**DSA BOOTCAMP ASSIGNMENT**

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**Q1. Write a program to swap two numbers.**

**Soln.**

#include <iostream>

using namespace std;

void swap(int &a, int &b)

{

int temp=a;

a=b;

b=temp;

}

int main()

{

int n=2;

int arr[2];

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

{

cout<<"Enter the value of element "<<i<<": ";

cin>>arr[i];

}

int left=0;

int right=n-1;

while(left<=right)

{

swap(arr[left],arr[right]);

left++;

right--;

}

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

{

cout<<arr[i]<<" ";

}

}

**Q2. Write a program to find the largest number among three numbers entered by the user.**

**Soln.**

#include <iostream>

#include <climits>

using namespace std;

int main()

{

int n=3;

int arr[3];

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

{

cout<<"Enter the value of element "<<i<<": ";

cin>>arr[i];

}

int max\_value=INT\_MIN;

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

{

if(arr[i]>max\_value)

{

max\_value=arr[i];

}

}

cout<<"Max value is "<<max\_value<<endl;

}

**Q3. Write a program to check whether a year entered by a user is Leap year or not.**

**Soln.**

#include<iostream>

using namespace std;

int main() {

int year;

cout<<"Enter a year: ";

cin>>year;

if (((year % 4 == 0) && (year % 100 != 0)) || (year % 400 == 0))

cout<<year<<" is a leap year";

else

cout<<year<<" is not a leap year";

return 0;

}

**Q4. Write a program to display Fibonacci Series upto nth term. (Using loops)**

**Soln.**

#include <iostream>

using namespace std;

int main() {

int n, t1 = 0, t2 = 1, sum = 0;

cout << "Enter the number of terms: ";

cin >> n;

cout << "Fibonacci Series: ";

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

if(i == 1) {

cout << t1 << " ";

continue;

}

if(i == 2) {

cout << t2 << " ";

continue;

}

sum = t1 + t2;

t1 = t2;

t2 = sum;

cout << sum << " ";

}

return 0;

}

**Q5. Write a program to check whether a number is Prime or Not.**

**Soln.**

#include<iostream>

using namespace std;

int main()

{

int n, c=0;

cout<<"Enter a Number: ";

cin>>n;

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

{

if(n%i==0)

{

c++;

break;

}

}

if(c==0)

cout<<"\nIt is a Prime Number";

else

cout<<"\nIt is not a Prime Number";

cout<<endl;

return 0;

}

**Q6. Print this pattern using loops**

**For n=5**

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**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**Soln.**

#include <iostream>

using namespace std;

int main()

{

int rows,stars,spaces,n;

cout<<"Enter the value of n: ";

cin>>n;

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

{

for(spaces=rows; spaces<n; spaces++)

{

cout << " ";

}

for(stars=1; stars<=2\*rows-1; stars++)

{

cout<<"\*";

}

cout<<endl;

}

}

**Q7.Write a program that takes n elements from the user and displays the second largest element of an array.**

**Soln.**

#include <iostream>

using namespace std;

int main(){

int n, num[50], largest, second;

cout<<"Enter number of elements: ";

cin>>n;

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

cout<<"Enter array element"<<(i+1)<<": ";

cin>>num[i];

}

if(num[0]<num[1]){

largest = num[1];

second = num[0];

}

else{

largest = num[0];

second = num[1];

}

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

if (num[i] > largest) {

second = largest;

largest = num[i];

}

else if (num[i] > second && num[i] != largest) {

second = num[i];

}

}

cout<<"Second Largest Element in array is: "<<second;

return 0;

}

**Q8.** [**Left Rotation**](https://www.hackerrank.com/challenges/array-left-rotation/problem)

**Soln.**

#include <iostream>

using namespace std;

int main()

{

int n,d;

cout<<"Enter the number of elements: ";

cin>>n;

cout<<"Enter the index of the element to be left rotated: ";

cin>>d;

int a[n];

cout<<"Enter the array elements : "<<endl;

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

{

cin>>a[i];

}

cout<<"Array elements after left rotation : ";

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

{

cout<<a[(i+d)%n]<<" ";

}

return 0;

}

**Q9.** [**Grading Students**](https://www.hackerrank.com/challenges/grading/problem)

**Soln.**

#include <bits/stdc++.h>

using namespace std;

int main() {

int n;

cout<<"Enter number of grades: ";

cin >> n;

int a[n];

cout<<"Enter the grades: "<<endl;

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

{

cin>>a[i];

}

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

{

if(a[i]>=38){

if((a[i]%5)==3){

a[i]=a[i]+2;

}

if((a[i]%5)==4){

a[i]=a[i]+1;}

}

}

cout<<"Converted grades are: "<<endl;

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

{

cout<<a[i]<<endl;

}

return 0;

}

**Q10.** [**CamelCase**](https://www.hackerrank.com/challenges/camelcase/problem)

**Soln.**

#include<iostream>

using namespace std;

int main(){

string s;

cout<<"Enter the string with 1st letter of 1st word in small and further words with first letter in capital without spaces between words: "<<endl;

cin >> s;

int count = 0;

for(int i = 0; i < s.size(); i++) {

if(s[i] >= 65 && s[i] <= 90) {

count++;

}

}

cout<<count+1;

return 0;

}