

Assignment:1

Course instructor: Dr Talha shahid

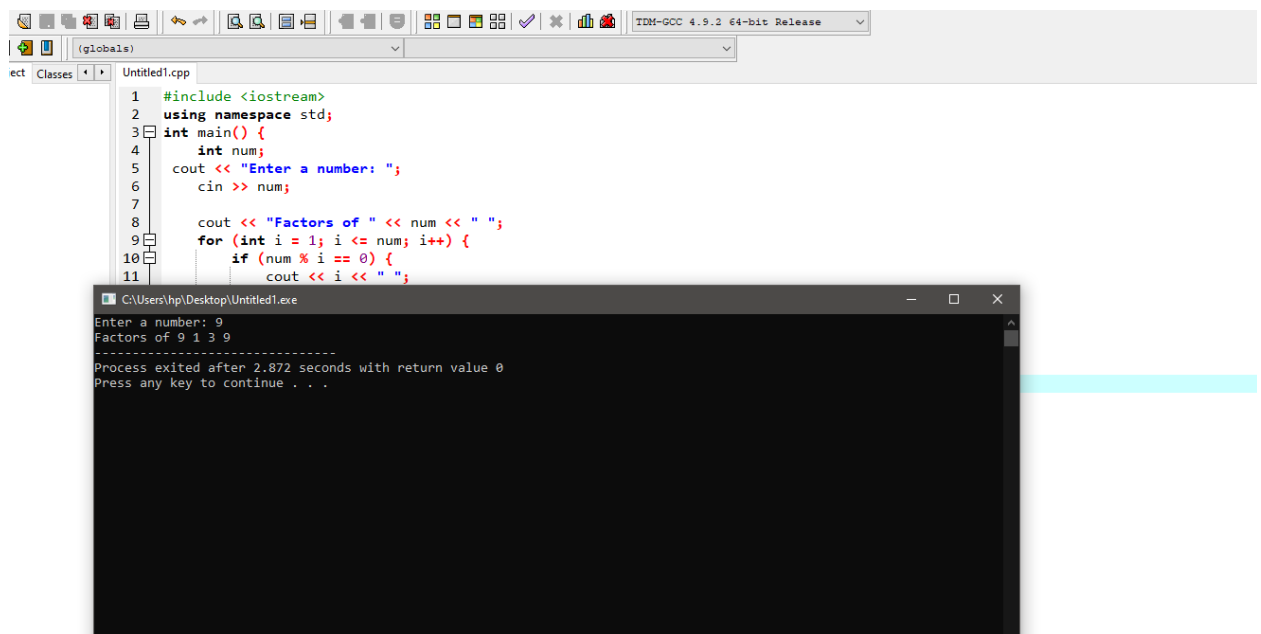
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Question:1

program to display factors of a number using for loops



The screenshot shows a C++ IDE with a file named 'Untitled1.cpp'. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int num;
5     cout << "Enter a number: ";
6     cin >> num;
7
8     cout << "Factors of " << num << " ";
9     for (int i = 1; i <= num; i++) {
10         if (num % i == 0) {
11             cout << i << " ";
12         }
13     }
14 }
```

Below the code editor, a terminal window titled 'C:\Users\hpl\Desktop\Untitled1.exe' shows the program's execution. It prompts 'Enter a number: 9', displays 'Factors of 9 1 3 9', and then shows 'Process exited after 2.872 seconds with return value 0' and 'Press any key to continue . . .'. A light blue horizontal bar is visible on the right side of the terminal window.

Question:2

Write output.

```
#include <iostream>
int main()
```

```
{ int x = 5;
```

```
int y = 10;
```

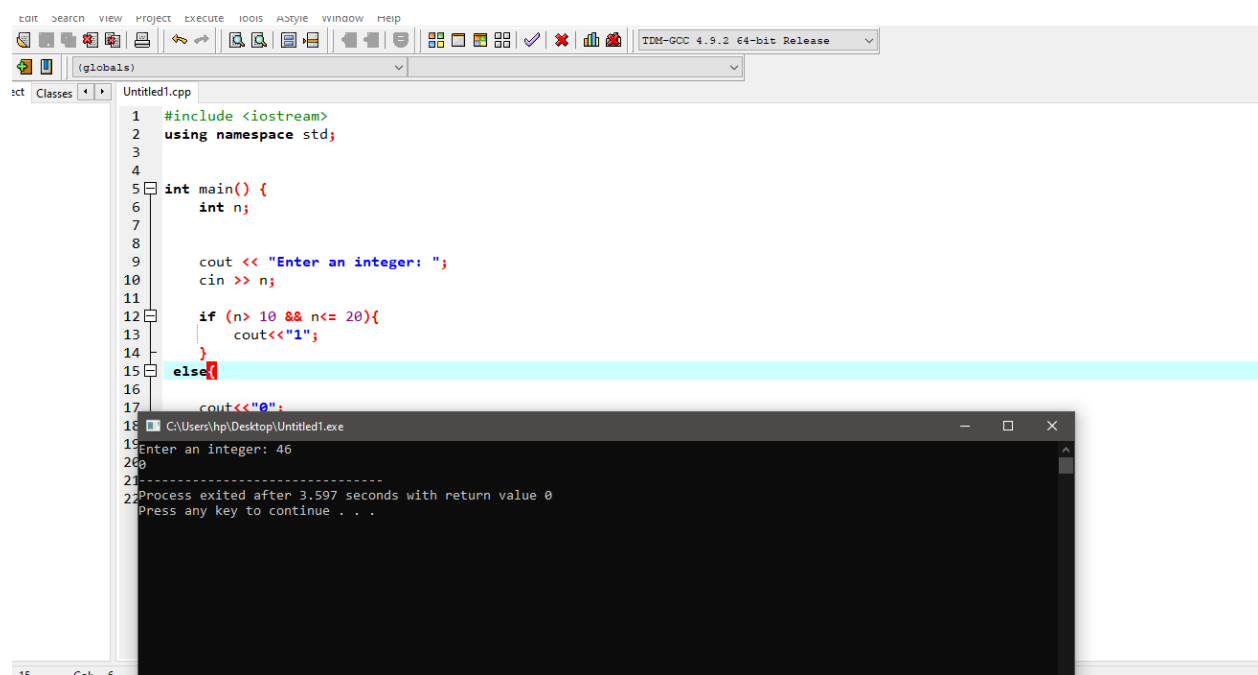
```
if (x == 5) if (y == 10)
```

```
std::cout << "x is 5 and y is 10" << std::endl; else std::cout << "x is not 5" << std::endl;
```

```
return 0;
```

output will be..(x is 5 and y is 10)

Question:3 Write a C++ program, take an integer value from user and check if it's greater than 10 and less than equal to 20. Print 1 if yes and print 0 if no. Use appropriate datatype for output.



```
1 #include <iostream>
2 using namespace std;
3
4
5 int main() {
6     int n;
7
8     cout << "Enter an integer: ";
9     cin >> n;
10
11     if (n > 10 && n <= 20){
12         cout << "1";
13     }
14     else{
15         cout << "0";
16     }
17
18     return 0;
19 }
```

C:\Users\hp\Desktop\Untitled1.exe

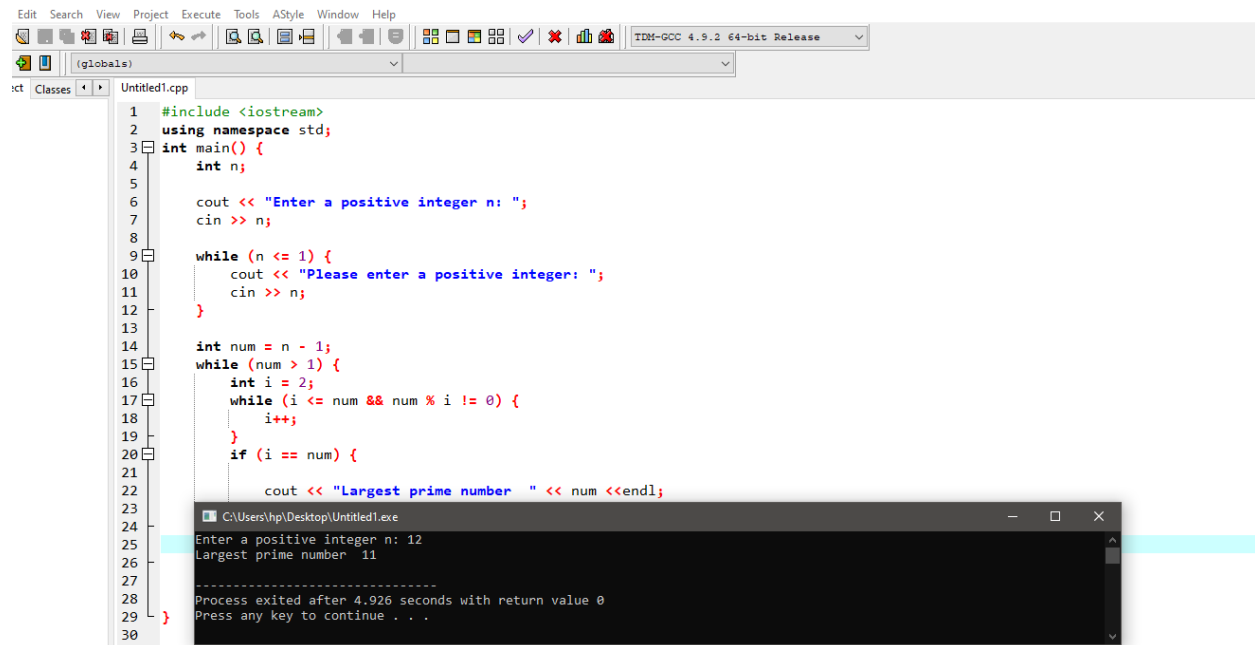
Enter an integer: 46

0

Process exited after 3.597 seconds with return value 0

Press any key to continue . . .

Question:4 Write a C++ program that uses a while loop to find the largest prime number less than a given positive integer N. Your program should take the value of N as input from the user and then find the largest prime number less than or equal to N. You are not allowed to use any library or pre-existing functions to check for prime numbers.

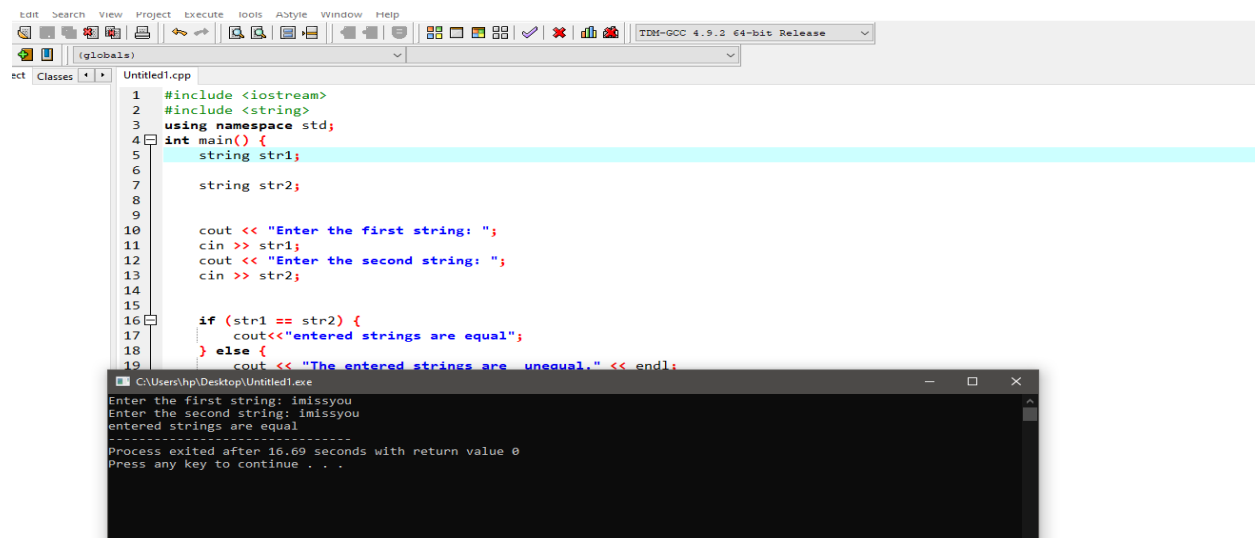


The screenshot shows a C++ IDE with a file named 'Untitled1.cpp'. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int n;
5
6     cout << "Enter a positive integer n: ";
7     cin >> n;
8
9     while (n <= 1) {
10        cout << "Please enter a positive integer: ";
11        cin >> n;
12    }
13
14    int num = n - 1;
15    while (num > 1) {
16        int i = 2;
17        while (i <= num && num % i != 0) {
18            i++;
19        }
20        if (i == num) {
21            cout << "Largest prime number " << num << endl;
22        }
23    }
24 }
```

The output window shows the execution of the program. It prompts the user to enter a positive integer, and when 12 is entered, it outputs 'Largest prime number 11'. The process exits after 4.926 seconds with a return value of 0.

Question:5 Write a C++ program, take two string as input from user and check if both strings are equal or not.



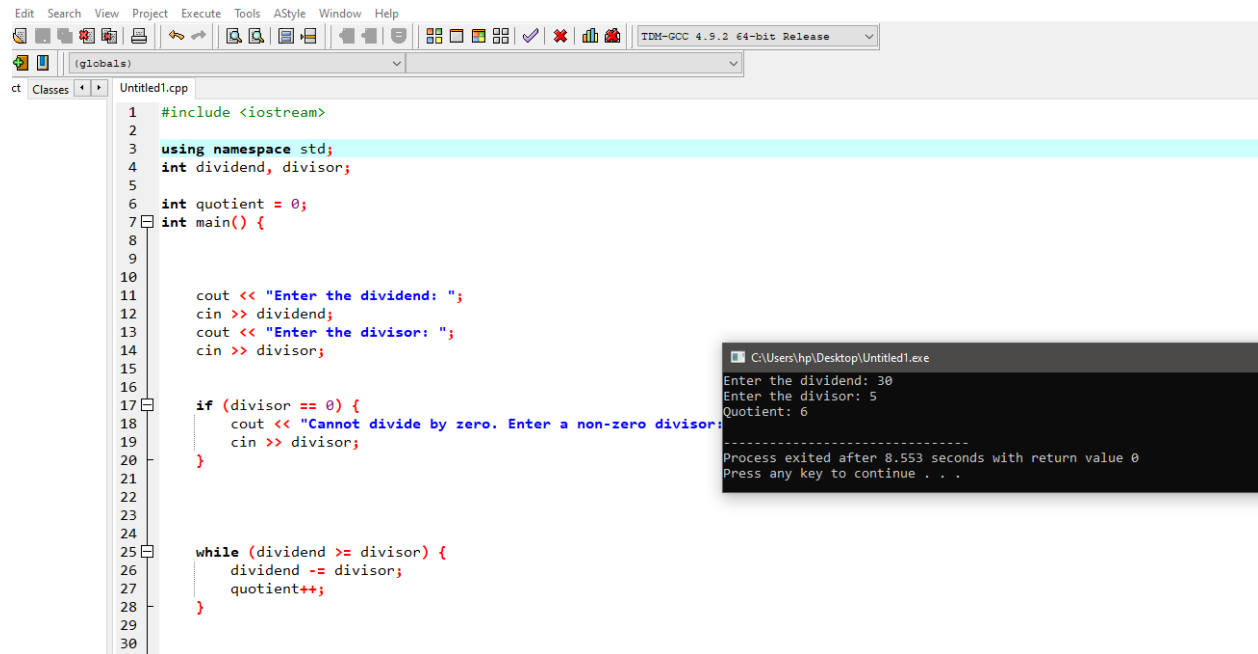
The screenshot shows a C++ IDE with a file named 'Untitled1.cpp'. The code is as follows:

```
1 #include <iostream>
2 #include <string>
3 using namespace std;
4 int main() {
5     string str1;
6     string str2;
7
8
9
10    cout << "Enter the first string: ";
11    cin >> str1;
12    cout << "Enter the second string: ";
13    cin >> str2;
14
15
16    if (str1 == str2) {
17        cout << "entered strings are equal";
18    } else {
19        cout << "The entered strings are unequal." << endl;
20    }
21 }
```

The output window shows the execution of the program. It prompts the user to enter two strings, and when 'imissyou' is entered for both, it outputs 'entered strings are equal'. The process exits after 16.69 seconds with a return value of 0.

Question:6

Perform division in C++ without / using for loops. You can use / only to display the final results. Your dividend must be greater than divisor.



```
1 #include <iostream>
2
3 using namespace std;
4 int dividend, divisor;
5
6 int quotient = 0;
7 int main() {
8
9
10
11     cout << "Enter the dividend: ";
12     cin >> dividend;
13     cout << "Enter the divisor: ";
14     cin >> divisor;
15
16
17     if (divisor == 0) {
18         cout << "Cannot divide by zero. Enter a non-zero divisor";
19         cin >> divisor;
20     }
21
22
23
24
25     while (dividend >= divisor) {
26         dividend -= divisor;
27         quotient++;
28     }
29
30 }
```

Console Output:

```
C:\Users\hp\Desktop\Untitled1.exe
Enter the dividend: 30
Enter the divisor: 5
Quotient: 6
-----
Process exited after 8.553 seconds with return value 0
Press any key to continue . . .
```

Question:8

Suppose an integer array `a[5] = {1,2,3,4,5}`. Add more elements to it and display them in C++.

The screenshot shows a C++ IDE with a file named 'Untitled1.cpp'. The code defines a main function that creates an array of 5 integers and a new array of 8 integers. The output window shows the execution results.

```
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int Size = 5;
5     int Array[Size] = {1, 2, 3, 4, 5};
6
7
8     cout << " Array: ";
9     for (int i = 0; i < Size; ++i) {
10         cout << Array[i] << " ";
11     }
12
13
14
15     int newSize = 8;
16     int newArray[newSize] = {1, 2, 3, 4, 5, 6, 7, 8};
17
18
19     cout << "New Array: ";
20     for (int i = 0; i < newSize; ++i) {
21         cout << newArray[i] << " ";
22     }
23
24
25     return 0;
26 }
27
28
```

Array: 1 2 3 4 5 New Array: 1 2 3 4 5 6 7 8
Process exited after 0.105 seconds with return value 0
Press any key to continue . . .

Question:10

Implement Bubble Sort on an array of 6 integers.

The screenshot shows a C++ IDE with a file named 'Untitled1.cpp'. The code defines a main function that creates an array of 6 integers and implements a bubble sort algorithm. The output window shows the execution results.

```
5
6
7
8
9
10
11
12
13
14
15 int main() {
16     const int size = 6;
17     int arr[size] = {5, 2, 9, 1, 5, 6};
18
19     cout << "Original Array: ";
20     for (int i = 0; i < size; ++i) {
21         cout << arr[i] << " ";
22     }
23     cout << endl;
24
25     bubbleSort(arr, size);
26
27
28     cout << "Sorted Array: ";
29     for (int i = 0; i < size; ++i) {
30         cout << arr[i] << " ";
31     }
32     cout << std::endl;
33
34     return 0;
35 }
```

Original Array: 5 2 9 1 5 6
Sorted Array: 1 2 5 5 6 9
Process exited after 0.3219 seconds with return value 0
Press any key to continue . . .

