

DSA BOOTCAMP ASSIGNMENT

Q1. Write a program to Swap to two numbers.

Solution:

```
#include <iostream>
using namespace std;
int main()
{
    int a=5, b=10;
    cout<<"Before swapping a= "<<a<<" b= "<<b<<endl;
    a=a*b;
    b=a/b;
    a=a/b;
    cout<<"After swapping a= "<<a<<" b= "<<b<<endl;
    return 0;
}
```

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

Solution:

```
#include <iostream>
using namespace std;
int main() {
    float a, b, c;

    cout << "Enter three numbers: ";
    cin >> a >> b >> c;

    if(a >= b && a >= c)
        cout << "Largest number: " << a;

    if(b >= a && b >= c)
        cout << "Largest number: " << b;

    if(c >= a && c >= b)
        cout << "Largest number: " << c;

    return 0;
}
```

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

Solution:

```
#include <iostream>

using namespace std;

int main() {
    int year;

    cout << "Enter a year: ";
    cin >> year;

    if (year % 4 == 0) {
        if (year % 100 == 0) {
            if (year % 400 == 0)
                cout << year << " is a leap year.";
            else
                cout << year << " is not a leap year.";
        }
        else
            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)

Solution:

```
#include <iostream>
using namespace std;

int main() {
    int a, b = 0, c = 1, nextTerm = 0;

    cout << "Enter the number of terms: ";
    cin >> a;

    cout << "Fibonacci Series: ";

    for (int i = 1; i <= a; ++i) {
        // Prints the first two terms.
        if(i == 1) {
            cout << b << ", ";
            continue;
        }
    }
```

```
    if(i == 2) {  
        cout << c << ", ";  
        continue;  
    }  
    nextTerm = b + c;  
    b = c;  
    b = nextTerm;  
  
    cout << nextTerm << ", ";  
}  
return 0;  
}
```

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

Solution:

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {  
    int i, n;  
    bool isPrime = true;  
  
    cout << "Enter a positive integer: ";  
    cin >> n;  
  
    if (n == 0 || n == 1) {  
        isPrime = false;  
    }  
    else {  
        for (i = 2; i <= n / 2; ++i) {  
            if (n % i == 0) {  
                isPrime = false;  
                break;  
            }  
        }  
    }  
    if (isPrime)  
        cout << n << " is a prime number";  
    else  
        cout << n << " is not a prime number";  
  
    return 0;  
}
```

Q6. Print this pattern using loops

For n=5

```
*
 * *
* * *
* * * *
* * * * *
```

Solution:

```
#include<iostream>
using namespace std;
int main()
{
    int n, s, i, j;
    cout << "Enter number of rows: ";
    cin >> n;
    for(i = 1; i <= n; i++)
    {
        //for loop to put space
        for(s = i; s < n; s++)
            cout << " ";
        //for loop for displaying star
        for(j = 1; j <= i; j++)
            cout << "* ";
        // ending line after each row
        cout << "\n";
    }
    return 0;
}
```

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

Solution:

```
#include <iostream>
using namespace std;

void print2largest(int arr[], int arr_size)
{
    int i, first, second;

    if (arr_size < 2) {
        printf(" Invalid Input ");
        return;
    }

    sort(arr, arr + arr_size);

    for (i = arr_size - 2; i >= 0; i--) {
        if (arr[i] != arr[arr_size - 1]) {
```

```
        printf("The second largest element is %d\n", arr[i]);
        return;
    }
}

printf("There is no second largest element\n");
}

int main()
{
    int arr[] = { 12, 35, 1, 10, 34, 1 };
    int n = sizeof(arr) / sizeof(arr[0]);
    print2largest(arr, n);
    return 0;
}
```

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

Solution:

```
#include <iostream>
using namespace std;
int main() {
    int a, b, i;
    cin >> a >> b;
    int start = a - b;
    int *arr = new int[a];
    for (i=0; i<a; ++i) {
        if (start == a) start = 0;
        cin >> arr[start++];
    }
    for (i=0; i<a; ++i) cout << arr[i] << " ";
    return 0;
}
```

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

Solution:

```
#include <iostream>
using namespace std;
int main(){
    int n;
    cin >> n;
    for(int a0 = 0; a0 < n; a0++){
        int grade;
        cin >> grade;
```

```
    if (grade >= 38) {  
        int rem = grade % 5;  
        if (rem >= 3) grade += 5 - rem;  
    }  
    cout << grade << endl;  
}  
return 0;  
}
```

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

Solution:

```
#include <iostream>  
using namespace std;  
int main(){  
    string s;  
    cin >> s;  
    int t=1;  
    for (int i=0;i<s.length();i++)  
        if (isupper(s[i]))  
            t++;  
    cout<<t<<endl;  
    return 0;  
}
```