```
                ///Bangladesh Univercity
                ///Md.Sirajul Islam
                ///Student ID: 202411608017
                ///Evening shift
                **writing to notepad**

/// Assignment--02

      /// source
      /// Anisul Islam Youtoub chenel
      ///

      /// class number-01

      ///Objectives

      //01. What is c++?
      //02. What are the usages of c++?
      //03. What is the History of C++?
      //04. What are the Features of C++?


      /// What is C++?

      * C++ ia known to be powerful computer programming language
      * C++ is genaral purpose, case-sensitve, object oriented
programming language


      /// Usage of C++

      * 1. It is used to develop game engines, and desktop app, art
application, music player etc.
      * 2. C++ is being highly used to write device drivers and other
software

      /// History of C++

      * C++ programming language was develop in 1980 by Bjarne Stroustrup
at bell labortories of AT and T.
      * Bjarne Stroustrup is known as the founder of C++ language
      * C++ was derived from C and is largely base on it
      overlap c,c++ and java

      /// Features of C++

      1. Simple
      2. Mid-level programming language
      3. Rich library
      4. Memory Management
      5. Fast Speed
      6. Poineters
      7. Recursion
      8. Object oriented
      9. compiler based

      //Belive in Humanity//

      ////vedio number 02
```

* C++ programming language is translator program Binary
// source code
* we wirte a code use c++ language is a source code .
//object code
* computer is understand language it is object code.

// translator work
source code from object code convetor is translator.

--There many translator
* assembler, compiler and interfere

// compiler work is object code conveted and output
//// vedio number 03
///Required software

1. Integrated Development Enviroment (IDE): Provides tools for writing source code.
Any text editor can be used as an IDE.
Example- Code:: Blocks, TurboC++ etc
2. Compiler: Compiles source code into the final executable program.
There are a number of C++ compilers avaible. The most frequently used frre avaible
compiler is the GNU. C/C++ compiler.(mingw)

//// vedio number 04
///simple C++ stractcher

```
#include <isotream>
using namespace std.;
int main()
{
      count << "Hello world!";
      return 0;
}

output:

Hello world
```

// isotream = input output stream a header file

// #include helping add to programming add

// int = integer is a keyword

compiler time c/c++ start to main() function wirte a function. main() must be write

coun << its standard output stream.

return is a keyword
* Returning 0 means a successful termination.

/////vedio number 06
/// start coding //

```
#include <iostream>
#include <conio.h>
using namespace std;
```

```
                int main(){
                      cout << "Md Sirjaul Islam " << " I'm Student";
                      getch();
                }

output:
Md Sirjaul Islam I'm Student

     //Common Escape Sequences:
                \n: Newline (Line break)
                \t: Horizontal tab
                \r: Carriage return
                \b: Backspace
                \f: Form feed (New page)
                \v: Vertical tab
                \a: Alert (Bell)
                \\: Backslash
                \': Single quote (Apostrophe)
                \": Double quote
                \?: Question mark
                \0: Null character (End of string)

     //// /n using
                #include <iostream>
                #include <conio.h>
                using namespace std;
                int main(){
                      cout << "Md Sirjaul Islam /n I'm Student";

                      getch();
                }

                output:
                Md Sirjaul Islam
                I'm Student


     ///  /n using
                #include <iostream>
                #include <conio.h>
                using namespace std;
                int main(){
                      cout << "Md Sirjaul Islam /n";
                      cout << "I'm Student/n";
                      cout << "Bangladesh Univercity";
                      getch();
                      }

                      output:
                Md Sirjaul Islam
                I'm Student
                Bangladesh Univercity


     //endl using
                #include <iostream>
                #include <conio.h>
                using namespace std;
                int main(){
                      cout << "Md Sirjaul Islam "<<endl;
```

```
                    cout << "I'm Student"<<endl;
                    cout << "Bangladesh Univercity";
                    getch();

                }

                output:
                Md Sirjaul Islam
                I'm Student
                Bangladesh Univercity


    //// vedio number 06
    // comment

          *single line comment anywhere using for programming c/c++
          *single line comment start to //

    //Multiple line comment

          *Multiple line start /*
          *Multiple line end */

          /* this is multiple line comment */

    /////vedio number 07

    1. Keywords
    Keywords are reserved words in C++ that have a predefined meaning.
Examples include:

          int, float, return, if, else, for, while,
           break, continue, switch, case, do, goto, enum, struct, class,
           private, public, protected, virtual, inline, constexpr,
           namespace, using, template, try, catch, throw, new, delete,
etc.

    //what is veriable programming c++

          In C++, a variable is a named storage location in the
computer's
           memory that can hold a value and can be changed during
program execution.
           Variables are fundamental in
          programming as they allow you to store and manipulate data
within your programs.

    /// Rule
          1. veriable latter usesing A..Z,a...z number 0,1,..0 and (_)
undersore and ($) dolars samble
          2. must be reamber to not allow to frist word ditit number
          3. two word using must be spaece to word ( serch as,
longdouble invalid and long double valid)
          4. keyword name spane not one by one space
          5.any keyword and function not use to veriable
          6.variable name using not spaece must be reamber
          7. we reamber to variable name 31 chacter up word .because not
should used 31 word.
    Summary:
```

Variable: A storage location in memory with a name and a type that holds data that can be changed during program execution.
Declaration: Specifies the variable type and name.
Initialization: Assigns an initial value to the variable.
Scope: The region in the program where the variable can be accessed.
Data Types: Determine the kind of data a variable can hold.

Example Program:

```
#include <iostream>
#include <conio.h>

int globalVar = 10;  // Global variable

int main() {
      int age = 25;              // Local variable
      float salary = 45000.75;    // Local variable
      char grade = 'A';           // Local variable
      bool isPassed = true;       // Local variable

      std::cout << "Age: " << age << std::endl;
      std::cout << "Salary: " << salary << std::endl;
      std::cout << "Grade: " << grade << std::endl;
      std::cout << "Passed: " << isPassed << std::endl;

      globalVar = 20;  // Modify global variable
      std::cout << "Global Variable: " << globalVar <<
std::endl;

      return 0;
}

output
Age: 25
Salary: 45000.75
Grade: A
Passed: 1
Global Variable: 20
```

////// vedio number 08
keyword, variable & data type (part-2)

```
#include <iostream>
#include <conio.h>
using namespace std;
int main(){
float num1=10.5,num2=20.40300383;
char=ch;
ch='a'
      cout << " Number1 = " <<num1 <<endl " Number2 = "
<<num2 <<endl;
      cout <<  " chacter = " <<ch ;
      getch();
}
```

output:
Number1 = 10.5
Number2 = 20.403

```
      Character = a

////// vedio number 09
            String variable

            #include <iostream>
            #include <conio.h>
            using namespace std;
            int main(){
            float num1=10.5,num2=20.40300383;
            char= name[13] = "Sirajul Islam"
            cout<< "My name is= " <<name;
                  getch();
            }

            output:

            My name is = Sirajul Islam



////// vedio number 10
            How to get user input

      #include <iostream>
      #include <conio.h>
      using namespace std;
      int main(){
      int num;
      cout<< "Enter an integer number : ";
      cin>>num;

      cout<< "Enter number is = " <<num;



            getch();
      }

      Output:
            Enter an integer number : 4
            Enter number is = 4


      ///Double
      #include <iostream>
      #include <conio.h>
      using namespace std;
      int main(){

            double num;
            cout<< "Enter an double number : ";
            cin>>num;

            cout<< "Enter number is= " <<num;

            getch();
      }

      output:
```

```
      Enter an double number : 4.44
      Enter number is= 4.44

///character

#include <iostream>
#include <conio.h>
using namespace std;
int main(){

char ch;
cout<< "Enter an character : ";
cin>>ch;

cout<< "Enter character is= " <<ch;



      getch();
}

Output:
Enter an character : a
Enter character is= a

///String variable

#include <iostream>
#include <conio.h>
using namespace std;
int main(){

char name[20];
cout<< "Enter your name : ";
cin>>name;

cout<< Wellcome= " <<name;



      getch();
}
output:
Enter your name: Sirajul
Welcome Sirajul


///Multiple input

#include <iostream>
#include <conio.h>
using namespace std;
int main(){

int num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;

sum = num1 + num2;
```

```
cout << sum;

      getch();
}
```

output:
Enter 2 numbers: 5 10
Sum: 15

////// vedio number 11

1. Arithmetic Operators

Arithmetic operators perform basic mathematical operations.

Addition (+)
Subtraction (-)
Multiplication (*)
Division (/)
Modulus (%): Returns the remainder of a division.
Increment (++): Increases a variable's value by one.
Decrement (--): Decreases a variable's value by one.

Arithmetic Operators example

```
#include <iostream>
#include <conio.h>
using namespace std;
int main(){

int num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;

int sum = num1 + num2;

cout <<" sum is : " << sum;
cout<<end1;

int sub = num1 - num2;

cout <<" subtraction is : " << sub;
cout<<end1;

int mul = num1 * num2;

cout <<" multiplication is : " << mul;
cout<<end1;


double div = num1 / num2;

cout <<" division is : " << div;
cout<<end1;


int rem = num1 % num2;
```

```
cout <<" remainder is : " << rem;
cout<<end1;



      getch();
}
```

output:

When you run the program and enter two numbers, the output might look like this:

```
Enter 2 numbers: 10 3
Sum is: 13
Subtraction is: 7
Multiplication is: 30
Division is: 3.33333
Remainder is: 1
```

If the user enters a zero as the second number:

```
Enter 2 numbers: 10 0
Sum is: 10
Subtraction is: 10
Multiplication is: 0
Division and remainder by zero are undefined.
```

```
#include <iostream>
#include <conio.h>
using namespace std;
int main(){

float num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;

int sum = num1 + num2;

cout <<" sum is : " << sum;
cout<<end1;

int sub = num1 - num2;

cout <<" subtraction is : " << sub;
cout<<end1;

int mul = num1 * num2;

cout <<" multiplication is : " << mul;
cout<<end1;


double div = (float)num1 / num2;

cout <<" division is : " << div;
cout<<end1;


int rem = num1 % num2;
```

```
cout <<" remainder is : " << rem;
cout<<end1;



      getch();
}
```

```
output:
Enter 2 numbers: 7.5 3.2
Sum is: 10.7
Subtraction is: 4.3
Multiplication is: 24
Division is: 2.34375
Remainder is: 1.1
```

```
////// vedio number 12


//showpoint exmple

#include <iostream>
#include <conio.h>
using namespace std;
int main(){

float num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;
cout<<showpoint;

float sum = num1 + num2;

cout <<" sum is : " << sum;
cout<<end1;

float sub = num1 - num2;

cout <<" subtraction is : " << sub;
cout<<end1;

float mul = num1 * num2;

cout <<" multiplication is : " << mul;
cout<<end1;


float div = num1 * num2;

cout <<" division is : " << div;
cout<<end1;


///float rem = num1 % num2;

//cout <<" remainder is : " << rem;
```

```
//cout<<end1;



      getch();
}
output:
Enter 2 numbers: 7.5 3.2
Sum is: 10.7
Subtraction is: 4.3
Multiplication is: 24
Division is: 2.34375

If the user enters a whole number:

Enter 2 numbers: 5 2
Sum is: 7.00000
Subtraction is: 3.00000
Multiplication is: 10.0000
Division is: 2.50000



      //noshowpoint exmple

#include <iostream>
#include <conio.h>
using namespace std;
int main(){

float num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;
cout<<showpoint;

float sum = num1 + num2;

cout <<" sum is : " << sum;
cout<<end1;

float sub = num1 - num2;

cout <<" subtraction is : " << sub;
cout<<end1;

cout<<noshowpoint;
float mul = num1 * num2;

cout <<" multiplication is : " << mul;
cout<<end1;


float div = num1 * num2;

cout <<" division is : " << div;
cout<<end1;


///float rem = num1 % num2;
```

```
//cout <<" remainder is : " << rem;
//cout<<end1;



      getch();
}

output:
Enter 2 numbers: 7.5 3.2
Sum is: 10.7000
Subtraction is: 4.3000
Multiplication is: 24
Division is: 2.34375


      //setprecision exmple

#include <iostream>
#include <conio.h>
#include<iomanip>
using namespace std;
int main(){

float num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;
cout<<showpoint;
cout<<setprecision(10);

float sum = num1 + num2;

cout <<" sum is : " << sum;
cout<<end1;

float sub = num1 - num2;

cout <<" subtraction is : " << sub;
cout<<end1;


float mul = num1 * num2;

cout <<" multiplication is : " << mul;
cout<<end1;


float div = num1 * num2;

cout <<" division is : " << div;
cout<<end1;


///float rem = num1 % num2;

//cout <<" remainder is : " << rem;
//cout<<end1;
```

```
      getch();


}

output:
Enter 2 numbers: 7.123456 3.123456
Sum is: 10.2469120000
Subtraction is: 4.0000000000
Multiplication is: 22.2959255556
Division is: 2.2815493274

      //setw exmple

#include <iostream>
#include <conio.h>
#include<iomanip>
using namespace std;
int main(){

float num1, num2,sum;

cout << "Enter 2 number : ";
cin>> num1 >> num2;
cout<<showpoint;
cout<<fixed;
cout<<setprecision(2);

float sum = num1 + num2;

cout <<setw(20)<<" sum is : " << sum;
cout<<end1;

float sub = num1 - num2;

cout cout <<setw(20<<" subtraction is : " << sub;
cout<<end1;


float mul = num1 * num2;

cout cout <<setw(20<<" multiplication is : " << mul;
cout<<end1;


float div = num1 * num2;

cout cout <<setw(20<<" division is : " << div;
cout<<end1;


///float rem = num1 % num2;

//cout <<" remainder is : " << rem;
//cout<<end1;
```

```
      getch();


   }

   output:
      Enter 2 numbers: 7.5 3.2
               Sum is: 10.70
      Subtraction is: 4.30
Multiplication is: 24.00
       Division is: 2.34


   ////// vedio number 13

   Calculating area For example:

   For a circle, you need the radius.
   For a rectangle, you need the length and width.
   For a triangle, you need the base and height.
   For a square, you need the side length.
   For a trapezoid, you need the lengths of the two bases and the
height.

   Calculating area of triangle

   #include <iostream>
   #include <conio.h>
   using namespace std;
   int main(){

   double base,height,area;

   cout << "Enter base : ";
   cin>> base;

   cout << "Enter height : ";
   cin>> height;

   area = 1.0/2 * base * height;
   cout<<"Area triangle = " <<area;
      getch();
   }
   output:
   Enter base: 10
   Enter height: 5
   Area of the triangle = 25


   ////double

   #include <iostream>
   #include <conio.h>
   using namespace std;
   int main(){

   double base,height,area;

   cout << "Enter base : ";
   cin>> base;
```

```
cout << "Enter height : ";
cin>> height;

area =(double) 1/2 * base * height;
cout<<"Area triangle = " <<area;
      getch();
}
```

1. Area of a Circle

Area

Area=Ï€Ã—r2

```
#include <iostream>
#include <cmath>
#include <iomanip>

using namespace std;

int main() {
      double radius, area;

      cout << "Enter the radius of the circle: ";
      cin >> radius;

      area = M_PI * radius * radius;

      cout << fixed << setprecision(2);
      cout << "The area of the circle is " << area <<
endl;


      return 0;
}
```

output:

```
Enter the radius of the circle: 5
The area of the circle is 78.54
```

2. Area of a Rectangle

Area=lengthÃ—width

```
#include <iostream>
#include <iomanip>

using namespace std;

int main() {
      double length, width, area;

      cout << "Enter the length of the rectangle: ";
      cin >> length;

      cout << "Enter the width of the rectangle: ";
      cin >> width;
```

```
                area = length * width;

                cout << fixed << setprecision(2);
                cout << "The area of the rectangle is " << area <<
endl;

                return 0;
        }
output:
Enter the length of the rectangle: 8.5
Enter the width of the rectangle: 3.2
The area of the rectangle is 27.20

3. Area of a Triangle
Area=1/2Ã—baseÃ—height


        #include <iostream>
        #include <iomanip>

        using namespace std;

        int main() {
                double base, height, area;

                cout << "Enter the base of the triangle: ";
                cin >> base;

                cout << "Enter the height of the triangle: ";
                cin >> height;

                area = 0.5 * base * height;

                cout << fixed << setprecision(2);
                cout << "The area of the triangle is " << area <<
endl;

                return 0;
        }

        output:
        Enter the base of the triangle: 10
        Enter the height of the triangle: 5
        The area of the triangle is 25.00


                4. Area of a Square

                Area=sideÃ—side

                #include <iostream>
                #include <iomanip>

                using namespace std;

                int main() {
                        double side, area;

                        cout << "Enter the side of the square: ";
```

```
                              cin >> side;

                              area = side * side;

                              cout << fixed << setprecision(2);
                              cout << "The area of the square is " << area
<< endl;

                              return 0;
                        }

                        Output:
                        Enter the side of the square: 4.5
                        The area of the square is 20.25
```

5. Area of a Trapezoid

Area= 1/2Ã—(base1+base2)Ã—height

```
#include <iostream>
#include <iomanip>

using namespace std;

int main() {
      double base1, base2, height, area;

      cout << "Enter the length of the first base of the
trapezoid: ";
      cin >> base1;

      cout << "Enter the length of the second base of
the trapezoid: ";
      cin >> base2;

      cout << "Enter the height of the trapezoid: ";
      cin >> height;

      area = 0.5 * (base1 + base2) * height;

      cout << fixed << setprecision(2);
      cout << "The area of the trapezoid is " << area <<
endl;

      return 0;
}
Output:
Enter the length of the first base of the trapezoid: 6.0
Enter the length of the second base of the trapezoid:
8.0
Enter the height of the trapezoid: 5.0
The area of the trapezoid is 35.00


////// vedio number 14

     // Temperature converter
// celsius = (fahrenheit-32) / 1.8
// fahrenheit = 1.8 celsius + 32
```

```
#include <iostream>
#include <conio.h>
using namespace std;
int main()
{
      double celsius, fahrenheit;
      cout << "Enter Celsius: ";
      cin >> celsius;

      fahrenheit = 1.8 * celsius + 32;

      cout << "Fahrenheit = " << fahrenheit;
      getch();
}

Output:
Enter Celsius: 25
Fahrenheit = 77
```

////// vedio number 15

///Assignment operator

```
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
      int x = 3;
      int y = 2;

      x += y;
      cout << x << endl;

      x -= y;
      cout << x << endl;

      x *= y;
      cout << x << endl;

      x /= y;
      cout << x << endl;

      x %= y;
      cout << x << endl;

      getch();
}
output:

5
3
6
3
1
```

////// vedio number 16

//Unary Operator

* +   Unary plus
* -   Unary minus
* ++   Increment
* --   Decrement

```
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{

      int x = 5;
      cout << -x << endl;
      cout << x++ << endl;
      cout << ++x << endl;
      cout << x-- << endl;
      cout << --x << endl;

      getch();
}

Output:
-5
5
7
7
5
```

////// vedio number 17 and 18

```
// Bitwise Operator -> & (and), | (or), ^ (exor), >> (right shift) , <<
(left shift), ~ (not)
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
  int a = 32;
  int b = 12;
  int c;

  c = a & b;
  cout << "a & b = " << c;

  c = a | b;
  cout << "a | b = " << c;

  c = a ^ b;
  cout << "a ^ b = " << c;

// 2 times divided by 2
```

```
  c = a >> 2;
  cout << "a >> 2 = " << c;

// 3 times divided by 2
  c = a >> 3;
  cout << "a >> 3 = " << c;


  c = a << 2;
  cout << "a << 2 = " << c;


      getch();
}

output:
a & b = 0
a | b = 44
a ^ b = 44
a >> 2 = 8
a >> 3 = 4
a << 2 = 128

////// vedio number 19

 special operator

 // special operator sizeof(), comma operator
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
      int a;
      float f;
      double d;
      char ch;
      char name[20];
      int num1, num2, sum;

      int c = sizeof(a);
      cout << c << endl;


      c = sizeof(name);
      cout << c << endl;

      sum = (num1=20, num2=10, sum = num1 + num2);
      cout << "sum is " << sum << endl;

      getch();
}
output:
4
20
sum is 30


////// vedio number 20
```

Relational operator\

== (Equal to): Checks if the value of a is equal to b. If true, it prints "a is equal to b".
!= (Not equal to): Checks if the value of a is not equal to b. If true, it prints "a is not equal to b".
> (Greater than): Checks if the value of a is greater than b. If true, it prints "a is greater than b".
< (Less than): Checks if the value of a is less than b. If true, it prints "a is less than b".
>= (Greater than or equal to): Checks if the value of a is greater than or equal to b. If true, it prints "a is greater than or equal to b".
<= (Less than or equal to): Checks if the value of a is less than or equal to b. If true, it prints "a is less than or equal to b"

////// vedio number 21

//if statement

```
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
	int number;


	cout << "Enter an integer: ";
	cin >> number;

	// Simple if statement to check if the number is positive
	if (number > 0) {
		cout << "The number is positive." << endl;
	}

	// Simple if statement to check if the number is negative
	if (number < 0) {
		cout << "The number is negative." << endl;
	}

	// Simple if statement to check if the number is zero
	if (number == 0) {
		cout << "The number is zero." << endl;
	}

	getch();
}
```

output:
If the user enters 5:
Enter an integer: 5
The number is positive.

If the user enters -3:

```
Enter an integer: -3
The number is negative.

If the user enters 0:
Enter an integer: 0
The number is zero.



////// vedio number 22 and 23

 if else-if statement

            #include <iostream>
            #include <conio.h>
            using namespace std;

            int main()
            {
                  int number;

                  cout << "Enter an integer: ";
                  cin >> number;

                  // if-else if statement to check if the
number is positive, negative, or zero
                  if (number > 0) {
                        cout << "The number is positive." <<
endl;
                  }
                  else if (number < 0) {
                        cout << "The number is negative." <<
endl;
                  }
                  else {
                        cout << "The number is zero." << endl;
                  }

                  getch();
            }

            output:
Enter an integer: 7
The number is positive.

If the user enters -5:
Enter an integer: -5
The number is negative.

If the user enters 0:
Enter an integer: 0
The number is zero.



////// vedio number 24
```

//Even-Odd check, Large-Small comparison, Pass-Fail determination, and Absolute value calculation.

//Even-Odd Check

```
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
      int number;

      cout << "Enter an integer: ";
      cin >> number;

      if (number % 2 == 0) {
            cout << "The number is even." << endl;
      } else {
            cout << "The number is odd." << endl;
      }

      getch();
}
```

output:

If the user enters 4:
Enter an integer: 4
The number is even.

If the user enters 7:
Enter an integer: 7
The number is odd.

//Large-Small Comparison

```
#include <iostream>
#include <conio.h>
using namespace std;

int main() {
      int num1, num2;

      cout << "Enter the first number: ";
      cin >> num1;
      cout << "Enter the second number: ";
      cin >> num2;

      if (num1 > num2) {
            cout << "The larger number is: " << num1 <<
endl;
            cout << "The smaller number is: " << num2 <<
endl;
      } else if (num1 < num2) {
            cout << "The larger number is: " << num2 <<
endl;
```

```
                        cout << "The smaller number is: " << num1 <<
endl;
                  } else {
                        cout << "Both numbers are equal." << endl;
                  }

                  return 0;
            }

            Output:
            If the user enters 7 and 3
            Enter the first number: 7
            Enter the second number: 3
            The larger number is: 7
            The smaller number is: 3

            If the user enters 2 and 8:
            Enter the first number: 2
            Enter the second number: 8
            The larger number is: 8
            The smaller number is: 2

            If the user enters 5 and 5:
            Enter the first number: 5
            Enter the second number: 5
            Both numbers are equal.
```

```
// Pass-Fail Determination

            #include <iostream>
            #include <conio.h>
            using namespace std;

            int main() {
                  int score;

                  cout << "Enter the student's score: ";
                  cin >> score;

                  if (score >= 50) {
                        cout << "The student passed." << endl;
                  } else {
                        cout << "The student failed." << endl;
                  }

                  return 0;
            }

            Output:
            If the user enters 75:
            Enter the student's score: 75
            The student passed.

            If the user enters 45:
            Enter the student's score: 45
            The student failed.
```

```
//Absolute Value Calculation

#include <iostream>
#include <conio.h>
using namespace std;

int main() {
	int number;

	cout << "Enter an integer: ";
	cin >> number;

	if (number < 0) {
		number = -number;
	}

	cout << "The absolute value is: " << number <<
endl;

	return 0;
}
Output
If the user enters -25:
Enter an integer: -25
The absolute value is: 25

If the user enters 10:
Enter an integer: 10
The absolute value is: 10

If the user enters 0:
Enter an integer: 0
The absolute value is: 0

////// vedio number 25

//Letter Grade program


#include <iostream>
#include <conio.h>
using namespace std;


int main()
{
	int marks;
	cout << "Enter your marks = ";
	cin >> marks;

	if(marks>100)
	{
		cout << "Invalid Mark" << endl;
	}
	else if(marks< 0)
	{
		cout << "Invalid Mark" << endl;
	}
```

```
            else if(marks>=80)
            {
                  cout << "A++" << endl;
            }
            else if(marks>=70)
            {
                  cout << "A" << endl;
            }
            else if(marks>=60)
            {
                  cout << "A-" << endl;
            }
            else if(marks>=50)
            {
                  cout << "B" << endl;
            }
            else if(marks>=40)
            {
                  cout << "C" << endl;
            }
            else if(marks>=33)
            {
                  cout << "D" << endl;
            }
            else
            {
                  cout << "Fail" << endl;
                  cout << "Best of luck for next time";
            }

            getch();
      }

      Output:
      If the user enters 85:
      Enter your marks = 85
      A++

      If the user enters 72:
      Enter your marks = 72
      A

      If the user enters 45:
      Enter your marks = 45
      C

      If the user enters 28:
      Enter your marks = 28
      Fail
      Best of luck for next time


      ////// vedio number 26

///Logical Operator

AND , OR


///AND
```

```
#include <iostream>
using namespace std;

int main() {
	int a = 5;
	int b = 10;
	int c = 15;

	// Check if both conditions are true
	if (a < b && b < c) {
		cout << "Both conditions are true." << endl;
	} else {
		cout << "One or both conditions are false." <<
endl;
	}

	return 0;
}
Output:
Both conditions are true.


///OR

#include <iostream>
using namespace std;

int main() {
	int a = 5;
	int b = 10;
	int c = 15;

	// Check if at least one condition is true
	if (a > b || b < c) {
		cout << "At least one condition is true." << endl;
	} else {
		cout << "Both conditions are false." << endl;
	}

	return 0;
}


Output:
At least one condition is true.

////// vedio number 27

///Vowel / Consonant program

// Vowel / Consonant

#include <iostream>
#include <conio.h>
using namespace std;


int main()
{
```

```
                char ch;
                cout << "Enter a letter = ";
                cin >> ch;

                // convert any uppercase letter to lowercase letter
                ch = tolower(ch);

                if(ch =='a' || ch =='e' || ch=='i' || ch=='o' ||
ch=='u')
                {
                      cout << "Vowel" << endl;
                }

                else
                {
                      cout << "Consonant" << endl;
                }

                getch();
          }
```

Output
If the user enters a vowel (e.g., 'a', 'E', 'o', etc.), the program will output:
If the user enters a vowel (e.g., 'a', 'E', 'o', etc.), the program will output:

If the user enters a consonant (e.g., 'b', 'C', 'z', etc.), the program will output:
Consonant

////// vedio number 28

```
     //Toupper and tolower example


                #include <iostream>
                #include <cctype>  // For toupper() and tolower()
functions
                using namespace std;

                int main() {
                      char ch;

                      // Input a character from the user
                      cout << "Enter a character: ";
                      cin >> ch;

                      // Convert character to lowercase to simplify
checking
                      char lowerCh = tolower(ch);

                      // Check if the character is a vowel
                      if (lowerCh == 'a' || lowerCh == 'e' || lowerCh ==
'i' || lowerCh == 'o' || lowerCh == 'u') {
                            cout << ch << " is a vowel." << endl;

                            // Convert to uppercase if it's lowercase
                            if (islower(ch)) {
```

```
                                    ch = toupper(ch);
                                    cout << "Converted to uppercase: " <<
ch << endl;
                              } else {
                                    cout << ch << " is already uppercase."
<< endl;
                              }

                        } else if (isalpha(ch)) {  // Check if it's a
consonant (and not a digit or special character)
                              cout << ch << " is a consonant." << endl;

                              // Convert to lowercase if it's uppercase
                              if (isupper(ch)) {
                                    ch = tolower(ch);
                                    cout << "Converted to lowercase: " <<
ch << endl;
                              } else {
                                    cout << ch << " is already lowercase."
<< endl;
                              }

                        } else {
                              cout << ch << " is not an alphabetic
character." << endl;
                        }

                        return 0;
                  }
```

Input: a
Output:
a is a vowel.
Converted to uppercase: A

Input: B
Output:
B is a consonant.
Converted to lowercase: b

Input: 9
Output:
9 is not an alphabetic character.

////// vedio number 29

///Large / small number among 3 numbers

```
                  #include <iostream>
                  #include <conio.h>
                  using namespace std;


                  int main()
                  {

                        int num1, num2, num3, large;
                        cout << "Enter 3 numbers: ";
```

```
                cin >> num1 >> num2 >> num3;

               if(num1> num2 && num1 > num3)
                  {
                        large = num1;
                  }
                  else if(num2> num1 && num2 > num3)
                  {
                        large = num2;
                  }
                  else
                  {
                        large = num3;
                  }

                  cout << "Large Number is : " << large <<
endl;

                  getch();
            }
```

Input: 5 10 3
Output:
Large Number is : 10

```
      ////// vedio number 30

      // Leap Year

      #include <iostream>
      #include <conio.h>
      using namespace std;


      int main()
      {

        int year;

        if ((year%4 == 0 && year%100 != 0) || year % 400
== 0)
        {
              cout << "Leap Year";
        }
        else{
               cout << "Not Leap Year";
        }

            getch();
      }
```

Output:

Input: 1900
Output:
Not Leap Year

```
      ////// vedio number 31
```

```
/// nested if

#include <iostream>
using namespace std;

int main() {
      int score;

      // Input the student's score
      cout << "Enter the student's score (0-100):
";
      cin >> score;

      // Check if the score is within the valid
range
      if (score >= 0 && score <= 100) {
            // Nested if to determine the letter
grade
            if (score >= 90) {
                  cout << "Grade: A" << endl;
            } else if (score >= 80) {
                  cout << "Grade: B" << endl;
            } else if (score >= 70) {
                  cout << "Grade: C" << endl;
            } else if (score >= 60) {
                  cout << "Grade: D" << endl;
            } else {
                  cout << "Invalid score. Please enter a
value between 0 and 100." << endl;
      }

      return 0;
}
```

Input: 72
Output:
Grade: C

////// vedio number 32

```
// Ternary Operator / conditional operator

#include <iostream>
#include <conio.h>
using namespace std;


int main()
{


      int num1, num2;

      cout << "Enter two numbers: ";
      cin >> num1 >> num2;
```

```
	int large = num1>num2 ? num1 : num2;

	cout << "Large Number is : " << large << endl;

	getch();
}
```

```
Input: 8 15
Output:
Large Number is : 15
```

```
////// vedio number 33

	// switch , case, break, default

	#include <iostream>
	#include <conio.h>
	using namespace std;

	int main()
	{
		int digit;

		cout << "Enter a digit : ";
		cin >> digit;

		switch(digit)
		{
			case 0:
				cout << "Zero";
				break;
			case 1:
				cout << "One";
				break;
			case 2:
				cout << "Two";
				break;
			case 3:
				cout << "Three";
				break;
			case 4:
				cout << "Four";
				break;
			case 5:
				cout << "Five";
				break;
			case 6:
				cout << "Six";
				break;
			case 7:
				cout << "Seven";
				break;
			case 8:
				cout << "Eight";
				break;
			case 9:
				cout << "Nine";
				break;
```

```
                        default:
                              cout << "Not a digit";

                        }

                        getch();
                  }

                        Input: 4
                        Output:
                        Four
                        Input: 11
                        Output:
                        Not a digit


                  ////// vedio number 34

                  ///Vowel / consonant program using switch statement


                  #include <iostream>
                  using namespace std;

                  int main() {
                        char ch;

                        // Input a character from the user
                        cout << "Enter a character: ";
                        cin >> ch;

                        // Convert the character to lowercase to handle
both uppercase and lowercase inputs
                        ch = tolower(ch);

                        // Use switch statement to check if the character
is a vowel
                        switch(ch) {
                              case 'a':
                              case 'e':
                              case 'i':
                              case 'o':
                              case 'u':
                                    cout << ch << " is a vowel." << endl;
                                    break;
                              default:
                                    // If the character is not a vowel,
check if it's an alphabetic character
                                    if (isalpha(ch)) {
                                          cout << ch << " is a consonant."
<< endl;
                                    } else {
                                          cout << ch << " is not an
alphabetic character." << endl;
                                    }
                        }

                        return 0;
                  }
                        Input: A
```

```
            Output:
            a is a vowel.
            Input: b
            Output:
            b is a consonant.
            Input: 9
            Output:
            9 is not an alphabetic character.

////// vedio number 35

//for loop

#include<iostream>
#include<conio.h>
using namespace std;

int main()
{

      int x;

      for(x=1; x<=10; x++)
      {
            cout << x << endl;
      }

      getch();
}
output:
1
2
3
4
5
6
7
8
9
10


////// vedio number 36

      //while loop

      #include<iostream>
      #include<conio.h>
      using namespace std;

      int main()
      {

            int x=1;

            while(x<=10)
            {
                  cout << x << endl;
                  x++;
            }
```

```
	getch();
}

output:
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10

////// vedio number 37

// do while loop

#include<iostream>
#include<conio.h>
using namespace std;

int main()
{

	int x=1;


	do {
		cout << x << endl;
		x++;
	}  while(x<=10);

	getch();
}
output:
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10


////// vedio number 38

////while vs do while

#include <iostream>
using namespace std;

int main() {
	int counter = 6;
```

```
	// While loop
	cout << "While loop:" << endl;
	while (counter <= 5) {
		cout << "Counter: " << counter << endl;
		counter++;
	}

	// Do-while loop
	cout << "Do-while loop:" << endl;
	do {
		cout << "Counter: " << counter << endl;
		counter++;
	} while (counter <= 5);

	return 0;
}

output
While loop:
Do-while loop:
Counter: 6

////// vedio number 39

// break and continue keyword

#include<iostream>
#include<conio.h>
using namespace std;

int main()
{
	int x;
	for(x=1; x<=100; x++)
	{
		if(x==10)
			continue;

		cout << x <<endl;

		if(x==20)
			break;
	}

	getch();
}

output:

	1
	2
	3
	4
	5
	6
	7
	8
	9
	11
	12
```

13
14
15
16
17
18
19
20