

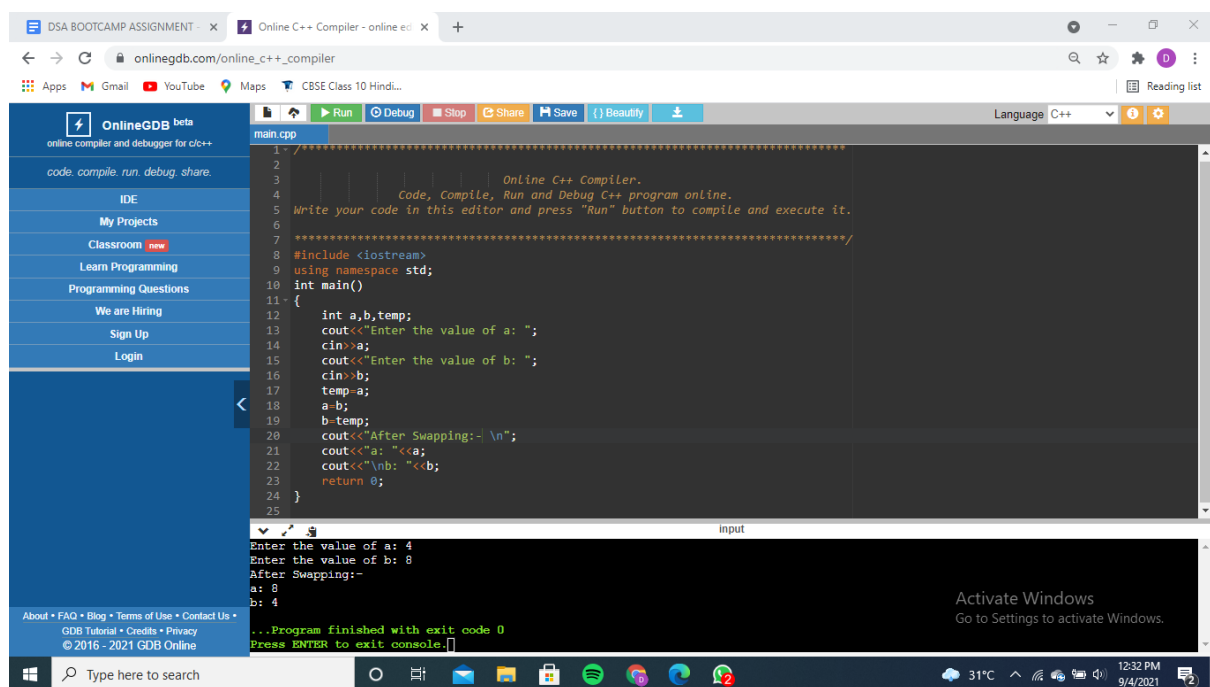
# DSA BOOTCAMP ASSIGNMENT SOLUTION

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## SOLUTIONS

Q1. Write a program to Swap to two numbers.



```
1 //***** Online C++ Compiler.
2
3 Code, Compile, Run and Debug C++ program online.
4 Write your code in this editor and press "Run" button to compile and execute it.
5
6 *****/
7
8 #include <iostream>
9 using namespace std;
10 int main()
11 {
12     int a,b,temp;
13     cout<<"Enter the value of a: ";
14     cin>>a;
15     cout<<"Enter the value of b: ";
16     cin>>b;
17     temp=a;
18     a=b;
19     b=temp;
20     cout<<"After Swapping:- \n";
21     cout<<"a: "<<a;
22     cout<<"\nb: "<<b;
23     return 0;
24 }
25
```

Enter the value of a: 4  
Enter the value of b: 8  
After Swapping:-  
a: 8  
b: 4

...Program finished with exit code 0  
Press ENTER to exit console.

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

```
1. //***** Online C++ Compiler. *****
2.
3. Code, Compile, Run and Debug C++ program online.
4. Write your code in this editor and press "Run" button to compile and execute it.
5. *****
6. #include <iostream>
7. using namespace std;
8. int main()
9. {
10.
11.     int a,b,c;
12.     cout<<"Enter the value of a: ";
13.     cin>>a;
14.     cout<<"Enter the value of b: ";
15.     cin>>b;
16.     cout<<"Enter the value of c: ";
17.     cin>>c;
18.     if(a>b && a>c)
19.         cout<<"\na is greatest";
20.     else if(b>a && b>c)
21.         cout<<"\nb is greatest";
22.     else
23.         cout<<"\nc is greatest";
24.     return 0;
25. }
```

input

Enter the value of a: 5  
Enter the value of b: 8  
Enter the value of c: 9

c is greatest

...Program finished with exit code 0  
Press ENTER to exit console.

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

```
1. //***** Online C++ Compiler. *****
2.
3. Code, Compile, Run and Debug C++ program online.
4. Write your code in this editor and press "Run" button to compile and execute it.
5. *****
6. #include <iostream>
7. using namespace std;
8. int main()
9. {
10.
11.     int year;
12.     cout<<"Enter the year: ";
13.     cin>>year;
14.     if((year%4==0 && (year%100)!=0)
15.         cout<<"Year is leap year.";
16.     else if((year%400)==0)
17.         cout<<"\nYear is leap year.";
18.     else
19.         cout<<"\nYear is not leap year.";
20.     return 0;
21. }
```

input

Enter the year: 1700

Year is not leap year.

...Program finished with exit code 0  
Press ENTER to exit console.

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

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```

1 //***** Online C++ Compiler.
2 //***** Code, Compile, Run and Debug C++ program online.
3 //***** Write your code in this editor and press "Run" button to compile and execute it.
4 //*****
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int n1,n2,n3,n;
10    n1=0;
11    n2=1;
12    cout<<"Enter the value of n: ";
13    cin>>n;
14    cout<<"\n "<<n1;
15    cout<<"\n "<<n2;
16    for(int i=2;i<=n;i++)
17    {
18        n3=n1+n2;
19        cout<<"\n "<<n3;
20        n1=n2;
21        n2=n3;
22    }
23    return 0;
24 }

```

input

0  
1  
1  
2  
3  
4

...Program finished with exit code 0  
Press ENTER to exit console.

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

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```

1 //***** Online C++ Compiler.
2 //***** Code, Compile, Run and Debug C++ program online.
3 //***** Write your code in this editor and press "Run" button to compile and execute it.
4 //*****
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int n, i, flag=0;
10    cout<<"Enter the Number : ";
11    cin>>n;
12    for(i=2; i<=n/2; i++)
13    {
14        if(n%i==0)
15        {
16            flag=1;
17            break;
18        }
19    }
20    if(flag==0)
21    {
22        cout<<"Number is Prime.";
23    }
24    else
25    {
26        cout<<"Number is not prime.";
27    }
28    return 0;
29 }

```

input

Enter the Number : 5  
Number is Prime.

...Program finished with exit code 0  
Press ENTER to exit console.

Activate Windows  
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Q6. Print this pattern using loops

For n=5

```

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

```

The screenshot shows the OnlineGDB interface with a C++ program that prints a diamond pattern. The code is as follows:

```
1 // Online C++ Compiler.
2 // Code, Compile, Run and Debug C++ program online.
3 // Write your code in this editor and press "Run" button to compile and execute it.
4 // *****
5 #include<stdio.h>
6 #define MAX 5
7 int main()
8 {
9     int i,j;
10    int space=4;
11    for(i=0;i< MAX;i++)
12    {
13        for(j=0;j< space;j++)
14        {
15            printf(" ");
16        }
17        for(j=0;j<=i;j++)
18        {
19            printf("* ");
20        }
21        printf("\n");
22        space--;
23    }
24    return 0;
25 }
```

The output of the program is a diamond pattern of asterisks:

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

The console shows the program finished with exit code 0.

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

The screenshot shows the OnlineGDB interface with a C++ program that finds the second largest element in an array. The code is as follows:

```
1 // Online C++ Compiler.
2 // Code, Compile, Run and Debug C++ program online.
3 // Write your code in this editor and press "Run" button to compile and execute it.
4 // *****
5 #include<iostream>
6 using namespace std;
7 int main ()
8 {
9     int a[10], n, i, j, temp;
10    cout << "Enter size of array : ";
11    cin >> n;
12    cout << "Enter elements of array : ";
13    for (i = 0; i < n; i++)
14    {
15        cin >> a[i];
16    }
17    for (i = 0; i < n; i++)
18    {
19        for (j = i + 1; j < n; j++)
20        {
21            if (a[i] < a[j])
22            {
23                temp = a[i];
24                a[i] = a[j];
25                a[j] = temp;
26            }
27        }
28    }
29    cout << "\nSecond largest number : " << a[1];
30    return 0;
31 }
```

The input provided is:

```
Enter size of array : 4
Enter elements of array : 5
9
2
8
```

The output of the program is:

```
Second largest number : 8
```

The console shows the program finished with exit code 0.

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

The screenshot shows the OnlineGDB IDE interface. The main editor displays a C++ program for rotating an array. The code is as follows:

```
1 // ***** Online C++ Compiler *****
2 // Code, Compile, Run and Debug C++ program online.
3 // Write your code in this editor and press "Run" button to compile and execute it.
4 // *****
5 #include <iostream>
6 using namespace std;
7 int main() {
8     int N, d, i;
9     cout << "Enter the value of N: ";
10    cin >> N;
11    cout << "Enter the value of d: ";
12    cin >> d;
13    int start = N - d;
14    int arr = new int[N];
15    cout << "Array elements are: \n";
16    for (i = 0; i < N; ++i)
17    {
18        if (start == N) start = 0;
19        cin >> arr[start++];
20    }
21    for (i = 0; i < N; ++i)
22    {
23        cout << arr[i] << " ";
24    }
25    return 0;
26 }
```

The input/output window shows the following interaction:

```
Enter the value of N: 6
Enter the value of d: 4
Array elements are:
1
2
3
4
5
6
```

The right sidebar shows the Call Stack, Local Variables, Registers, Display Expressions, and Breakpoints and Watchpoints sections.

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

The screenshot shows the OnlineGDB IDE interface. The main editor displays a C++ program for grading students. The code is as follows:

```
1 // ***** Online C++ Compiler *****
2 // Code, Compile, Run and Debug C++ program online.
3 // Write your code in this editor and press "Run" button to compile and execute it.
4 // *****
5 #include <iostream>
6 using namespace std;
7 int main() {
8     int n;
9     cout << "Enter the value of n: ";
10    cin >> n;
11    for (int i = 0; i < n; i++) {
12        int grade;
13        cout << "Enter grade of student: ";
14        cin >> grade;
15        if (grade >= 80) {
16            int rem = grade % 5;
17            if (rem >= 3) grade += 5 - rem;
18        }
19        cout << grade << endl;
20    }
21    return 0;
22 }
```

The input/output window shows the following interaction:

```
Enter the value of n: 4
Enter grade of student: 89
89
Enter grade of student: 69
70
Enter grade of student: 25
25
Enter grade of student: 86
86
```

The right sidebar shows the Call Stack, Local Variables, Registers, Display Expressions, and Breakpoints and Watchpoints sections.

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

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main.cpp

```
1: /*===== Online C++ Compiler.
2: Code, Compile, Run and Debug C++ program online.
3: Write your code in this editor and press "Run" button to compile and execute it.
4: =====*/
5: #include<iostream>
6: #include<string>
7: using namespace std;
8: int main(){
9:     string s;
10:    cin >> s;
11:    int t=0;
12:    for (int i=0;i<s.length();i++)
13:        if (isupper(s[i]))
14:            t++;
15:    cout<<t<<endl;
16:    return 0;
17: }
```

input

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