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## LAB MANUAL : 1

### Lab Task:

1. Write a C++ code that displays your name, department and degree on the console. Make sure the three Things are in three different lines.

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout << "Name: Hamdan Hafeez Malik"
           << endl;
6      cout << "Department:SMME" << endl;
7      cout << "Degree:Bs Mechanical
           Engineering" << endl;
8      return 0;
9  }
```

Output:

```
/tmp/qkWgamc6eU.o
```

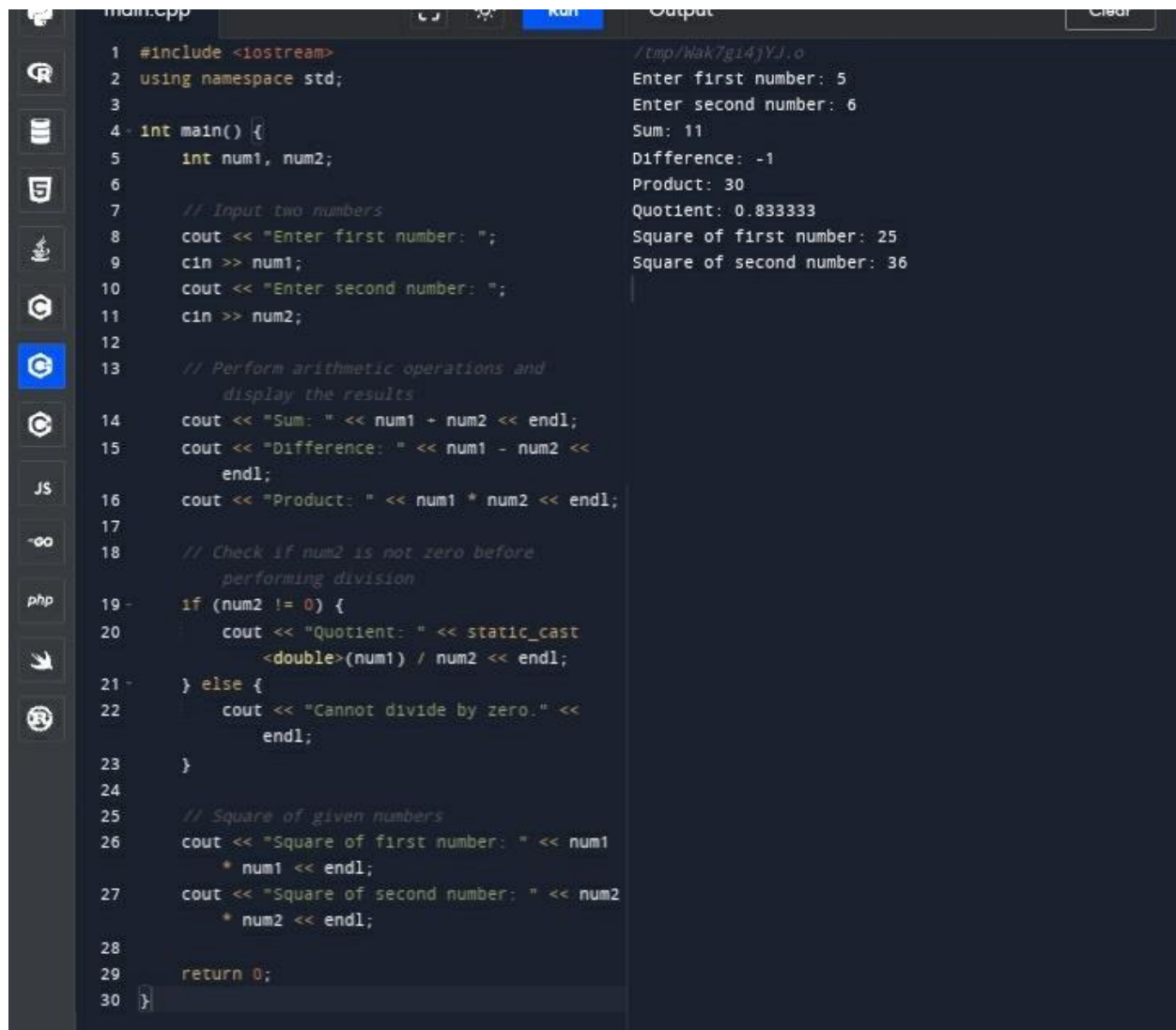
```
Name: Hamdan Hafeez Malik
```

```
Department: SMME
```

```
Degree: Bs Mechanical Engineering
```

```
|
```

Q2



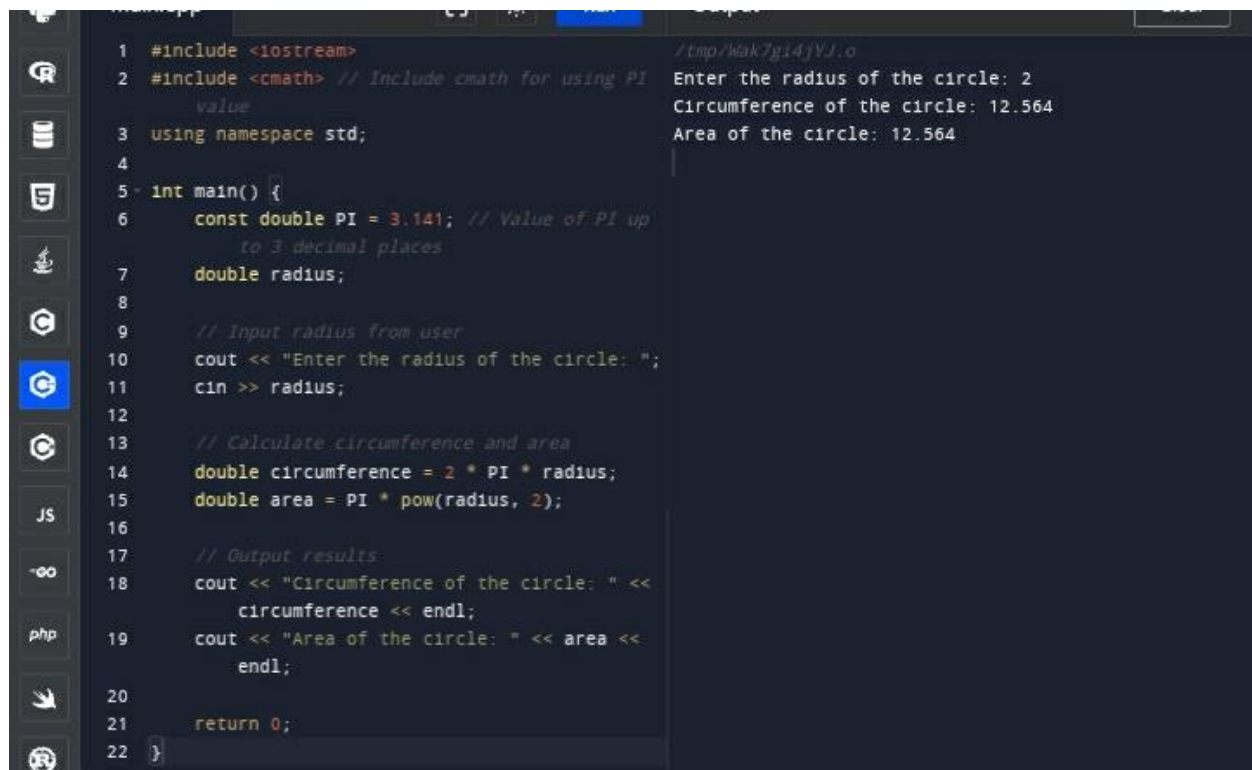
The image shows a screenshot of a C++ IDE with a dark theme. The editor window displays a C++ program named 'main.cpp'. The program prompts the user to enter two numbers, 5 and 6, and then displays the results of various arithmetic operations. The output window on the right shows the program's execution, including the input and the calculated values for sum, difference, product, quotient, and squares. The code includes comments for each section of the program.

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int num1, num2;
6
7     // Input two numbers
8     cout << "Enter first number: ";
9     cin >> num1;
10    cout << "Enter second number: ";
11    cin >> num2;
12
13    // Perform arithmetic operations and
14    // display the results
15    cout << "Sum: " << num1 + num2 << endl;
16    cout << "Difference: " << num1 - num2 <<
17    endl;
18    cout << "Product: " << num1 * num2 << endl;
19
20    // Check if num2 is not zero before
21    // performing division
22    if (num2 != 0) {
23        cout << "Quotient: " << static_cast
24        <double>(num1) / num2 << endl;
25    } else {
26        cout << "Cannot divide by zero." <<
27        endl;
28    }
29
30    // Square of given numbers
31    cout << "Square of first number: " << num1
32    * num1 << endl;
33    cout << "Square of second number: " << num2
34    * num2 << endl;
35
36    return 0;
37 }
```

Output:

```
/tmp/Wak7g14jYJ.o
Enter first number: 5
Enter second number: 6
Sum: 11
Difference: -1
Product: 30
Quotient: 0.833333
Square of first number: 25
Square of second number: 36
```

Q3



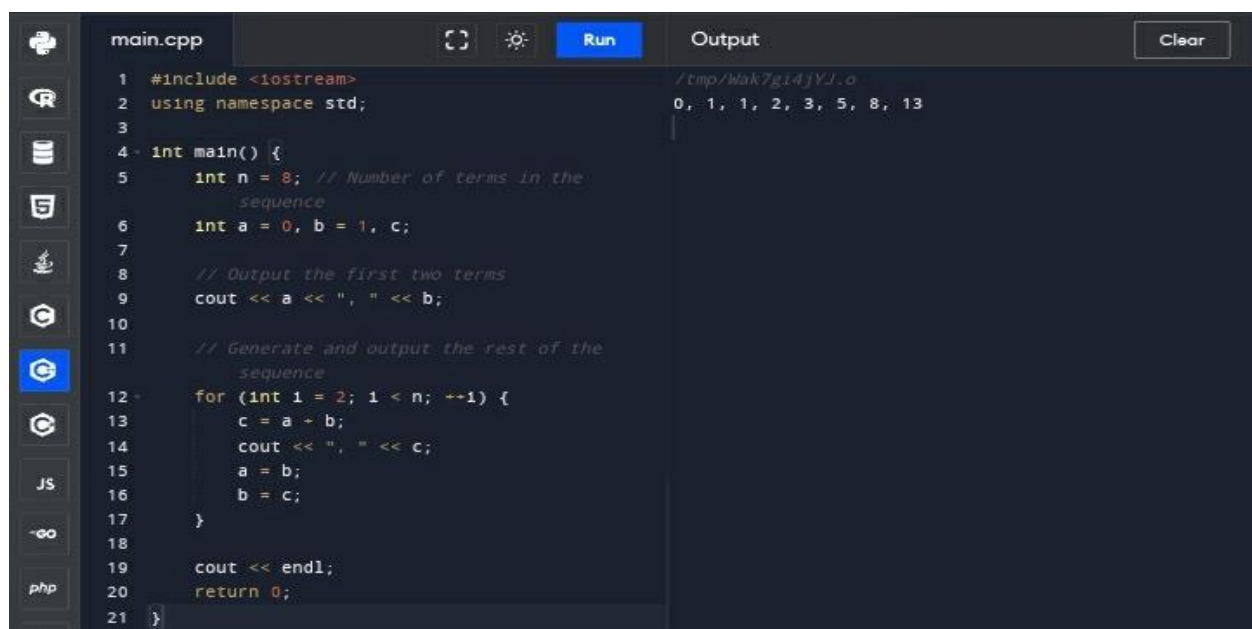
The screenshot shows a C++ IDE with a file named 'main.cpp'. The code defines a constant PI as 3.141 and a variable radius. It prompts the user to enter the radius, which is 2. Then it calculates the circumference as 12.564 and the area as 12.564. The output window shows the same values.

```
1 #include <iostream> //tmp/wak7gi4jYJ.o
2 #include <cmath> // Include cmath for using PI value
3 using namespace std;
4
5 int main() {
6     const double PI = 3.141; // Value of PI up to 3 decimal places
7     double radius;
8
9     // Input radius from user
10    cout << "Enter the radius of the circle: ";
11    cin >> radius;
12
13    // Calculate circumference and area
14    double circumference = 2 * PI * radius;
15    double area = PI * pow(radius, 2);
16
17    // Output results
18    cout << "Circumference of the circle: " << circumference << endl;
19    cout << "Area of the circle: " << area << endl;
20
21    return 0;
22 }
```

Output:

```
Enter the radius of the circle: 2
Circumference of the circle: 12.564
Area of the circle: 12.564
```

Q4



The screenshot shows a C++ IDE with a file named 'main.cpp'. The code defines a variable n as 8, and variables a, b, and c. It prompts the user to enter the first two terms of the sequence, which are 0 and 1. Then it generates the rest of the sequence (1, 1, 2, 3, 5, 8, 13) and outputs them. The output window shows the same sequence.

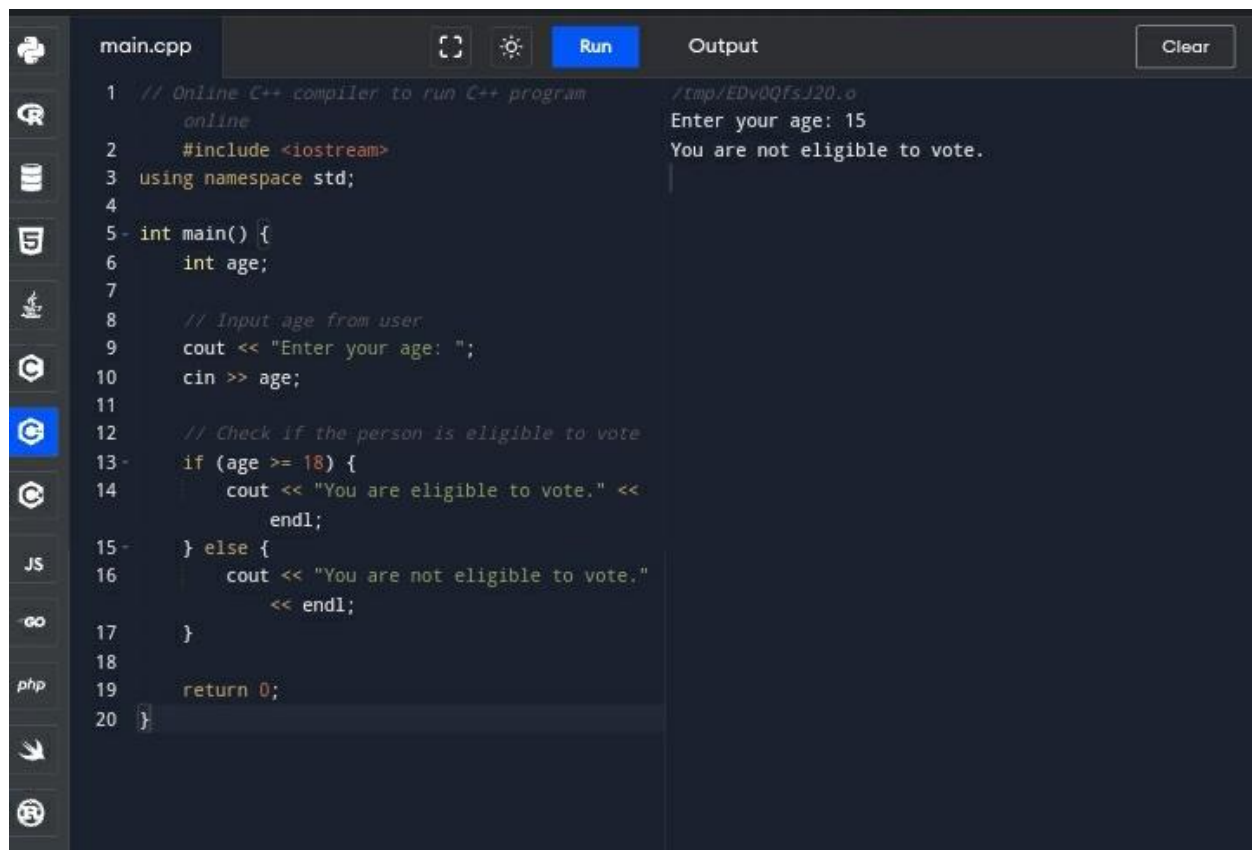
```
1 #include <iostream> //tmp/wak7gi4jYJ.o
2 using namespace std;
3
4 int main() {
5     int n = 8; // Number of terms in the sequence
6     int a = 0, b = 1, c;
7
8     // Output the first two terms
9     cout << a << ", " << b;
10
11    // Generate and output the rest of the sequence
12    for (int i = 2; i < n; ++i) {
13        c = a + b;
14        cout << ", " << c;
15        a = b;
16        b = c;
17    }
18
19    cout << endl;
20    return 0;
21 }
```

Output:

```
0, 1, 1, 2, 3, 5, 8, 13
```

## Lab 2 lab task

Q1



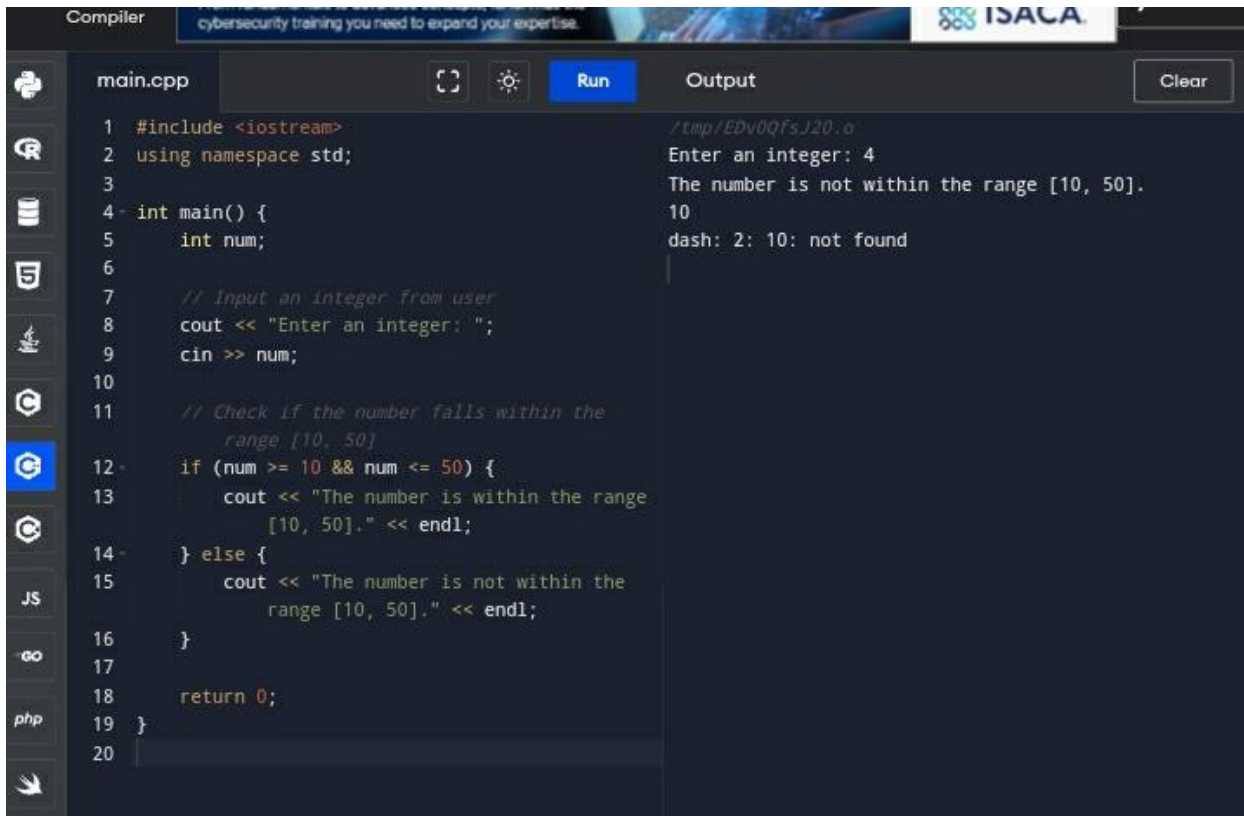
The screenshot shows an online C++ compiler interface. On the left is a sidebar with icons for various programming languages: C++, JavaScript (JS), Go, PHP, and others. The main area is divided into two sections. The top section, titled 'main.cpp', contains the source code of a C++ program. The bottom section, titled 'Output', shows the program's execution results. The program prompts the user to enter their age, and the user has entered '15'. Since 15 is less than 18, the program outputs 'You are not eligible to vote.'

```
1 // Online C++ compiler to run C++ program online
2 #include <iostream>
3 using namespace std;
4
5 int main() {
6     int age;
7
8     // Input age from user
9     cout << "Enter your age: ";
10    cin >> age;
11
12    // Check if the person is eligible to vote
13    if (age >= 18) {
14        cout << "You are eligible to vote." << endl;
15    } else {
16        cout << "You are not eligible to vote." << endl;
17    }
18
19    return 0;
20 }
```

Output:

```
/tmp/EDv0QfsJ20.o
Enter your age: 15
You are not eligible to vote.
```

Q2



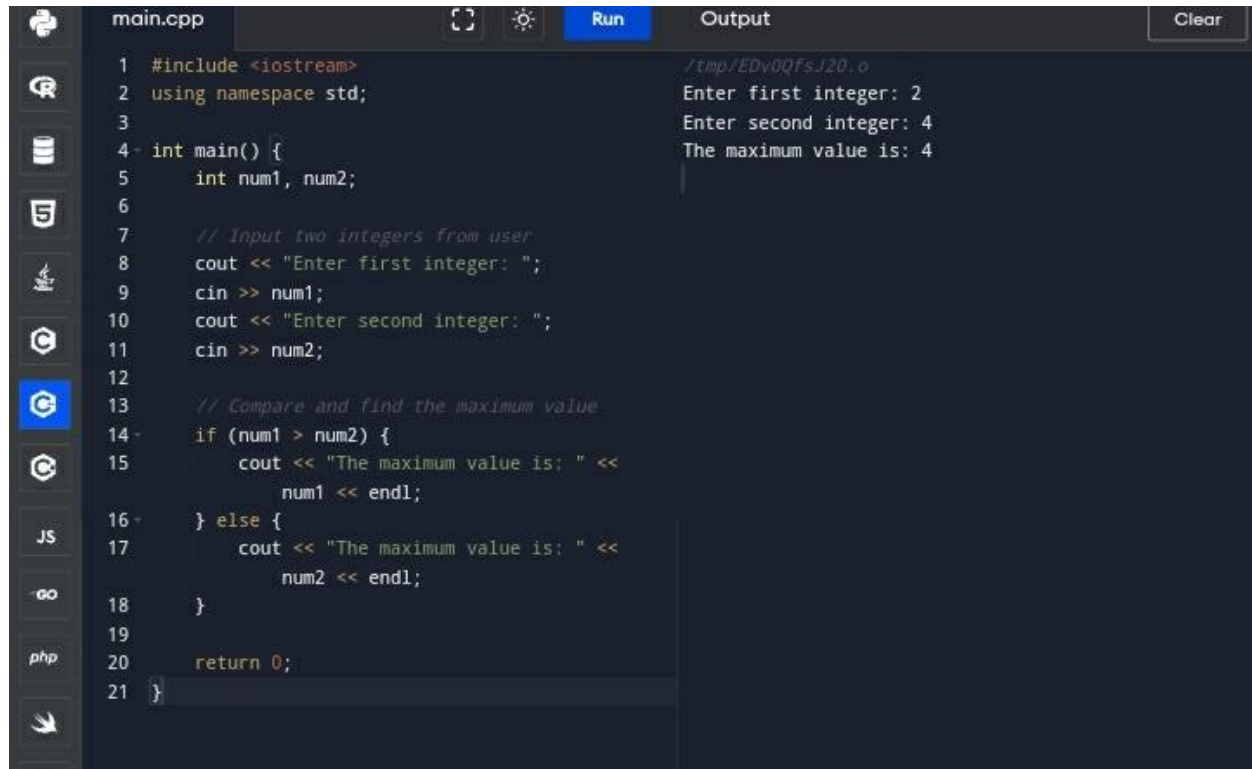
The screenshot shows a C++ compiler interface with a dark theme. The left sidebar contains icons for various programming languages: C++, Python, JavaScript, PHP, and others. The main editor displays a C++ program named `main.cpp`. The program prompts the user to enter an integer and checks if it falls within the range [10, 50]. The output window on the right shows the execution results.

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int num;
6
7     // Input an integer from user
8     cout << "Enter an integer: ";
9     cin >> num;
10
11    // Check if the number falls within the
12    // range [10, 50]
13    if (num >= 10 && num <= 50) {
14        cout << "The number is within the range
15        [10, 50]." << endl;
16    } else {
17        cout << "The number is not within the
18        range [10, 50]." << endl;
19    }
20    return 0;
21 }
```

Output:

```
/tmp/EDv0QfsJ20.o
Enter an integer: 4
The number is not within the range [10, 50].
10
dash: 2: 10: not found
```

Q3
















The image shows a code editor window with a dark theme. On the left is a sidebar with icons for various programming languages: Python, R, Java, JavaScript, C++, C, Go, PHP, and a generic icon. The main editor area is titled 'main.cpp' and contains C++ code. The code defines a function 'main' that takes two integers as input, compares them, and prints the maximum. The output window on the right shows the execution results for the input values 2 and 4.

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int num1, num2;
6
7     // Input two integers from user
8     cout << "Enter first integer: ";
9     cin >> num1;
10    cout << "Enter second integer: ";
11    cin >> num2;
12
13    // Compare and find the maximum value
14    if (num1 > num2) {
15        cout << "The maximum value is: " <<
            num1 << endl;
16    } else {
17        cout << "The maximum value is: " <<
            num2 << endl;
18    }
19
20    return 0;
21 }
```



Output:

```
/tmp/EDv0QfsJ20.o
Enter first integer: 2
Enter second integer: 4
The maximum value is: 4
```

Q4



main.cpp



Run

Output

Clear

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     double score1, score2, score3;
6     double average;
7
8     // Input exam scores from user
9     cout << "Enter score for exam 1: ";
10    cin >> score1;
11    cout << "Enter score for exam 2: ";
12    cin >> score2;
13    cout << "Enter score for exam 3: ";
14    cin >> score3;
15
16    // Calculate average of exam scores
17    average = (score1 + score2 + score3) / 3;
18
19    // Check if average is above passing grade (60)
20    if (average >= 60) {
21        cout << "Average score: " << average << endl;
22        cout << "Congratulations! You passed." << endl;
23    } else {
24        cout << "Average score: " << average << endl;
25        cout << "Sorry, you did not pass." << endl;
26    }
27
28    return 0;
29 }
```

/tmp/b0pDVkJ1Pq.o

Enter score for exam 1: 10

Enter score for exam 2: 20

Enter score for exam 3: 30

Average score: 20

Sorry, you did not pass.