end = n-1;

while(start < end){

int temp = arr[start];

arr[start] = arr[end];

arr[end] = temp;

start++;

end--;

}

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

cout<<arr[i];

}

break;}

case 2:{

int r,c;

int r1,c1;

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

int arr3[100][100];

cout<<"Enter no of rows in matrix 1: ";

cin>>r;

cout<<"Enter no of columns in matrix 1: ";

cin>>c;

cout<<"Enter elements for matrix 1 \n";

for(int i = 0;i<r;i++){

for(int j = 0;j<c;j++){

cout<<"Enter element at "<<"["<<i<<"]"<<"["<<j<<"]";

cin>>arr1[i][j];

}

}

cout<<"Enter no of rows in matrix 2 : ";

cin>>r1;

cout<<"Enter no of columns in matrix 2 : ";

cin>>c1;

cout<<"Enter elements for matrix 2 \n";

for(int i = 0;i<r1;i++){

for(int j = 0;j<c1;j++){

cout<<"Enter element at "<<"["<<i<<"]"<<"["<<j<<"]";

cin>>arr2[i][j];

}

}

if(c!=r1){

cout<<"Multiplication cant be done as no of columns of first matrix is not same as no of rows in second matrix";

}

for(int i = 0;i<r;i++){

for(int j = 0;j<c1;j++){

arr3[i][j]=0;

}

}

for(int i = 0;i<r;i++){

for(int j = 0;j<c1;j++){

for(int k =0;k<c1;k++){

arr3[i][j]+=arr1[i][k]\*arr2[k][j];

}

}

}

cout<<"resultant matrix";

for(int i = 0;i<r;i++){

for(int j = 0;j<c1;j++){

cout<<arr3[i][j];

cout<<" ";

}cout<<endl;

}

break;}

case 3 :

{

int arr4[100][100];

int r3,c3;

cout<<"Enter the no of rows : ";

cin>>r3;

cout<<"Enter the no of columns : ";

cin>>c3;

cout<<"Enter elements for matrix \n";

for(int i = 0;i<r3;i++){

for(int j = 0;j<c3;j++){

cout<<"Enter element at "<<"["<<i<<"]"<<"["<<j<<"]";

cin>>arr4[i][j];

}

}

for(int i = 0;i<c3;i++){

for(int j = 0;j<r3;j++){

cout<<arr4[j][i];

cout<<" ";

}

cout<<endl;

}

}}

}

//QUESTION 5

#include<iostream>

using namespace std;

main(){

int arr[100][100];

int r,c;

cout<<"Enter the no of rows";

cin>>r;

cout<<"Enter the no of columns";

cin>>c;

for(int i = 0;i<r;i++){

for(int j =0;j<c;j++){

cout<<"Enter element at "<<"["<<i<<"]"<<"["<<j<<"] :";

cin>>arr[i][j];

}

}

for(int i = 0;i<r;i++){

for(int j =0;j<c;j++){

cout<<arr[i][j];

cout<<" ";

}cout<<endl;

}

int option;

cout<<"Option 1 : Row-wise sum";

cout<<"\nOption 2 : column wise sum";

cout<<"\nOption 3 : Sum of whole matrix";

cout<<"Enter the option: ";

cin>>option;

switch(option){

case 1:

int sum ;

for(int i = 0;i<r;i++){

sum = 0;

for(int j =0;j<c;j++){

sum+=arr[i][j];

}

cout<<"Sum of "<<i+1<<"row : "<<sum;

cout<<endl;

}

break;

case 2 :

int sum2;

for(int j = 0;j<c;j++){

sum2 = 0;

for(int i =0;i<r;i++){

sum2+=arr[i][j];

}

cout<<"Sum of "<<j+1<<"column : "<<sum2;

cout<<endl;}

break;

case 3:

int sum1 = 0;

for(int i =0;i<r;i++){

for(int j = 0;j<c;j++){

sum1+=arr[i][j];

}

}

cout<<"Sum of whole matrix : "<<sum1;

}

}