

ASSIGNMENT – 1

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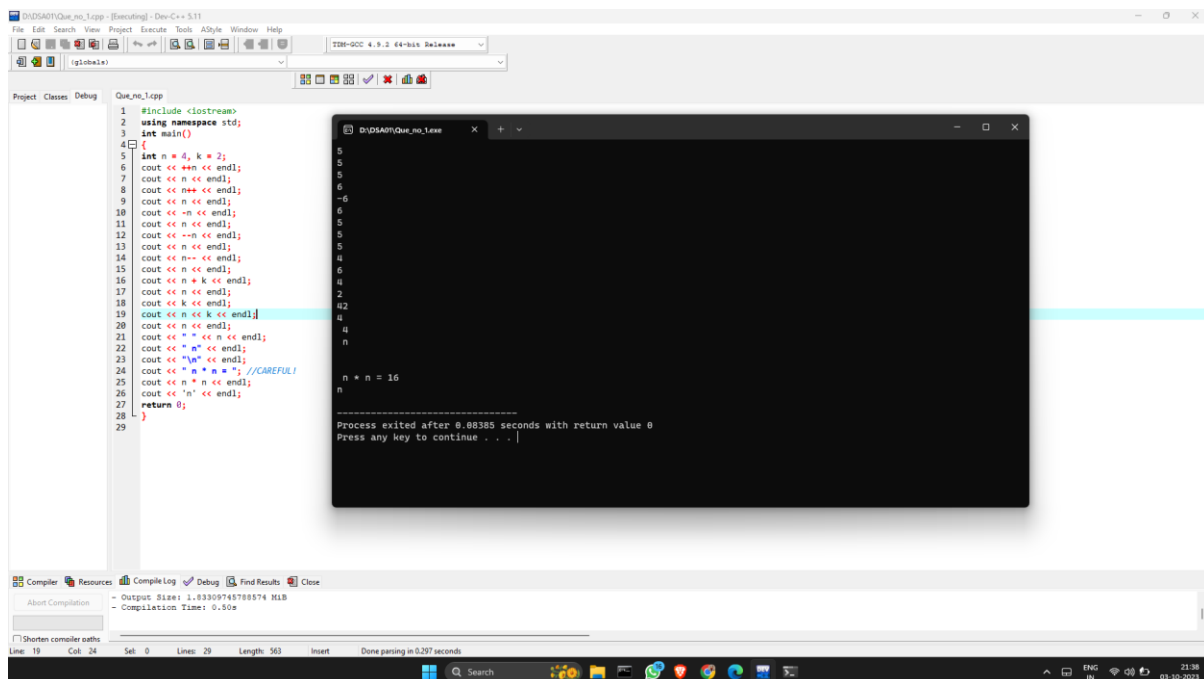
192110434

DSA0159

1. What is the exact output of the program below?

ANS:

OUTPUT



The screenshot shows a C++ IDE with the following source code in `Que_no_1.cpp`:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n = 4, k = 2;
6     cout << ++n << endl;
7     cout << n << endl;
8     cout << ++n << endl;
9     cout << n << endl;
10    cout << --n << endl;
11    cout << n << endl;
12    cout << --n << endl;
13    cout << n << endl;
14    cout << n-- << endl;
15    cout << n << endl;
16    cout << n + k << endl;
17    cout << n << endl;
18    cout << k << endl;
19    cout << n << k << endl;
20    cout << n << endl;
21    cout << " * " << n << endl;
22    cout << " * " << endl;
23    cout << "\n" << endl;
24    cout << " * * * " << endl; //CAREFUL!
25    cout << n * n << endl;
26    cout << 'n' << endl;
27    return 0;
28 }
```

The output window displays the following results:

```
5
5
5
6
-6
5
5
5
4
4
2
42
4
n
n * n = 16
n
Process exited after 0.00385 seconds with return value 0
Press any key to continue . . .
```

The IDE interface includes a menu bar (File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help), a toolbar, a compiler selection dropdown (GCC 4.9.2 64-bit Release), and a status bar at the bottom showing the current line (19) and column (24).

ANS: OUTPUT

terminalHelp

DSA01

Que_no_2.cpp x

Que_no_2.cpp > ...

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n = 3;
6     while (n >= 0)
7     {
8         cout << n * n << endl;
9         --n;
10    }
11    cout << n << endl;
12    while (n < 4)
13    {
14        cout << ++n << endl;
15        cout << n << endl;
16        while (n >= 0)
17        {
18            cout << (n / 2) << endl;
19            return 0;
20        }
21    }
22 }
```

PROBLEMS2

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

SEARCH TERMINAL OUTPUT

[New Thread 16188.0x3fd4]

[New Thread 16188.0x29b4]

Loaded 'C:\WINDOWS\System64\kernel32.dll'. Symbols loaded.

Loaded 'C:\WINDOWS\System64\KernelBase.dll'. Symbols loaded.

Loaded 'C:\WINDOWS\System64\msvcrt.dll'. Symbols loaded.

Loaded 'C:\MinGW\bin\libgcc_s_dw2-1.dll'. Symbols loaded.

Loaded 'C:\MinGW\bin\libstdc++-6.dll'. Symbols loaded.

9

4

1

2 0

1

2

3

2 4

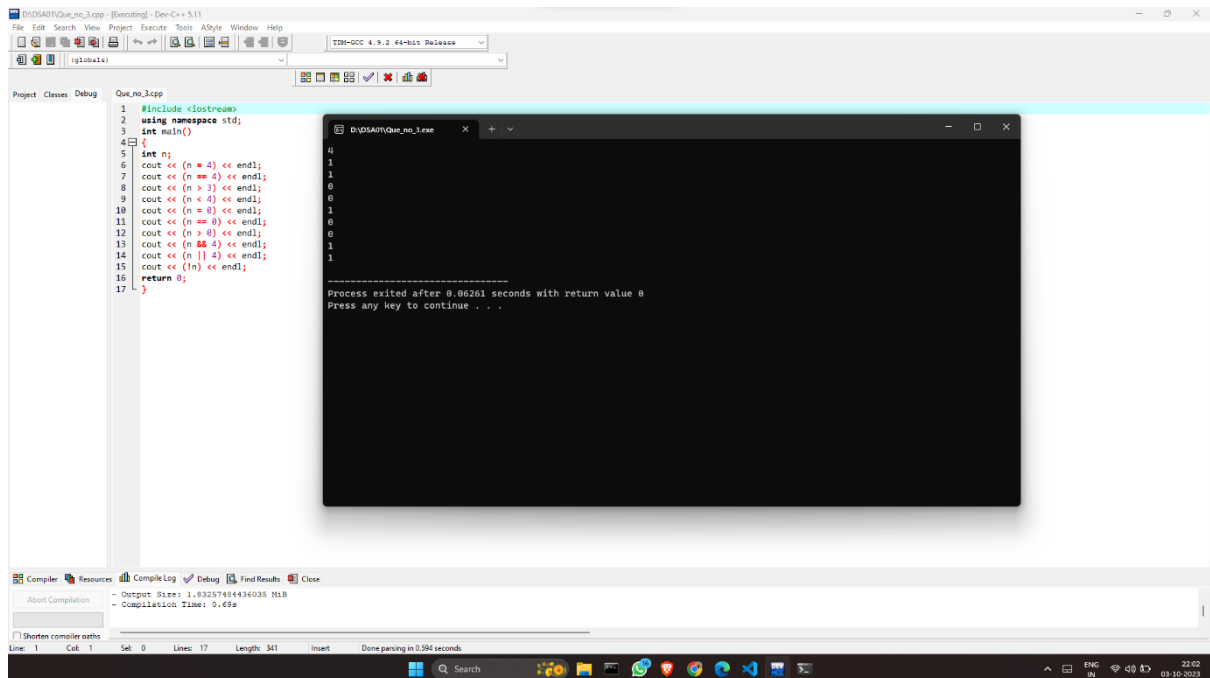
2

1

119976 0

3. What is the output of the program below?

ANS: OUTPUT



The screenshot shows a C++ program named 'Que_no_3.cpp' being executed in Dev-C++. The program uses a series of conditional statements to print the value of 'n' based on its parity and magnitude. The output window displays the following sequence of values: 4, 1, 1, 0, 0, 1, 0, 0, 1, 0, 1, 1. The program exits after 0.86261 seconds with a return value of 0.

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     cout << (n = 4) << endl;
7     cout << (n == 4) << endl;
8     cout << (n > 3) << endl;
9     cout << (n < 4) << endl;
10    cout << (n == 0) << endl;
11    cout << (n == 0) << endl;
12    cout << (n > 0) << endl;
13    cout << (n <= 0) << endl;
14    cout << (n || 4) << endl;
15    cout << (!n) << endl;
16    return 0;
17 }
```

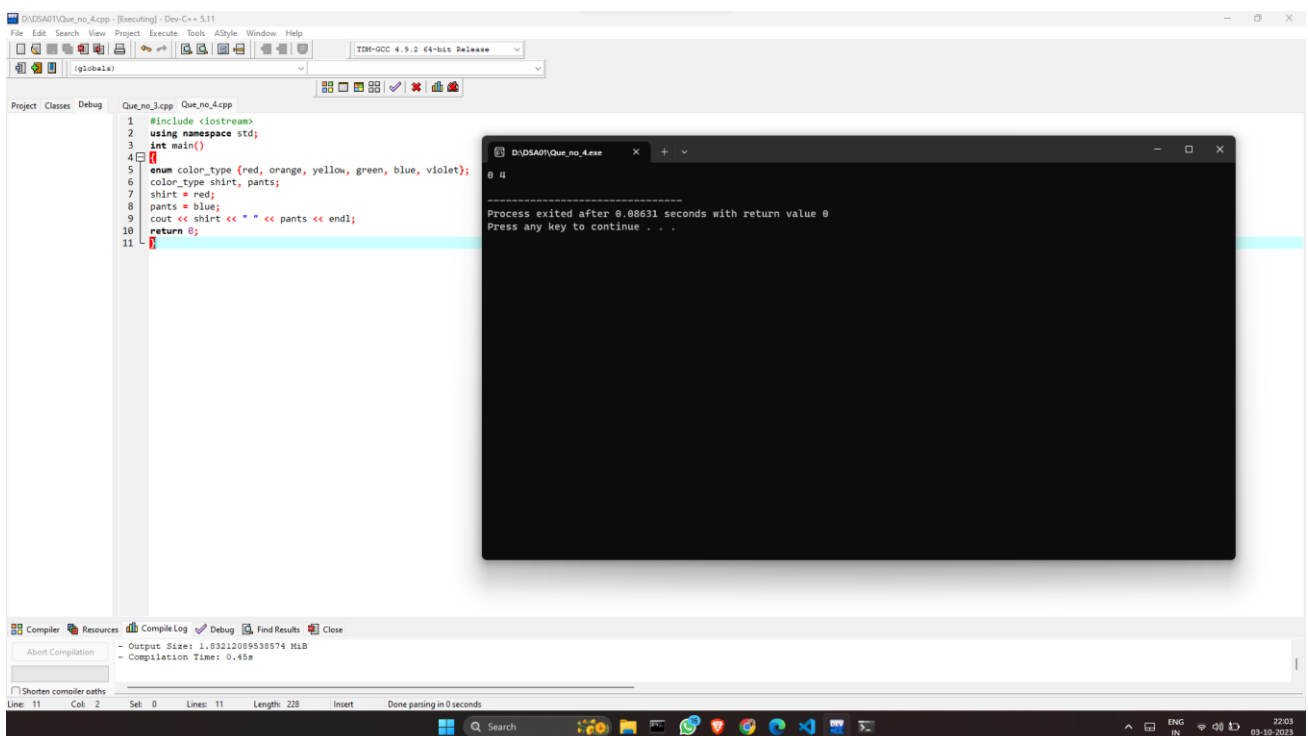
Output:

```
4
1
1
0
0
1
0
0
1
0
1
1

Process exited after 0.86261 seconds with return value 0
Press any key to continue . . .
```

4. What is the output of the following program?

ANS : OUTPUT



The screenshot shows a C++ program named 'Que_no_4.cpp' being executed in Dev-C++. The program defines an enum 'color_type' with values red, orange, yellow, green, blue, and violet. It then declares variables 'shirt' and 'pants' of type 'color_type' and assigns them the values 'red' and 'blue' respectively. The program prints the value of 'shirt' followed by ' == ' and the value of 'pants'. The output window displays '0 4'. The program exits after 0.08631 seconds with a return value of 0.

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     enum color_type {red, orange, yellow, green, blue, violet};
6     color_type shirt, pants;
7     shirt = red;
8     pants = blue;
9     cout << shirt << " == " << pants << endl;
10    return 0;
11 }
```

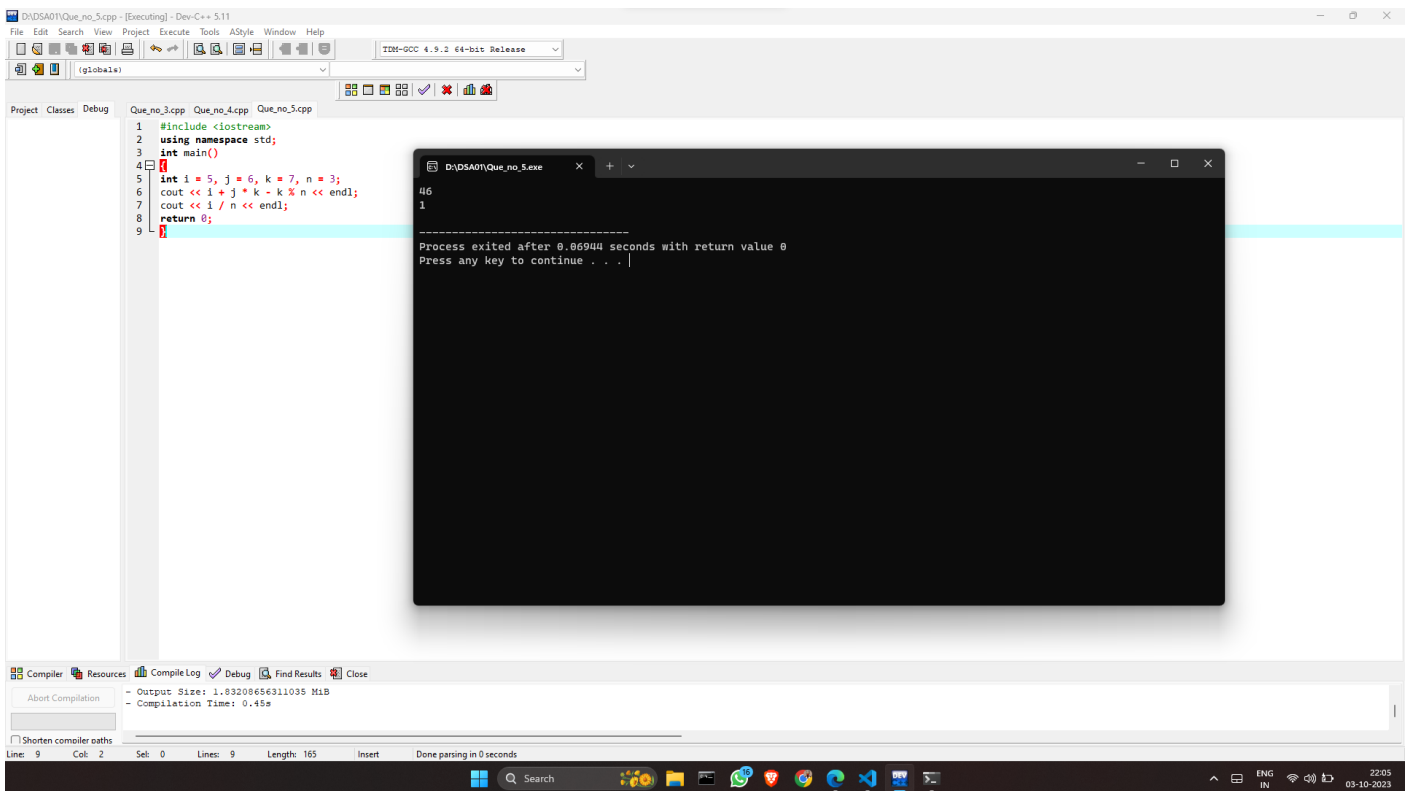
Output:

```
0 4

Process exited after 0.08631 seconds with return value 0
Press any key to continue . . .
```

5. What is the output when the following code fragment is executed?

ANS: OUTPUT



The screenshot shows a C++ IDE with a project named 'D:\DSA01\Que_no_5.cpp'. The code in 'Que_no_5.cpp' is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i = 5, j = 6, k = 7, n = 3;
6     cout << i + j * k - k * n << endl;
7     cout << i / n << endl;
8     return 0;
9 }
```

The output window shows the following output:

```
46
1

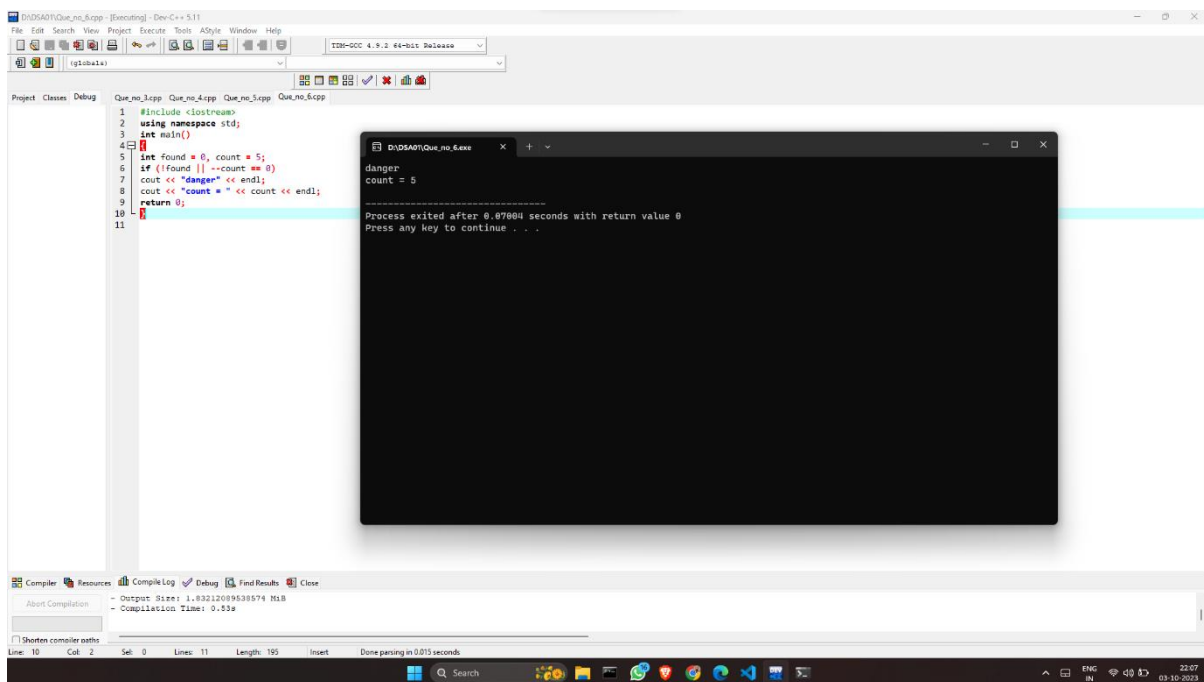
Process exited after 0.06904 seconds with return value 0
Press any key to continue . . .
```

The compiler output at the bottom shows:

```
- Output Size: 1.8320865311035 MiB
- Compilation Time: 0.45s
```

6. What is the output when the following code fragment is executed?

ANS: OUTPUT



The screenshot shows a C++ IDE with a project named 'D:\DSA01\Que_no_6.cpp'. The code in 'Que_no_6.cpp' is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int found = 0, count = 5;
6     if (!found || --count == 0)
7     {
8         cout << "danger" << endl;
9         cout << "count = " << count << endl;
10    }
11    return 0;
12 }
```

The output window shows the following output:

```
danger
count = 5

Process exited after 0.07004 seconds with return value 0
Press any key to continue . . .
```

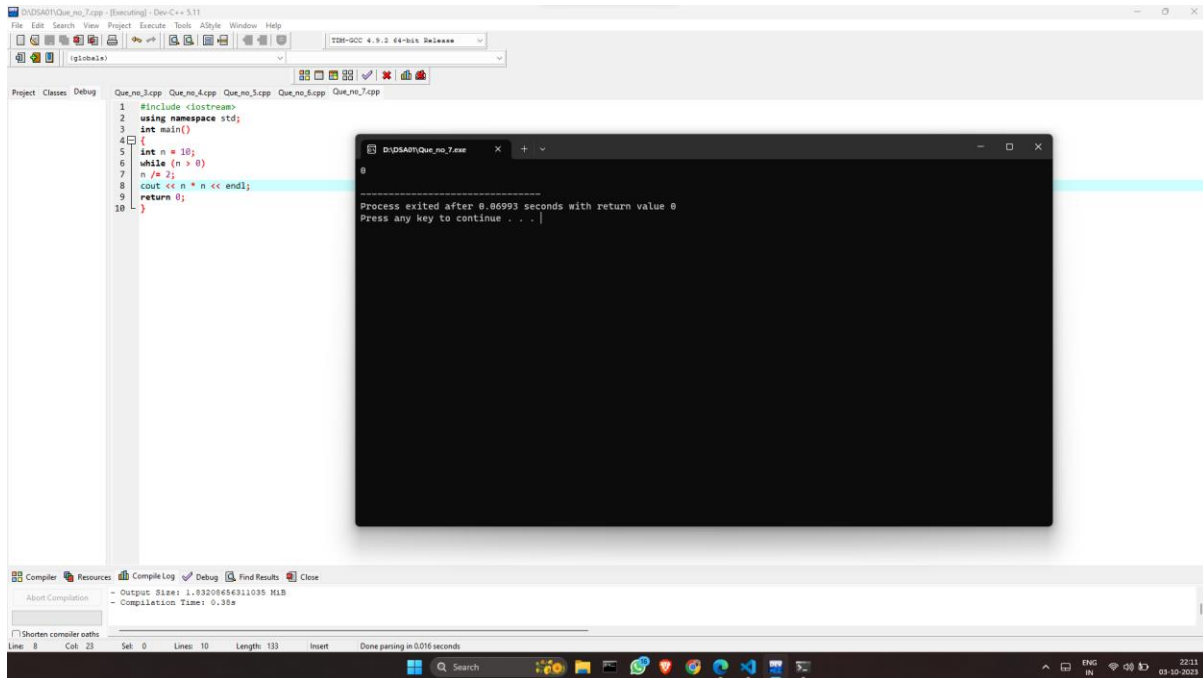
The compiler output at the bottom shows:

```
- Output Size: 1.83212099530574 MiB
- Compilation Time: 0.55s
```

7. The loop shown below has been written by an inexperienced C++ programmer. The behavior of the loop is not correctly represented by the formatting.

a. What is the output of the loop as it is written?

ANS:



The screenshot shows a C++ IDE with a file named `Queue_no_7.cpp`. The code is as follows:

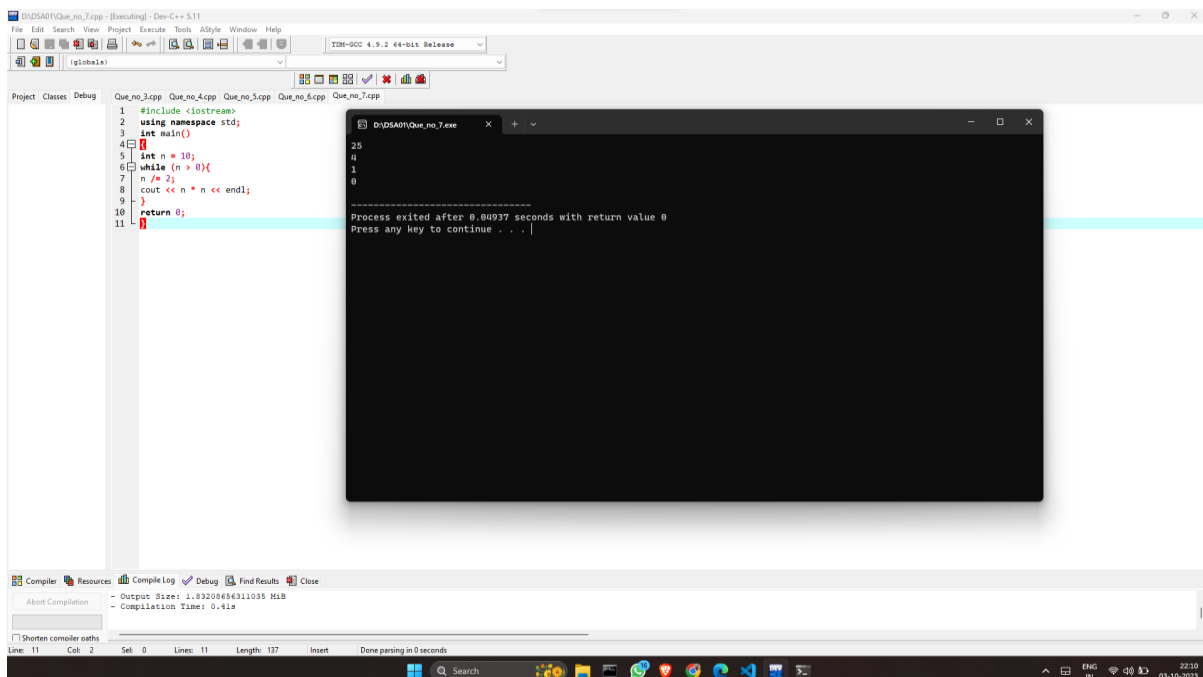
```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n = 10;
6     while (n > 0)
7     {
8         n /= 2;
9         cout << n * n << endl;
10    }
11    return 0;
12 }
```

The output window shows the following text:

```
Process exited after 0.06993 seconds with return value 0
Press any key to continue . . .
```

b. Correct the syntax of the loop so that the logic of the corrected loop corresponds to the formatting of the original loop. What is the output of the corrected loop?

ANS:



The screenshot shows the same C++ IDE with the code corrected to match the formatting of the original loop. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n = 10;
6     while (n > 0){
7         n /= 2;
8         cout << n * n << endl;
9     }
10    return 0;
11 }
```

The output window shows the following text:

```
25
4
1
0
Process exited after 0.00937 seconds with return value 0
Press any key to continue . . .
```

c. Correct the formatting of the (original) loop so that the new format reflects the logical behavior of the original loop.

```

1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n = 10;
6     while (n > 0){
7         n /= 2;
8         cout << n * n << endl;
9     }
10    return 0;
11 }

```

```

25
4
1
0
-----
Process exited after 0.00937 seconds with return value 0
Press any key to continue . . .

```

8. Remove all the unnecessary tests from the nested conditional statement below

ANS: OUTPUT

```

1 #include <iostream>
2 using namespace std;
3 int main() {
4     float income;
5     cout << "Enter your monthly income: ";
6     cin >> income;
7     if (income < 0.0)
8         cout << "You are going farther into debt every month." << endl;
9     else if (income < 1200.00)
10        cout << "You are living below the poverty line." << endl;
11    else if (income < 2500.00)
12        cout << "You are living in moderate comfort." << endl;
13    else
14        cout << "You are well off." << endl;
15    return 0;
16 }
17 }

```

```

Enter your monthly income: 1000
You are living below the poverty line.
-----
Process exited after 5.167 seconds with return value 0
Press any key to continue . . .

```

9. Answer the questions below concerning the following fragment of code.

a. What will be the output of the fragment above if the interactive user enters the integer value 0 ?

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     cout << "Enter an integer: ";
7     cin >> n;
8     if (n < 10)
9         cout << "less than 10" << endl;
10    else if (n > 5)
11        cout << "greater than 5" << endl;
12    else
13        cout << "not interesting" << endl;
14    return 0;
}
```

```
Enter an integer: 0
less than 10

Process exited after 5.745 seconds with return value 0
Press any key to continue . . .
```

b. What will be the output of the fragment above if the interactive user enters the integer value 15 ?

ANS:

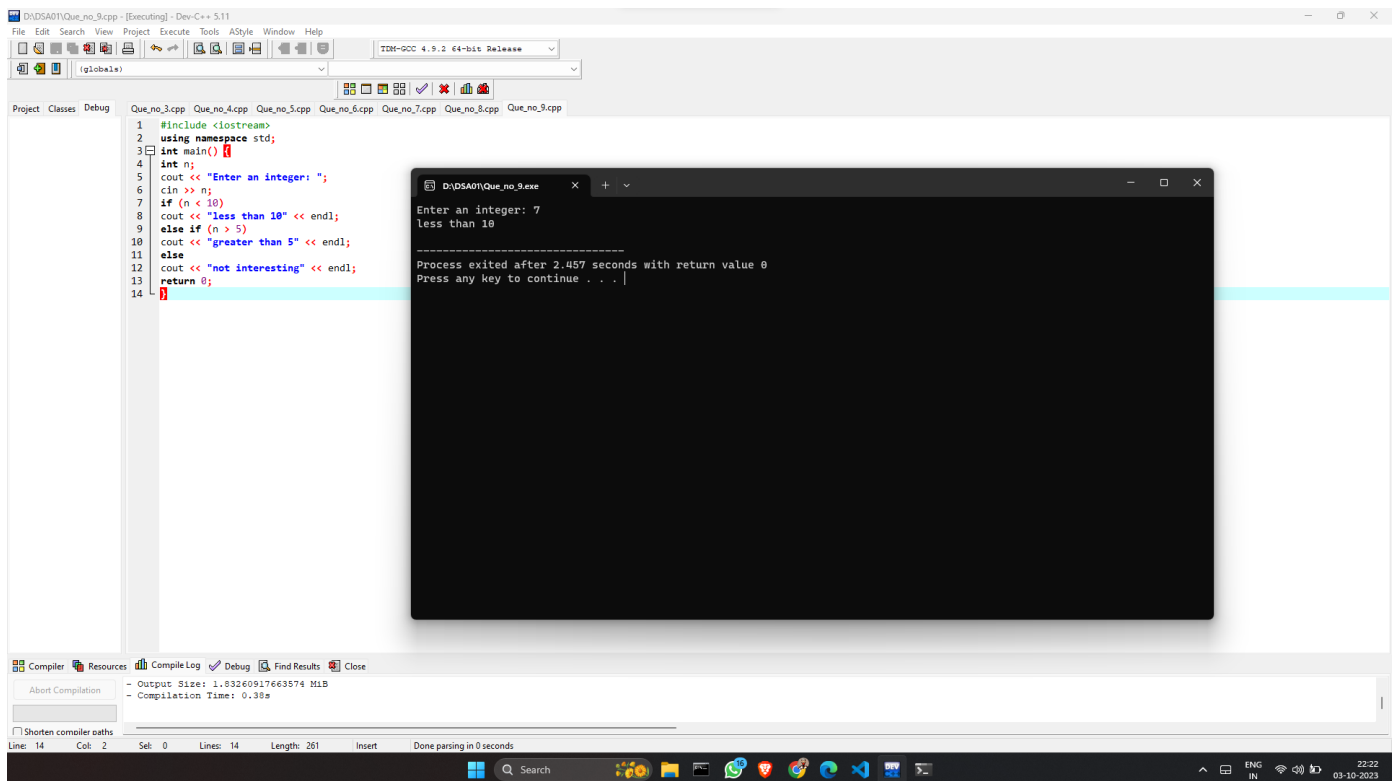
```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     cout << "Enter an integer: ";
7     cin >> n;
8     if (n < 10)
9         cout << "less than 10" << endl;
10    else if (n > 5)
11        cout << "greater than 5" << endl;
12    else
13        cout << "not interesting" << endl;
14    return 0;
}
```

```
Enter an integer: 15
greater than 5

Process exited after 3.666 seconds with return value 0
Press any key to continue . . .
```

c. What will be the output of the fragment above if the interactive user enters the integer value 7 ?

ANS:



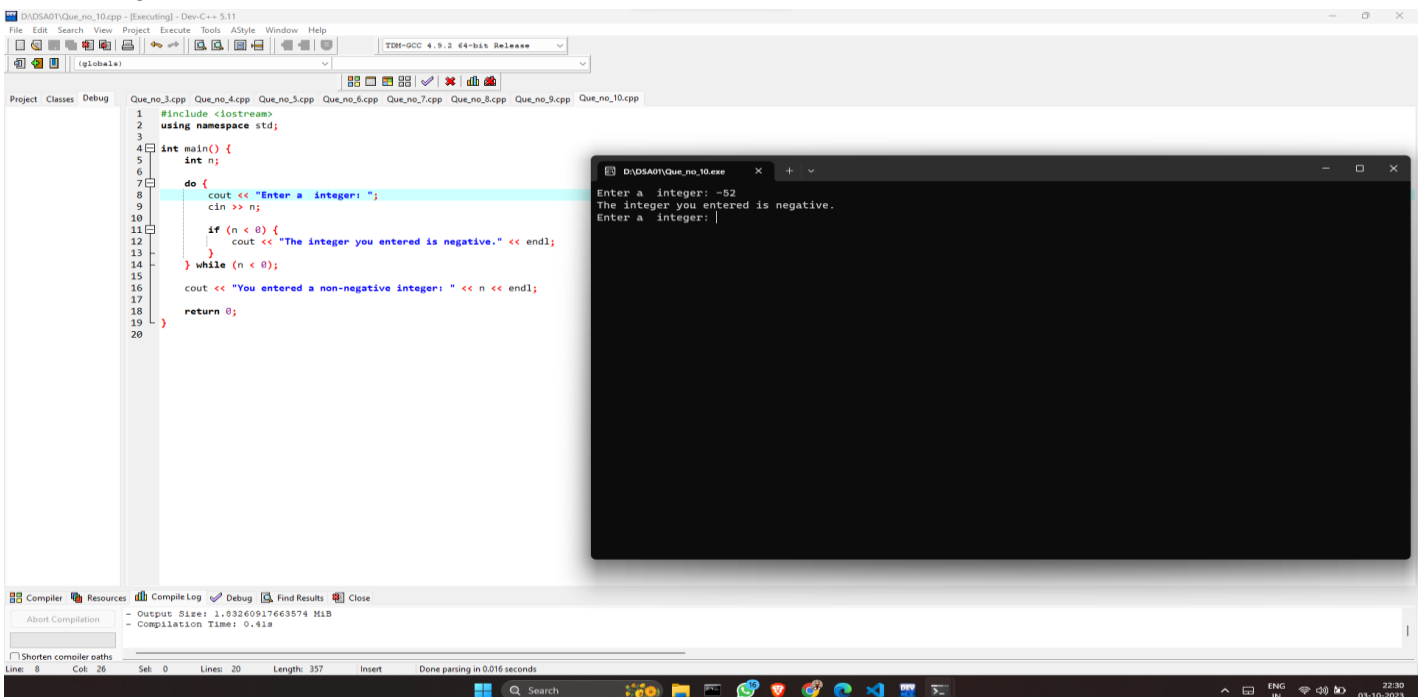
```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     cout << "Enter an integer: ";
7     cin >> n;
8     if (n < 10)
9         cout << "less than 10" << endl;
10    else if (n > 5)
11        cout << "greater than 5" << endl;
12    else
13        cout << "not interesting" << endl;
14    return 0;
15 }
```

```
Enter an integer: 7
less than 10

Process exited after 2.457 seconds with return value 0
Press any key to continue . . .
```

10. Rewrite the following code fragment so that it uses a "do...while..." loop to accomplish the same task.

ANS:



```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     do {
7         cout << "Enter a integer: ";
8         cin >> n;
9         if (n < 0) {
10             cout << "The integer you entered is negative." << endl;
11             while (n < 0);
12         }
13         cout << "You entered a non-negative integer: " << n << endl;
14     } while (n < 0);
15     return 0;
16 }
```

```
Enter a integer: -52
The integer you entered is negative.
Enter a integer: 
```