**Array Question**

**Question 1:** Write a program to store 10 elements in an array of integers and print the array on the screen.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 10;

int arr[SIZE];

for(int i=0; i<SIZE; i++)

{

cout<<" enter values at : "<< i << " index " ;

cin>>arr[i]; //check array notes

}

return 0;

}

**Question 2:** Write a program to store 10 elements in an array of double(focus when its array of double and when its array of integer). The program finds the sum of all elements of the array and displays it.

//Write a program to store 10 elements in array of double.

//The program finds

// the sum of all elements of the array and displays it.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 3;

double arr[SIZE];

int i;

double sum =0;

for(int i =0; i<SIZE; i++)

{

cout<<"enter integer at "<< i << " index " <<endl; //obviously jab hum integer phly put krein gy tb hi sum aye ga so we used cout statement before sum formula.

cin>>arr[i];

sum +=arr[i];

}

cout<<"sum is = "<<sum;

return 0;

}

**Question 3:** Write a program to store 10 elements in an array of integers. The program stores the double value of each element of one array into another array. Print the second array on the screen.

//Write a program to store 3 elements in an array of integers.

// Program stores the double value of each element of one array

//into another array. Print the second array on the screen.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 3;

int arr1[SIZE];

int arr2[SIZE];

for(int i=0; i<SIZE; i++)

{

cout<<"enter integer at = "<< i << "index"<<endl;

cin>>arr1[i];

arr2[i] =arr1[i]\*2;

cout<<"value of array 2 is = "<< arr2[i] << endl;

}

return 0;

}

Or

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 3;

int arr1[SIZE]={1,2,3};

int arr2[SIZE];

for(int i=0; i<SIZE; i++)

{

arr2[i] =arr1[i]\*2;

cout<<"value of array 2 is = "<< arr2[i] << endl;

}

return 0;

}

**Question 4:** Write a program to find the sum and average one-dimensional integer array.

//Write a program to find the sum and

//average one-dimensional integer array

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 2;

int arr[SIZE];

int sum=0;

int avg;

int i;

for(int i=0; i< SIZE; i++)

{

cout<<"enter value of = "<< i <<"index"<< endl;

cin>>arr[i];

sum = sum + arr[i];

avg = sum/ SIZE;

}

cout<<"sum is = "<< sum <<endl;

cout<<"average is = "<< avg<<endl;

return 0;

}

***PROGRAMS DONE IN CLASS;***

1. ***#include<iostream>***

***using namespace std;***

***int main ()***

***{***

***const int SIZE = 10;***

***int arr[SIZE] = {23,56,-100,1,11,45,99,86,-1,77};***

***for (int i=0; i<SIZE; i++){***

***cout<<" enter value at index = "<< i << arr[i] <<endl;***

***}***

***cout<<endl;***

***return 0;***

***}***

**Question 5:** Write a program to swap the first and last element of an integer 1-d array

//Write a program to swap the first and last element of

// an integer 1-d array.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 10;

int arr[SIZE] = {23,56,-100,1,11,45,99,86,-1, 77};

swap(arr[0], arr[SIZE-1]); //The swap operation is done before the loop because the for loop is used to display the contents of the array after the swap has taken place. This means that when the loop runs, it will print the modified array, showing the effect of swapping the first and last elements.

for (int i=0; i<SIZE; i++)

{

cout << "Value at index " << i << " is: " << arr[i] << endl;

}

cout<<endl;

return 0;

}

**Question 6:** Write a program to reverse the element of an integer 1-D array.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 10;

int arr[SIZE] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};

for (int i = 0; i < SIZE / 2; i++)

{

swap(arr[i], arr[SIZE - 1 - i]);

}

for (int i = 0; i < SIZE; i++)

{

cout << "Value at index " << i << " is " << arr[i] << endl;

}

return 0;

}

**Question 7:** Write a program to find the minimum and maximum element of an array.

//Write a program to find the

//minimum and maximum element of an array.

#include<iostream>

using namespace std;

int main()

{

const int SIZE = 10;

int arr[SIZE] = {23,56,-100,1,11,45,99,86,-1,77};

int i;

int largest, smallest;

largest = arr[0];

smallest = arr[0];

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

largest = max (arr[i], largest);

smallest = min (arr[i], smallest);

}

cout<<"largest value is = "<< largest <<endl;

cout<<"smallest value is = "<< smallest <<endl;

return 0;

}

**Question 8:** Write a program to find the sum of all even and odd elements of an array.

#include <iostream>

using namespace std;

int main(){

int i,sumo=0,sume=0;

const int SIZE=10;

int arr[SIZE]={1,2,3,4,5,6,7,8,9,10};

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

{

cout<<" value at "<<i<<" index is "<<arr[i]<<endl;

}

cout<<endl<<endl;

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

{

if(arr[i]%2==0)

{

sume+=arr[i];

}

else

{

sumo+=arr[i];

}

}

cout<<"sum of all even number will be "<<sume<<endl;

cout<<"sum of all odd number will be "<<sumo<<endl;

return 0;

}

**Question 9**: Write a program to find the total number of even and odd number of elements in the array.

#include <iostream>

using namespace std;

int main(){

int i,sumo=0,sume=0,counte=0,counto=0;

const int SIZE=10;

int arr[SIZE]={1,2,3,4,5,6,7,8,9,10};

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

{

cout<<" value at "<<i<<" index is "<<arr[i]<<endl;

}

cout<<endl<<endl;

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

{

if(arr[i]%2==0)

{

counte++;

}

else

{

counto++;

}

}

cout<<"total even number will be "<<counte<<endl;

cout<<"total odd number will be "<<counto<<endl;

return 0;

}

**Question 10:** Write a program that stores 10 values in an array of type integers. Program counts and displays the total number of duplicate elements in an array.

#include <iostream>

using namespace std;

int main()

{

const int SIZE=10;

int arr[SIZE]={23,56,-100,1,11,45,99,86,-1,77};

for(int i=0;i<SIZE;i++)

{

cout<<"The value of "<<i<<" index: "<<arr[i]<<endl;

}

cout<<endl;

cout<<endl;

int countdup=0;

for(int i=0;i<SIZE;i++)

{

for(int j=i+1;j<SIZE;j++)

{

if(arr[i]==arr[j])

{

countdup++;

}

}

}

cout<<"Duplicate number: "<<countdup<<endl;

return 0;

}

Here’s another program in which not only duplicate is found but also its index is found

#include<iostream>

using namespace std;

int main()

{

const int SIZE = 10;

int arr[SIZE] = {23, 56, -100, -100, 11, 45, 99, 86, -1, 77};

bool foundDuplicate = false;

for(int i = 0; i < SIZE; i++)

{

for(int j = i + 1; j < SIZE; j++)

{

if(arr[i] == arr[j])

{

cout << "Duplicate number: " << arr[i] << " found at indices " << i << " and " << j << endl;

foundDuplicate = true;

}

}

}

return 0;

}

**Question 11:** Write a program that stores 10 values in an array of type integers. Finds the sum of all those values which are less than the average of all values of the array.

**Question 12:** Write a program that stores 10 values in an array of type integers. It calculates and displays the difference between the largest and smallest values in an array.

#include <iostream>

using namespace std;

int main(){

const int SIZE=10;

int arr[SIZE]={1,2,3,4,5,6,7,8,9,10};

int largest= arr[0];

int smallest= arr[0];

int difference;

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

{

largest = max (arr[i], largest);

smallest = min(arr[i], smallest);

}

difference = largest - smallest;

cout<<"diff is"<<difference<<endl;

return 0;

}

**Question 13:** Write a program that stores 5, 5 values in two integer arrays. The program find the value of the common elements and stores them into third arrays.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 5;

int arr1[SIZE] = {1, 2, 3, 4, 5};

int arr2[SIZE] = {3, 4, 5, 6, 7};

for (int i=0; i<SIZE; i++)

{

cout<<"value at "<< i << "index" << arr1[i]<<endl;

cout<< endl;

}

for(int j=0; j<SIZE; j++)

{

cout<<"value at "<< j << "index" << arr2[j]<<endl;

cout<< endl;

}

for(int i=0; i<SIZE; i++)

{

for(int j=0; j<SIZE; j++)

{

if(arr1[i]==arr2[j])

{

cout << arr1[i] << " ";

}

}

}

return 0;

}

**Question 14:** Write a program that initializes an array of ten integers. It inputs an integer from the user (Searching number) and searches the value in the array using linear search.

#include <iostream>

using namespace std;

int main()

{

const int SIZE = 10;

int arr[SIZE] = {5, 3, 8, 6, 2, 9, 4, 1, 7, 0};

int searchNumber;

int found = -1; // set by -1 because the array stared from 0. so -1 is not used as index of the array

cout << "Enter the number you want to search for: ";

cin >> searchNumber;

for (int i = 0; i < SIZE; i++)

{

if (arr[i] == searchNumber)

{

found = i;

break;

}

}

if (found == -1)

cout << "Number " << searchNumber << " is not in the array." << endl;

else

cout << "Number " << searchNumber << " found at index " << found << "." << endl;

return 0;

}

**Question 15:** Write a program that initializes an array of ten integers. It inputs an integer from the user (Searching number) and searches the value in the array using binary search.

#include<iostream>

using namespace std;

int main()

{

int arr[10] = {1,2,3,4,5,6,7,8,9,10};

int n;

cout<<"Enter the number you want to find location: ";

cin>>n;

bool found = true;

int low=0, high=9, mid;

for ( low<=high; )

{

mid = (low+high)/2;

if(arr[mid]==n)

{

cout<<"Location of search number "<<n<<" is "<<mid<<endl;

found = true;

break;

}

else if(arr[mid]<n)

{

low = mid +1;

}

else

{

high = mid-1;

}

}

return 0;

}

**Question 16:** Write a program that initializes an array of ten integers. It sorts the array using bubble sort. Display array after and before sorting.

#include<iostream>

using namespace std;

int main(){

const int SIZE = 10;

int arr[SIZE]={23,56,-100,1,11,45,99,86,-1,77};

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

cout<<"Value at "<<i<<"index = "<<arr[i]<<endl;

}

for(int i=0;i<SIZE – 1 ;i++)

{

for(int j=0;j<SIZE – 1 – i ;j++){

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

swap(arr[j],arr[j+1]);

}

}

cout<<"\n\nsorted array:"<<endl;

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

cout<<"Value at "<<i<<"index = "<<arr[i]<<endl;

}

return 0;

}

**Question 17:** Write a program that initializes an array of ten integers. It sorts the array using selection sort. Display array after and before sorting.

#include<iostream>

using namespace std;

int main(){

const int SIZE = 10;

int arr[SIZE]={23,56,-100,1,11,45,99,86,-1,77};

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

cout<<"Value at "<<i<<"index = "<<arr[i]<<endl;

}

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

{

int small =i;

for(int j=i+1;j<SIZE;j++)

{

if(arr[small]>arr[j])

small =j;

}

if(small!=i)

swap(arr[small],arr[i]);

}

cout<<"\n\nsorted array:"<<endl;

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

cout<<"Value at "<<i<<"index = "<<arr[i]<<endl;

}

**Question 18:** Write a program that initializes an array of ten integers. The program finds the smallest and smallest element in an array.

**Question 19:** Write a program that initializes an array of ten integers. The program finds the second largest element in an array.

**Question 20:** Write a program that initializes an array of ten integers. The program finds the second smallest element in an array.