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1).

What's the output of following program:

#include<iostream>
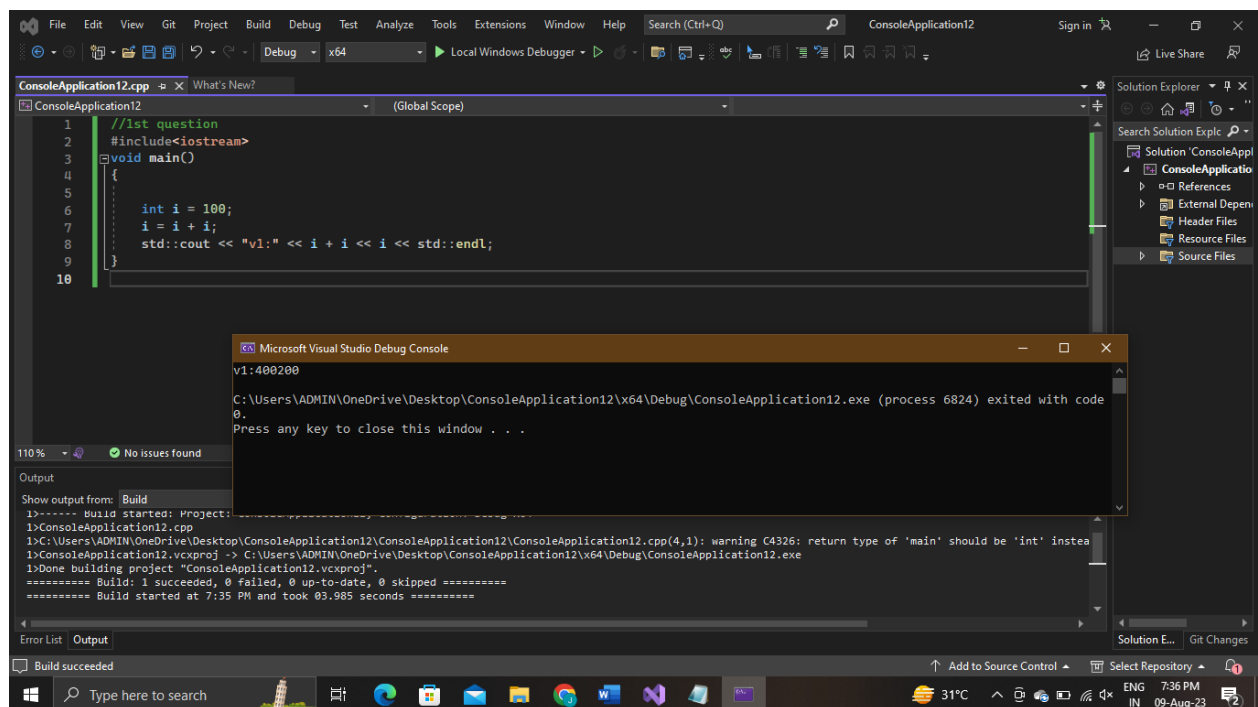
void main()

{

        int i = 100;

        i = i + i;

        std::cout << "v1:" << i + i << i << std::endl;

}

2).

What is the output of following program:

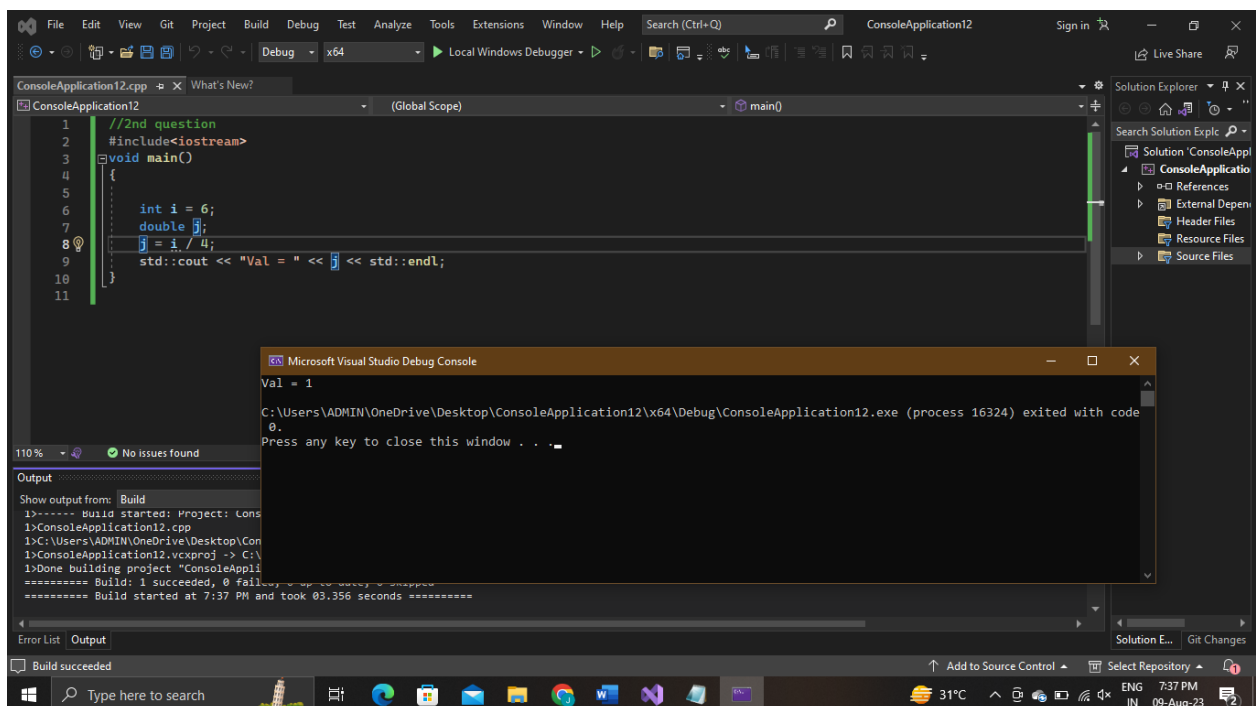#include<iostream>

void main()

```cpp
{
    int i = 6;

    double j;

    j = i / 4;

    std::cout << "Val = " << j << std::endl;
}
```


3).

Write a program that declares two intergers, assigns them
the values of 20 and 50, and displays result of their division.

Input :-

```cpp
#include <iostream>

int main() {

    int num1 = 20;

    int num2 = 50;
```
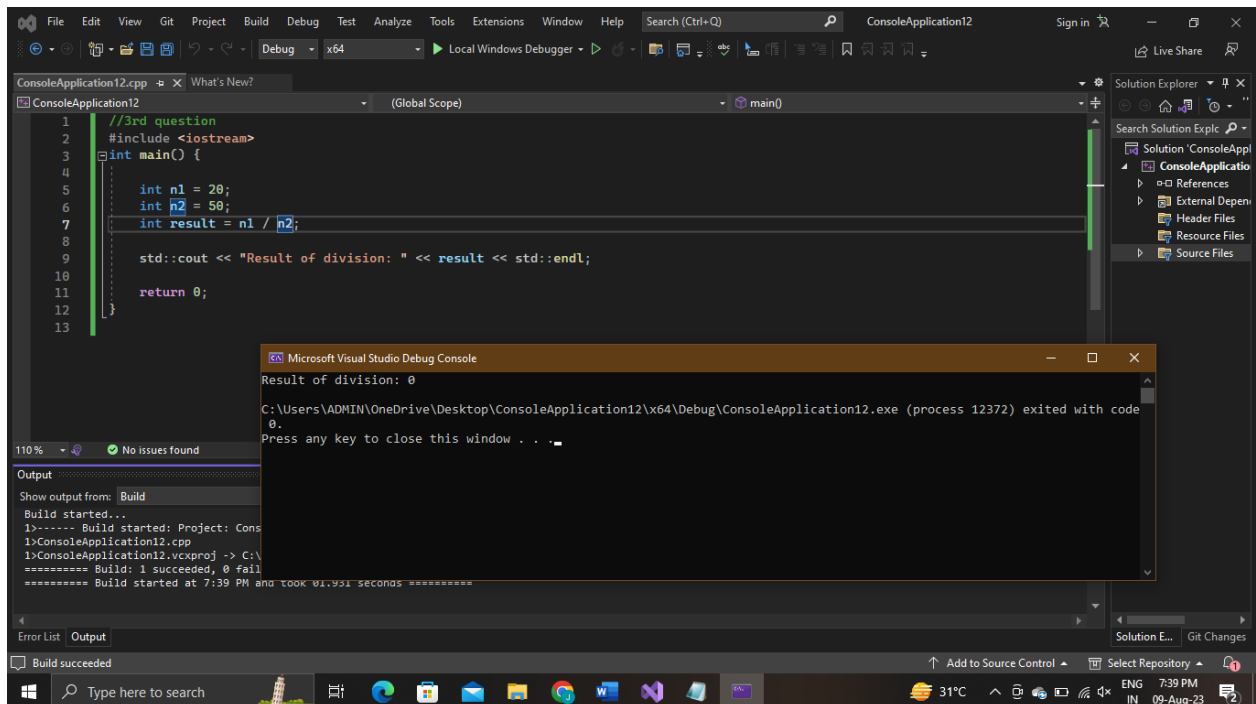
```cpp
    int result = num1 / num2;

    std::cout << "Result of division: " << result << std::endl;

    return 0;

}
```
Output-

4).

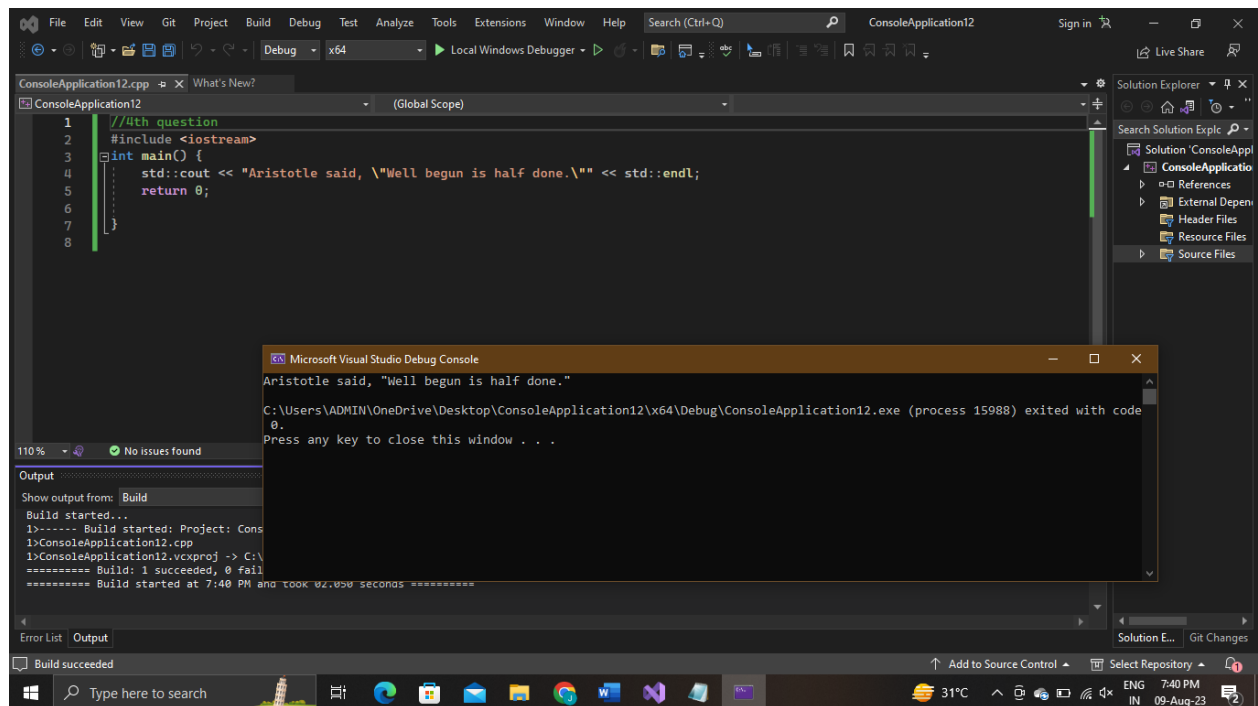Write a program to print: Aristotle said, "Well begun is half done".

Input :-

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

    std::cout << "Aristotle said, \"Well begun is half done.\"" <<
std::endl;

    return 0;

}
```

5. Write a program to print: This is the share for lectureslides: \\10.100.56.21\Lecture\Lavneet Singh\IT603
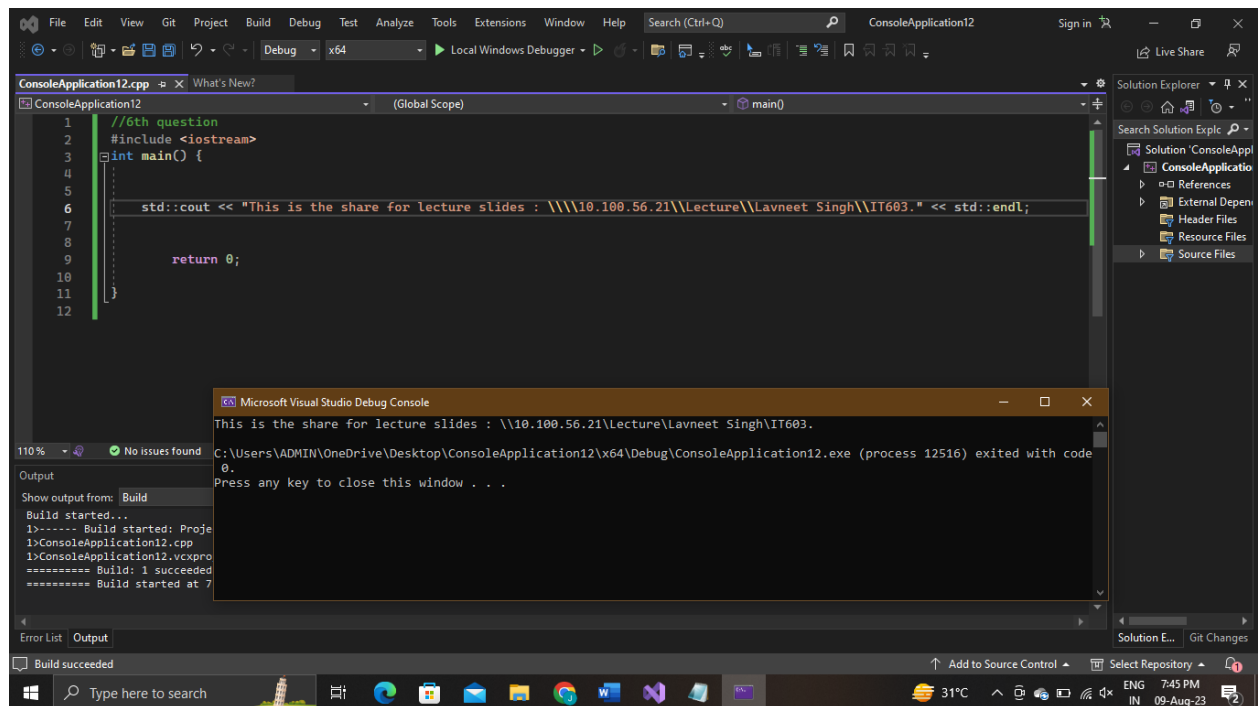
Input :-

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

    std::cout << "This is the share for lecture slides:
\\\\10.100.56.21\\Lecture\\Lavneet Singh\\IT603" <<
std::endl;

    return 0;

}
```

6). Find bug(s) in the following code, if any:

Input-

#include<stdio.h>

void main()

{

        double i = 12, j = 5, avg;

        avg = i + j / 2;
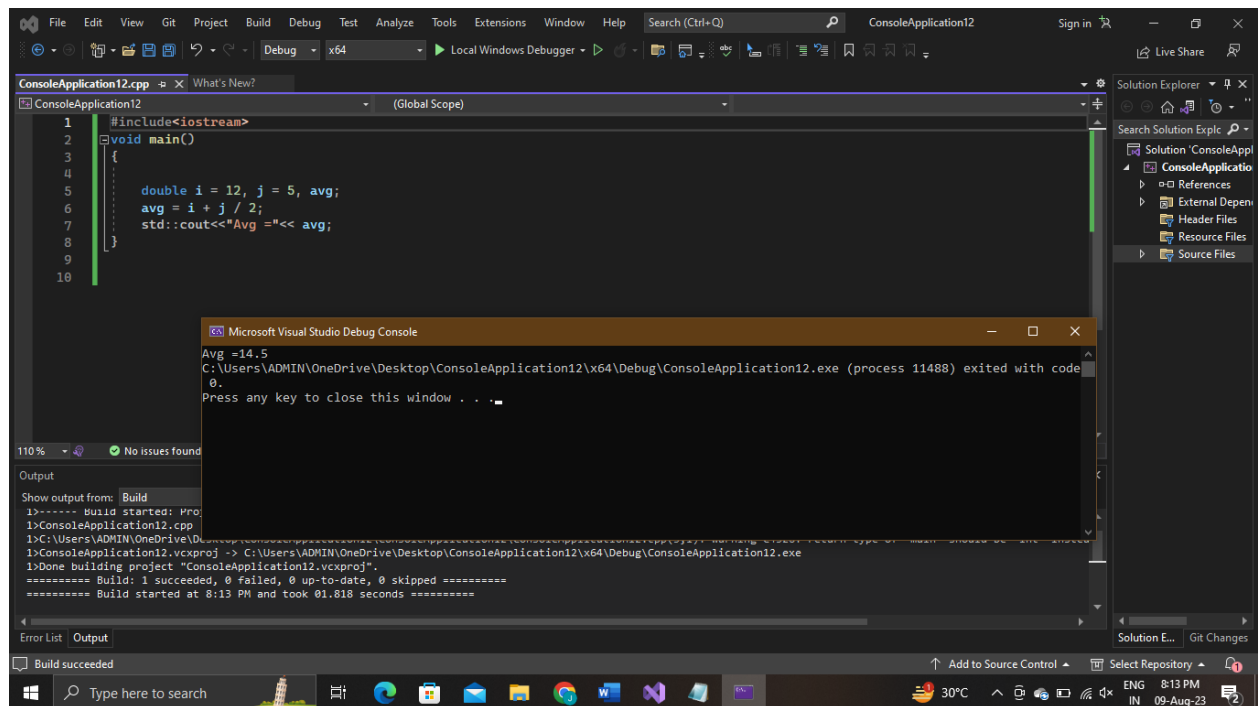
        printf("Avg = %.2f\n", avg);

}

Output-

There was no error. Just we can decline avg variable by round bracket in addition part and then divide by 2.

avg=(i+j)/2;

7).

Q-7. Write a program to take input from three students (one by one) - their names and marks obtained (out of maximum of 500).

Then calculate their percentages and print in the form:

<student name1> scored x.x%

<student name2> scored x.x%
<student name3> scored x.x%

[Note: i) Avoid using loops as we have not yet covered them.
ii) Maximum marks is fixed to 500.]
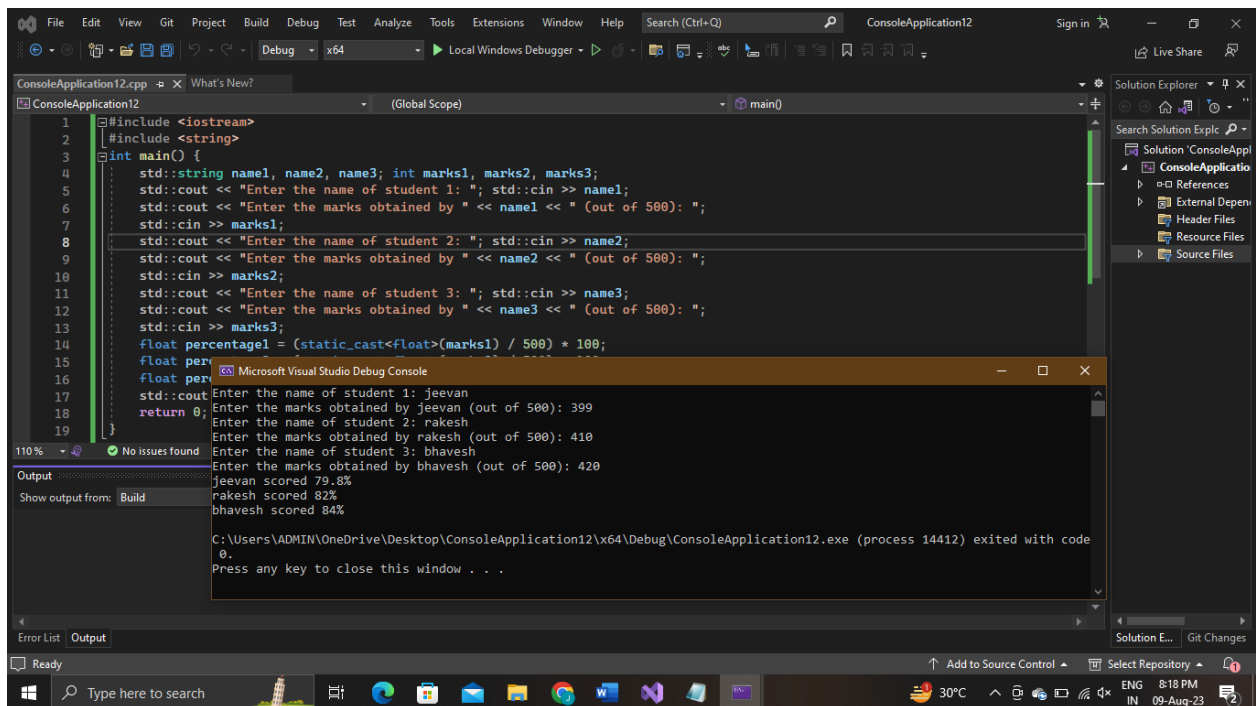
Input :-

#include <iostream>

#include <string>

int main() {
    std::string name1, name2, name3;

    int marks1, marks2, marks3;

```cpp
    std::cout << "Enter the name of student 1: ";

    std::cin >> name1;

    std::cout << "Enter the marks obtained by " << name1 << "
(out of 500): ";

    std::cin >> marks1;
    std::cout << "Enter the name of student 2: ";

    std::cin >> name2;

    std::cout << "Enter the marks obtained by " << name2 << "
(out of 500): ";

    std::cin >> marks2;
```

```cpp
    std::cout << "Enter the name of student 3: ";
std::cin >> name3;

    std::cout << "Enter the marks obtained by " << name3 << "
(out of 500): ";

    std::cin >> marks3;
    float percentage1 = (static_cast<float>(marks1) / 500) *
100;

    float percentage2 = (static_cast<float>(marks2) / 500) *
100;

    float percentage3 = (static_cast<float>(marks3) / 500) *
100;
    std::cout << name1 << " scored " << percentage1 << "%\n";

    std::cout << name2 << " scored " << percentage2 << "%\n";

    std::cout << name3 << " scored " << percentage3 << "%\n";

    return 0;
}
```

Output :-

8).

Write a program in input a string that may include spaces and calculate -

i) number of words in it (ie group of letters separated by space. think about different way user might input, like what if there are more than one space, or, spaces in the begining / end of the string

ii) number of vowels in the string

Input :-

#include <iostream>

#include <string>

using namespace std;
int main() {

  string str;

  int word_count = 0;

  int vowel_count = 0;

  cout << "Enter a string: ";

```cpp
    getline(cin, str);

    for (int i = 0; i < str.length(); i++) {

        if (str[i] == ' ') {

            word_count++;

        } else if (str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] ==
'o' || str[i] == 'u') {

            vowel_count++;

        }

    }

    cout << "The number of words in the string is: " <<
word_count << endl;

    cout << "The number of vowels in the string is: " <<
vowel_count << endl;
    return 0;

}
```
Output :-
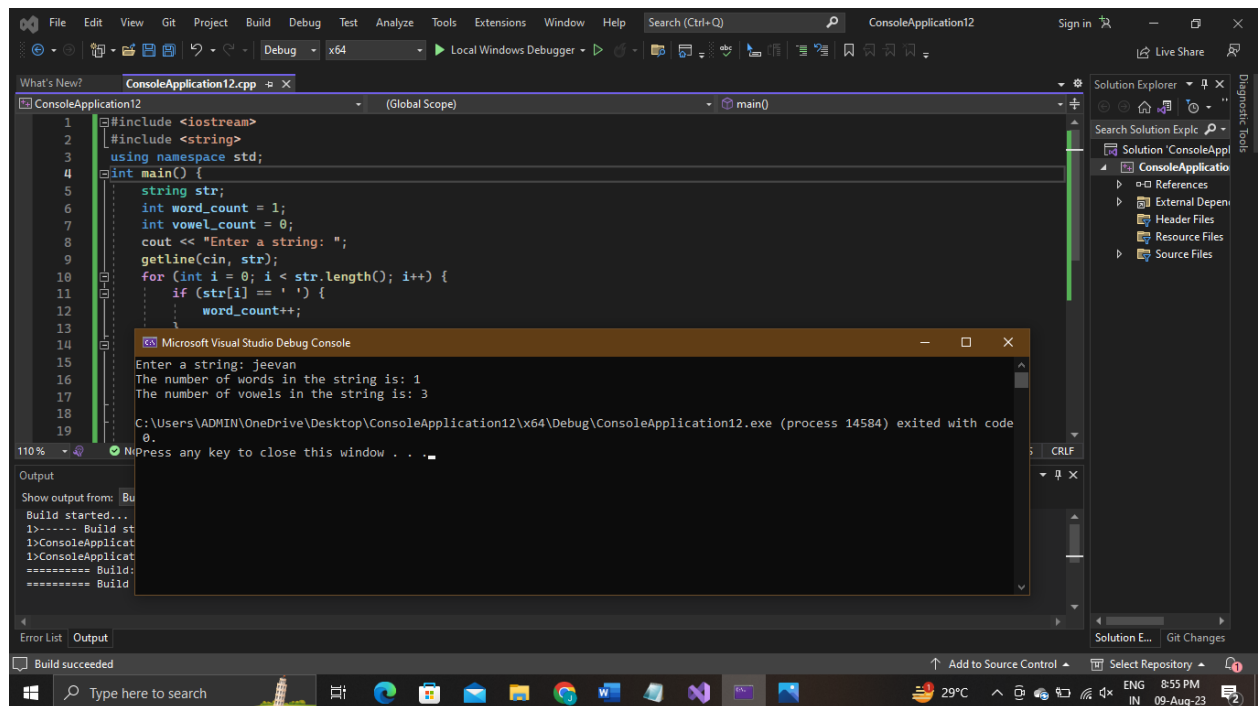
9).

9. Write a program to print multiplication table (upto 10) of any number. The output should be like this:

5 x 1 = 5

5 x 2 = 10

..and so on till

5 x 10 = 50

Input :-

```cpp
#include <iostream>
using namespace std;
int main() {
    int n;
```

```cpp
cout << "Enter a number to
get table : ";
cin >>n;
for (int i = 1; i <= 10; i++) {
    cout << n << " x " << i << " = " << n* i << endl;
}
return 0;
}
```

Output :-

10). Write a program to count number of digits in any number. (Hint: Two integer divisions of any two digit number by 10 results in 0).

Input-

```cpp
Include <iostream>
Using namespace std;
int main(){
```

```cpp
int n;
cin>>n;
int count=0;
while(n!=0){
    count++;
n=n/10;
}
cout<<"Number of digit in the number is :"<<count<<endl;
return 0;
}
```
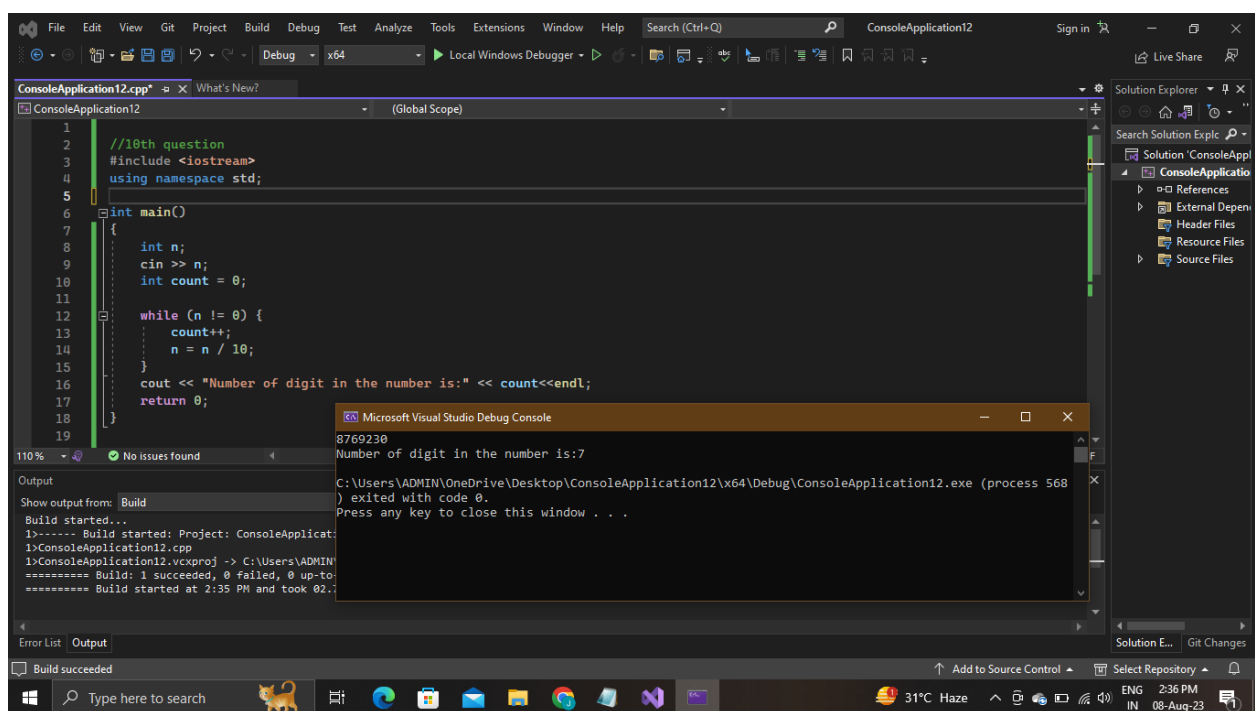

11).

Write a program to toggle nth bit of a number.

Input :-

```cpp
#include <iostream>

using namespace std;

int toggle_bit(int number, int n) {
```

```cpp
    int mask = 1 << n;

    return number ^ mask;

}
int main() {
    int number = 10, n = 2;
    int new_number = toggle_bit(number, n);

    cout << "The original number is: " << number << endl;

    cout << "The nth bit of the number is: " << n << endl;

    cout << "The new number after toggling the nth bit is: " << new_number << endl;
    return 0;
}
```

Output :-

12).

 Write a program to print all odd number between 1 to100.

Input :-

```cpp
#include <iostream>
using namespace std;
int main() {
  for (int i = 2; i < 100; i++)

  {

   if (i % 2 != 0) {
     cout << i << " ";
    }
   }
  return 0;

 }
```
Output:-
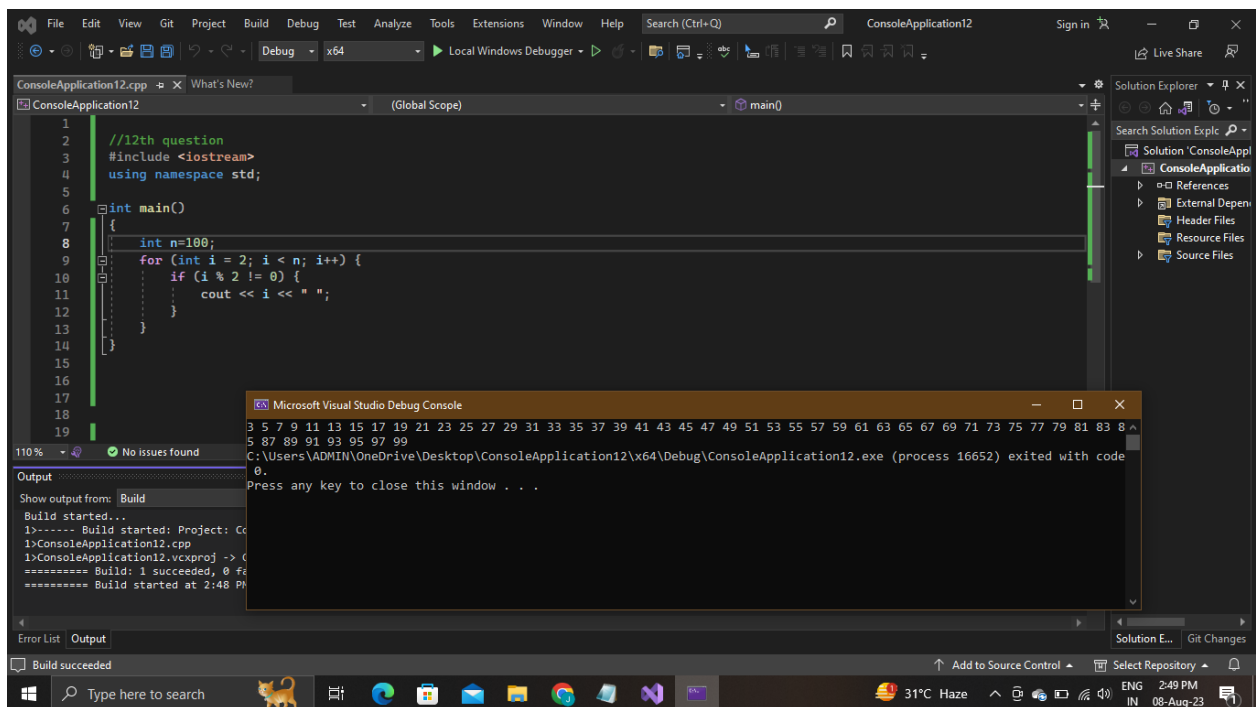
13).

 Write a program to enter any number and print itsreverse.

Input:-

```cpp
#include <iostream>

using namespace std;

int main() {
int n;
cin>>n;
int rem,num=0;
while(n!=0){
rem=n%10;
num=(num*10)+rem;
n=n/10;
}
Cout<<"the reverse of the given number is :"<<num<<endl;
return 0;
}
```
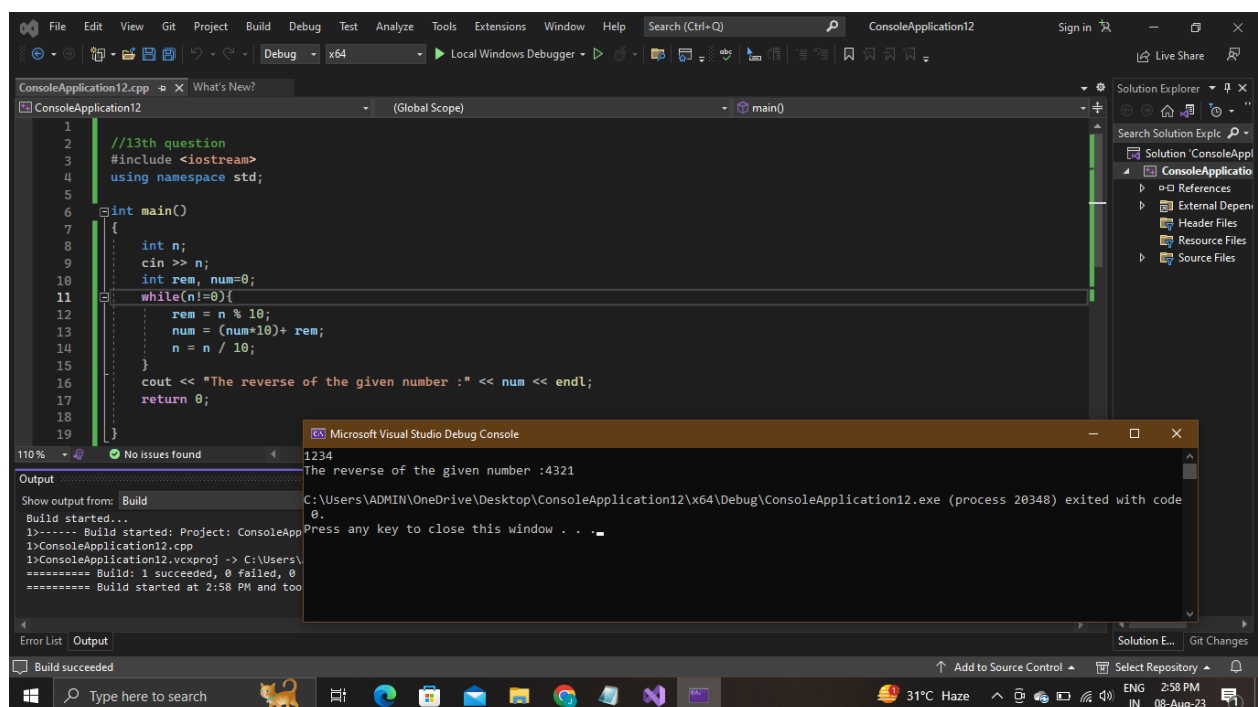

14).

Write a program to input marks of five subjects Data
Structures, C Programming, DB, Mathematics and CS. Assume

100 as max marks. Calculate percentage and grade according to following:

Percentage >= 90% : Grade A Percentage >= 80% : Grade B

Percentage >= 70% : Grade C Percentage >= 60% : Grade D

Percentage >= 40% : Grade E Percentage < 40% : Grade F

Input :-

```cpp
#include <iostream>
using namespace std;
int main() {

  int marks_data_structures, marks_c_programming,
marks_db, marks_mathematics, marks_cs;

  float percentage;

  string grade;

  cout << "Enter the marks of Data Structures: ";

  cin >> marks_data_structures;

  cout << "Enter the marks of C Programming: ";

  cin >> marks_c_programming;

  cout << "Enter the marks of DB: ";

  cin >> marks_db;

  cout << "Enter the marks of Mathematics: ";

  cin >> marks_mathematics;

  cout << "Enter the marks of CS: ";

  cin >> marks_cs;
```

```cpp
    percentage = (marks_data_structures +
marks_c_programming + marks_db + marks_mathematics +
marks_cs) / 500.0 * 100;
    if (percentage >= 90)   grade = "A";
    else if (percentage >= 80)   grade = "B";
    else if (percentage >= 70)   grade = "C";
    else if (percentage >= 60)   grade = "D";
    else if (percentage >= 40)   grade = "E";
    else grade = "F";

    cout << "Percentage: " << percentage << endl;cout
<< "Grade: " << grade << endl;
    return 0;

}
```

Output :-
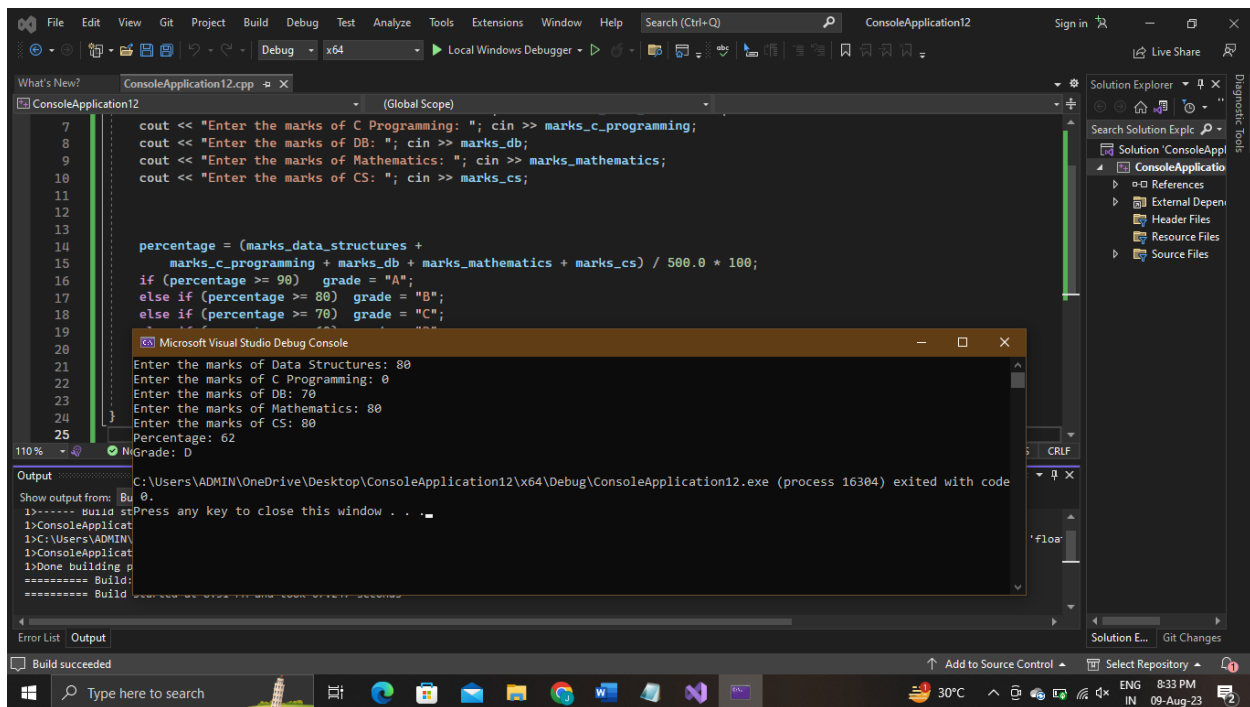
15. Write a program to input any alphabet and checkwhether it is vowel or consonant.

```cpp
//15th question
#include <iostream>
using namespace std;

int main()
{
    char ch;
    cin >> ch;
    char vowels[] = {'A','E','I','O','U','a','e','i','o','u'};
    bool isVowel = false;
        for (char v : vowels) {
            if(ch == v) {
                isVowel = true;
                break;
            }
        }
    if (isVowel) {
        cout << "vowel";
```
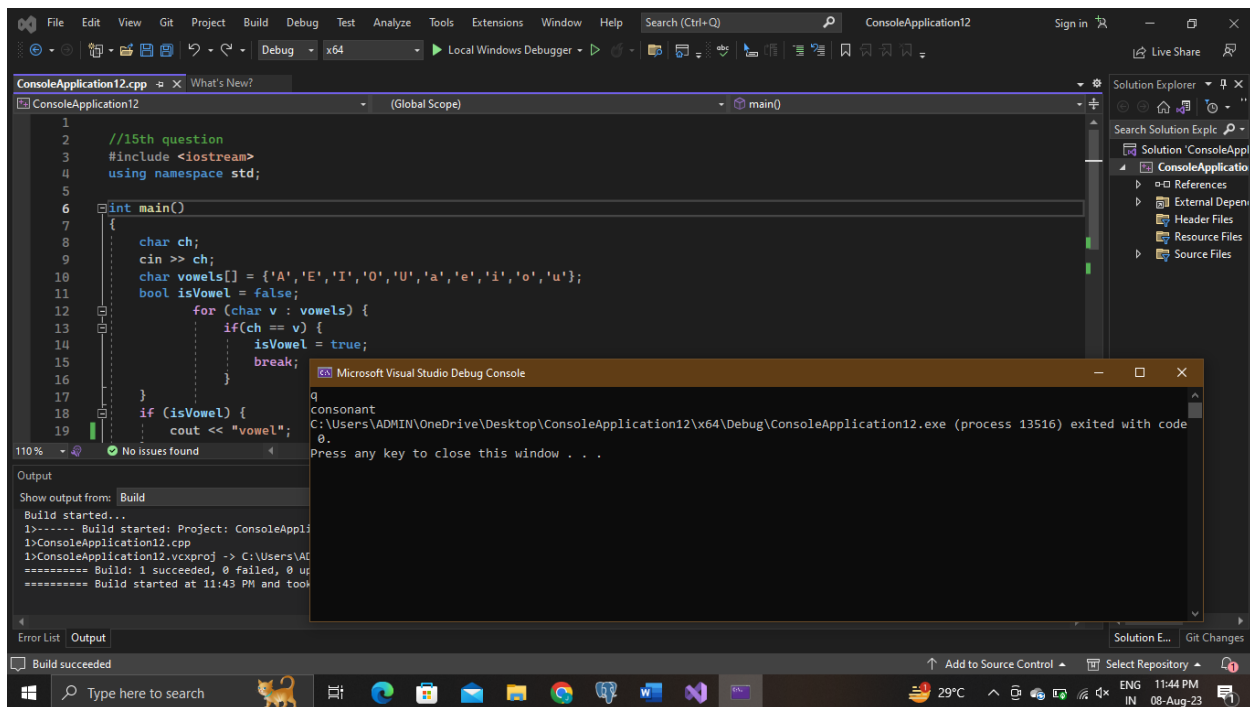
16. Write a program to input month number and printnumber of days in that month.


```cpp
int main()
{
    int mon = 12, yr = 2012;
    if ((mon == 2) && ((yr % 400 == 0) || ((yr % 100 != 0) && (yr % 4 == 0)))) {
        cout << "Number of days is 29";
    }
    else if (mon == 2) {
        cout << "Number of days is 28";
    }
    else if (mon == 1 || mon == 3 || mon == 5 || mon == 7 || mon == 8 || mon == 10 || mon == 12) {
        cout << "Number of days is 31";
    }
```
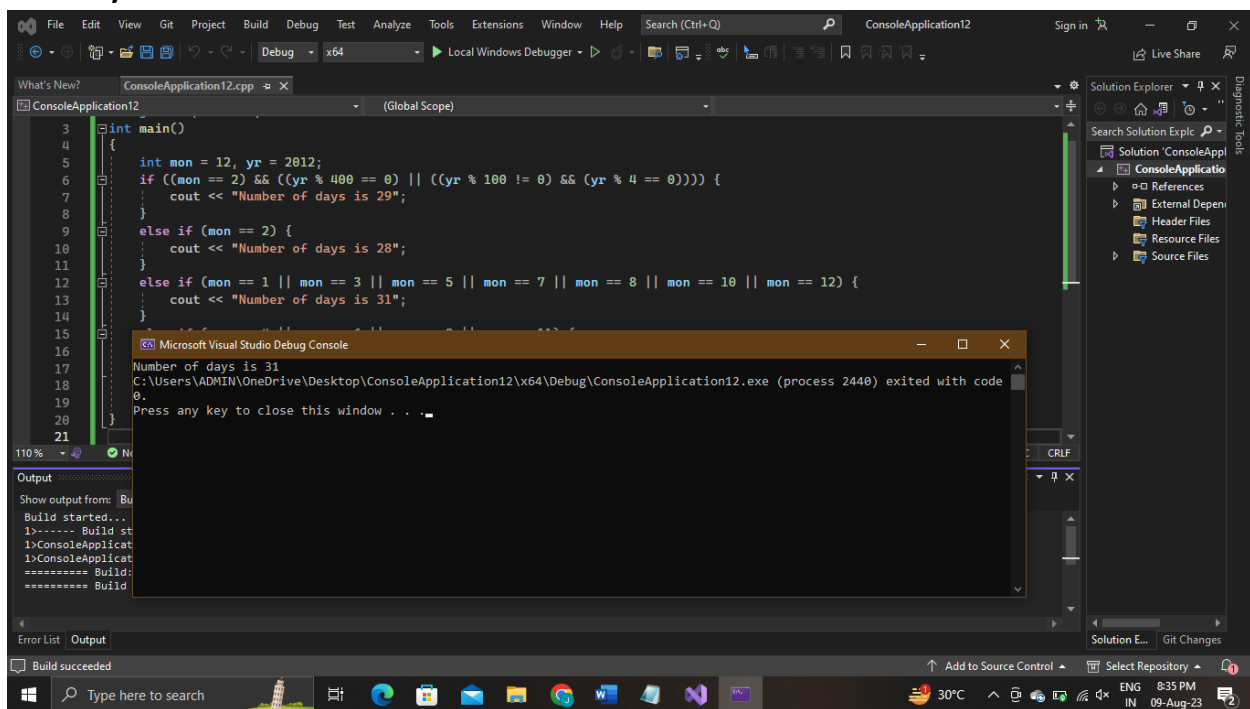
17).

Write a program to input all sides of a triangle andcheck whether triangle is valid or not.
Input:-

```cpp
#include <iostream>
using namespace std;
int main() {
int x,y,z;
cout<<"enter the value of x:";
cin>x;
cout<<"enter the value of :y";
cin>y;
cout<<"enter the value of z:";
cin>z;
if(x+y>z &&y+z>x; && z+x>y){
   cout<<"triangle is valid";
}
else{
cout<<"triangle is not valid";
```

```cpp
//17th question
#include <iostream>
using namespace std;

int main()
{
    int x, y, z;
    cout << "enter the value of x :";
    cin >> x;
    cout << "enter the value of y :";
    cin >> y;
    cout << "enter the value of z :";
    cin >> z;

    if (x+y>z && y+z>x && z+x>y) {
        cout << "Triangle is valid";
    }
    else {
        cout << "Triangle
```

Microsoft Visual Studio Debug Console

```
enter the value of x :3
enter the value of y :4
enter the value of z :5
Triangle is valid
C:\Users\ADMIN\OneDrive\Desktop\ConsoleApplication12\x64\Debug\ConsoleApplication12.exe (process 11500) exited with code
0.
Press any key to close this window . . .
```