

**Lab no.:- 2 Date:** 2079-09-15

**Title**: Write a program to find ceiling and floor of real number.

Ceiling Function

Ceiling function is a function in which thesmallest successive integer is returned. In other words, the ceiling function of a real number x is the least integer that is greater than or equal to the given number x. The ceiling function is defined as: f (x) = minimum { a ∈ Z ; a ≥ x }

For example, ⌈4.5⌉ = 5 and ⌈- 4.5⌉ = – 4

Floor Function

The floor function gives the greatest nearest value that is less than or equal to the specified value. That means the resultant value will be less than the specified value. Floor function is the reverse function of the ceiling function. It gives the largest nearest integer of the specified value. It is represented by: f(x) = ⌊x⌋ = Largest Nearest Integer of specified value

For example, ⌊4.5⌋ = 4 and ⌊−4.5⌋ = −5

The ceil function and the floor function have different definitions.

* The ceil function returns the smallest integer value which is greater than or equal to the specified number, whereas the floor function returns the largest integer value which is less than or equal to the specified number.
* Both the functions are represented by square brackets symbol, but with top and bottom parts missing.

**IDE** : Dev-C++

**Language** : C++

**Source Code**

#include <iostream>

using namespace std;

int floor(double v) {

int t;

if (v - (int) v == 0) // check if number a integer or not

return v; //if then it is the answer.

else {

if (v < 0) { //check if the number is negative or not

t = int(v) - 1; //if it is negative then it's integer minus one is the floor

return t;

}

else

return v; //if positive then it's integer is the floor

}

}

int ceiling(double v) {

if (v - (int) v == 0) // check if the number is a integer or not

return v; //if then it is the answer.

else {

if (v < 0) //check if the number is negative or not

return v; //if positive then it's integer is the ceiling

else

return v + 1; //if positive then it's integer plus one is the ceiling

}

}

int main()

{

double v;

cout << "Enter a number : ";

cin >> v;

cout << endl << "Ceiling of " << v << " is : " << ceiling(v);

cout << endl << "Floor of " << v << " is : " << floor(v);

}

**Output**

