

DSA BOOTCAMP PROJECT

Q1. Write a program to Swap to two numbers.

```
#include<iostream>
Using namespace std;
Void swap (int &x, int &y){
    int temp =x;
    x=y;
    y=temp;
}
int main ()
{
    int a=10,b=18,temp;
    cout<<" in main function before swapping"<<endl;
    cout<<a<<" "<<b;

    swap(x,y);
    cout<<"in main function after swapping"<<endl;
    cout<<a<<" "<<b;
    return 0;
}
```

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

```
#include<iostream>
Using namespace std;
int main ()
{
    int a, b, c;
    cout<<" enter value of a"<<endl;
    cin>>a;
    cout<<" enter value of b"<<endl;
    cin>>b;
    cout <<" enter value of c"<<endl;
    cin>>c;
    if(a>b&&a>c){
        cout<<"a is largest"<<endl;
    }else if(b>a&&b>c){
        cout<<"b is largest"<<endl;
    }else{
        cout<<"c is largest"<<endl;
    }

    return 0;
}
```

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

```
#include<iostream>
using namespace std;
int main()
{
    int yr, leap;
    Cout<<"enter the year"<<endl;
    Cin>>year;
    leap=(yr%4==0)?((yr%100==0)?((yr%400==0)?1:0):1):0;
    if(leap==1)
        Cout<<yr<<"is a leap year<endl;
    else
        Cout<<yr<<"is not a leap year";
    return 0;
}
```

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

```
#include<iostream>
using namespace std;
int main()
{
    int n,i,sum=0;
    cout<<"enter the value of n"<<endl;
    cin>>n;
    for(i=1;i<=n;i++){
        sum= sum +i;
    }
    cout<<sum<<endl;
    return 0;
}
```

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

```

#include<iostream>
using namespace std;
int main()
{
    int i,n,k;
    cout<<"enter the value of n"<<endl;
    cin>>n;
    for(i=1;i<=n;i++)
    {
        if(n%i==0)
        {
            k++;
        }
    }
    if(k==2)
    {
        Cout<<"n is a prime number"<<endl;
    }
    else
    {
        Cout<<"n is not a prime number"<<endl;
    }
    return 0;
}

```

Q6. Print this pattern using loops

For n=5

```

*
* *
* * *
* * * *
* * * * *

```

```

#include<iostream>
using namespace std;
int main()
{
    int n,i,j,k;
    n=5;
    for(i=1;i<=5;i++)
    {
        for(j=i;j<=5;j++)
        {
            for (k=1;k<=(i*2);k++)
            {
                Cout<<"*";
            }
            Cout<<endl;
        }
    }
}

```

```
        }  
    return 0;  
}
```

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

```
#include<iostream>  
  
using namespace std;  
  
int main ()  
{  
    int A[10], n, i, j, x;  
    cout << "Enter size of array : ";  
    cin >> n;  
    cout << "Enter elements of array : ";  
    for (i = 0; i < n; i++)  
        cin >> A[i];  
    for (i = 0; i < n; i++)  
    {  
        for (j = i + 1; j < n; j++)  
        {  
            if (A[i] < A[j])  
            {  
                x = A[i];  
                A[i] = A[j];  
                A[j] = x;  
            }  
        }  
    }  
  
    cout << "Second largest number : " << A[1];  
    cout << "\nSecond smallest number : " << A[n - 2];  
}
```

```
        return 0;
    }
}
```

Q8. <https://www.hackerrank.com/challenges/array-left-rotation/problem>

```
#include<bits/stdc++.h>
```

```
Using namespace std;
```

```
string ltrim(const string &);
string rtrim(const string &);
vector<string> split(const string &);
```

```
vector<int> rotateLeft(int d, vector<int> arr) {
}
}
```

```
int main()
{
    ofstream fout(getenv("OUTPUT_PATH"));

    string first_multiple_input_temp;
    getline(cin, first_multiple_input_temp);

    vector<string> first_multiple_input = split(rtrim(first_multiple_input_temp));

    int n = stoi(first_multiple_input[0]);

    int d = stoi(first_multiple_input[1]);

    string arr_temp_temp;
    getline(cin, arr_temp_temp);

    vector<string> arr_temp = split(rtrim(arr_temp_temp));

    vector<int> arr(n);

    for (int i = 0; i < n; i++) {
        int arr_item = stoi(arr_temp[i]);

        arr[i] = arr_item;
    }
}
```

```

vector<int> result = rotateLeft(d, arr);

for (size_t i = 0; i < result.size(); i++) {
    fout << result[i];

    if (i != result.size() - 1) {
        fout << " ";
    }
}

fout << "\n";

fout.close();

return 0;
}

string ltrim(const string &str) {
    string s(str);

    s.erase(
        s.begin(),
        find_if(s.begin(), s.end(), not1(ptr_fun<int, int>(isspace)))
    );

    return s;
}

string rtrim(const string &str) {
    string s(str);

    s.erase(
        find_if(s.rbegin(), s.rend(), not1(ptr_fun<int, int>(isspace))).base(),
        s.end()
    );

    return s;
}

vector<string> split(const string &str) {
    vector<string> tokens;

    string::size_type start = 0;
    string::size_type end = 0;

```

```

while ((end = str.find(" ", start)) != string::npos) {
    tokens.push_back(str.substr(start, end - start));

    start = end + 1;
}

tokens.push_back(str.substr(start));

return tokens;
}

```

Q9. <https://www.hackerrank.com/challenges/grading/problem>

```

#include <bits/stdc++.h>

using namespace std;

string ltrim(const string &);
string rtrim(const string &);
vector<int> gradingStudents(vector<int> grades) {

}

int main()
{
    ofstream fout(getenv("OUTPUT_PATH"));

    string grades_count_temp;
    getline(cin, grades_count_temp);

    int grades_count = stoi(ltrim(rtrim(grades_count_temp)));

    vector<int> grades(grades_count);

    for (int i = 0; i < grades_count; i++) {
        string grades_item_temp;
        getline(cin, grades_item_temp);

        int grades_item = stoi(ltrim(rtrim(grades_item_temp)));

        grades[i] = grades_item;
    }

    vector<int> result = gradingStudents(grades);

```

```

for (size_t i = 0; i < result.size(); i++) {
    fout << result[i];

    if (i != result.size() - 1) {
        fout << "\n";
    }
}

fout << "\n";

fout.close();

return 0;
}

string ltrim(const string &str) {
    string s(str);

    s.erase(
        s.begin(),
        find_if(s.begin(), s.end(), not1(ptr_fun<int, int>(isspace)))
    );

    return s;
}

string rtrim(const string &str) {
    string s(str);

    s.erase(
        find_if(s.rbegin(), s.rend(), not1(ptr_fun<int, int>(isspace))).base(),
        s.end()
    );

    return s;
}

```

Q10. <https://www.hackerrank.com/challenges/camelcase/problem>

```

#include<bits/stdc++.h>
Using namespace std;

```



```
int camelcase(string s) {  
  
}  
  
int main()  
{  
    ofstream fout(getenv("OUTPUT_PATH"));  
  
    string s;  
    getline(cin, s);  
  
    int result = camelcase(s);  
  
    fout << result << "\n";  
  
    fout.close();  
  
    return 0;  
}
```