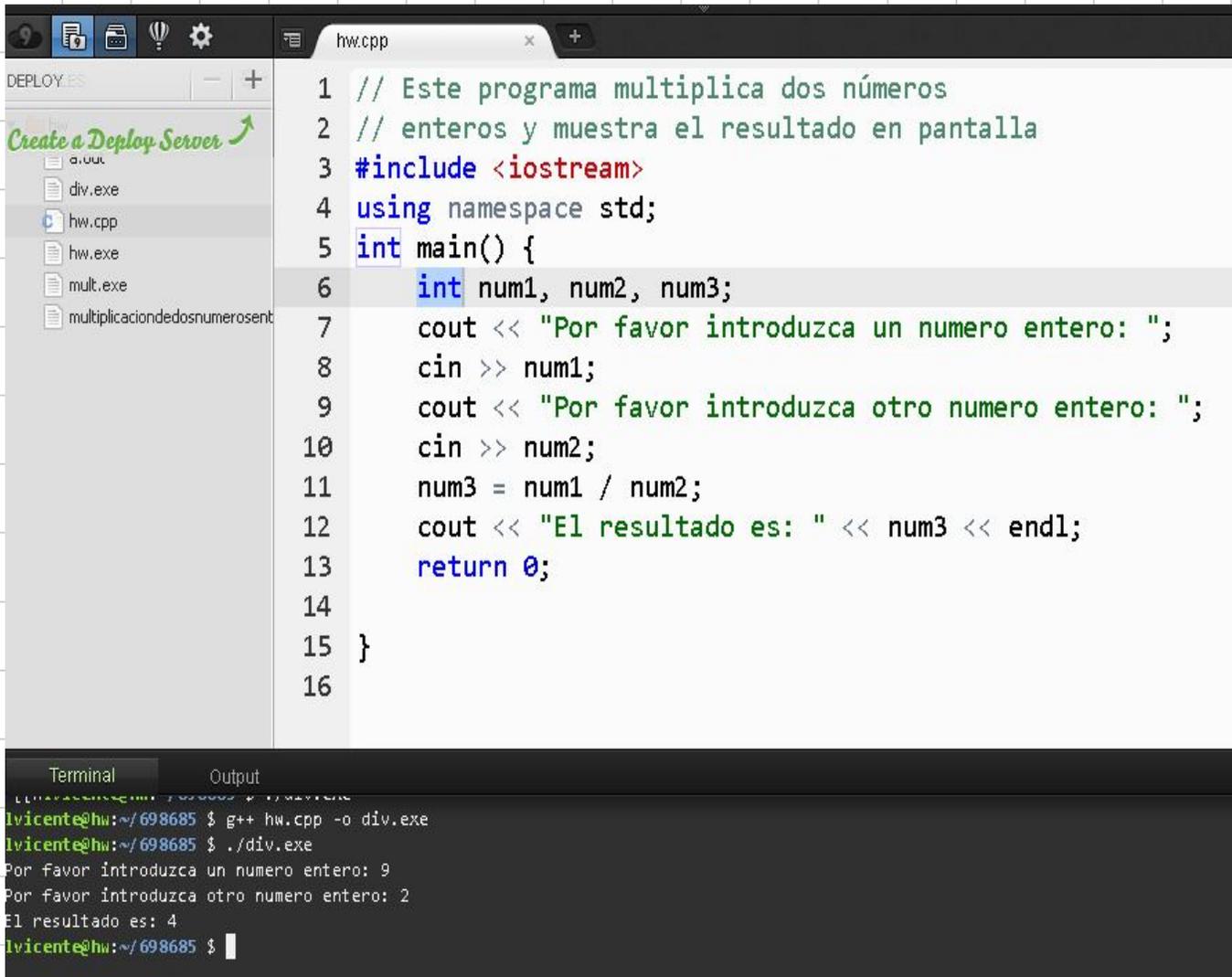


Abrir el cloud nine y vamos a hacer un programa sencillo que multiplique dos números enteros.



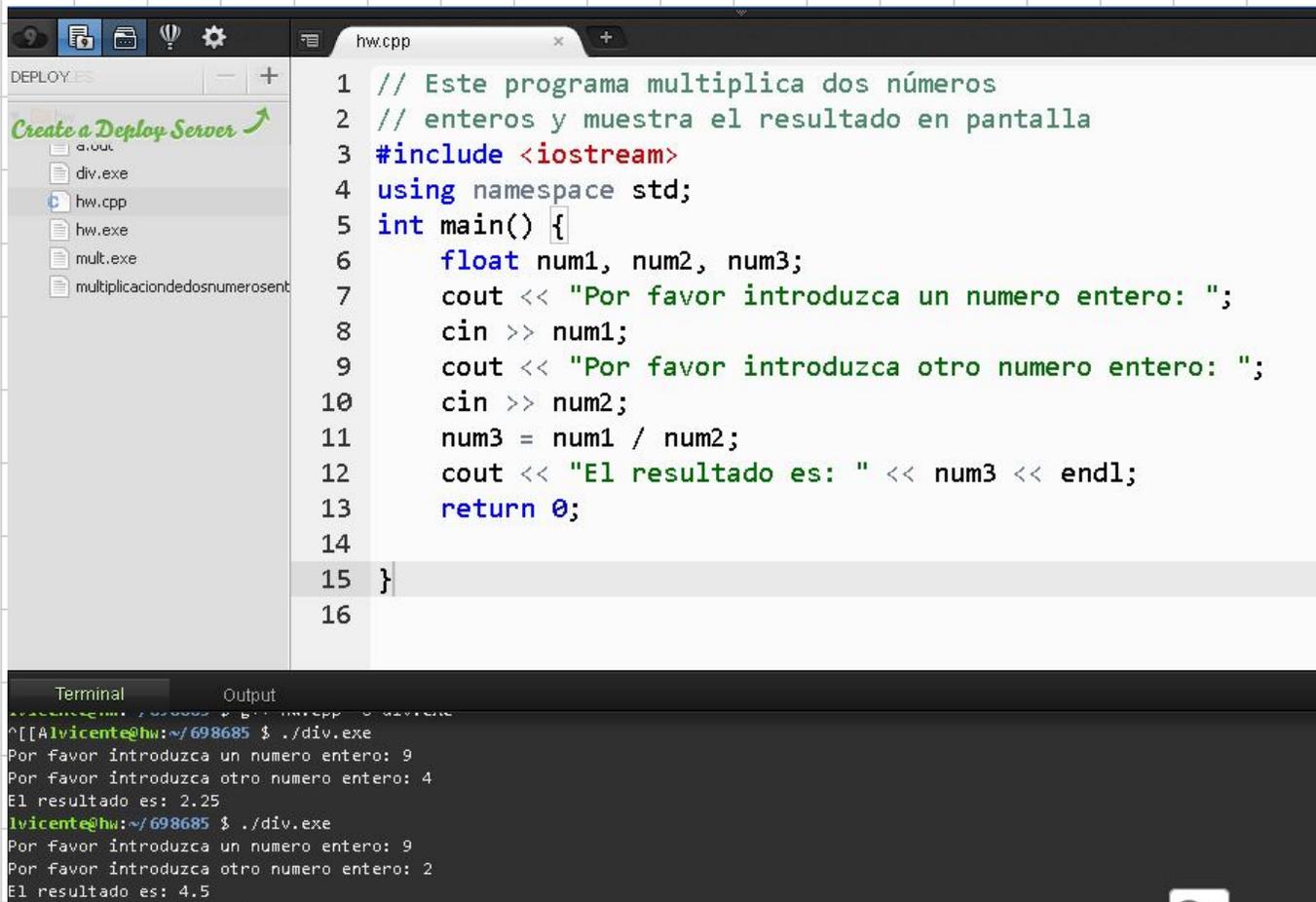
The image shows a code editor window with a file named 'hw.cpp'. The code is a C++ program that prompts the user for two integers and prints their product. Below the code editor is a terminal window showing the compilation and execution of the program.

```
1 // Este programa multiplica dos números
2 // enteros y muestra el resultado en pantalla
3 #include <iostream>
4 using namespace std;
5 int main() {
6     int num1, num2, num3;
7     cout << "Por favor introduzca un numero entero: ";
8     cin >> num1;
9     cout << "Por favor introduzca otro numero entero: ";
10    cin >> num2;
11    num3 = num1 / num2;
12    cout << "El resultado es: " << num3 << endl;
13    return 0;
14
15 }
16
```

Terminal Output:

```
lvicente@hw:~/698685 $ g++ hw.cpp -o div.exe
lvicente@hw:~/698685 $ ./div.exe
Por favor introduzca un numero entero: 9
Por favor introduzca otro numero entero: 2
El resultado es: 4
lvicente@hw:~/698685 $
```

## Ahora vamos a usar números decimales: float



```
1 // Este programa multiplica dos números
2 // enteros y muestra el resultado en pantalla
3 #include <iostream>
4 using namespace std;
5 int main() {
6     float num1, num2, num3;
7     cout << "Por favor introduzca un numero entero: ";
8     cin >> num1;
9     cout << "Por favor introduzca otro numero entero: ";
10    cin >> num2;
11    num3 = num1 / num2;
12    cout << "El resultado es: " << num3 << endl;
13    return 0;
14 }
15 }
16
```

Terminal Output:

```
Alvicente@hw:~/698685 $ ./div.exe
Por favor introduzca un numero entero: 9
Por favor introduzca otro numero entero: 4
El resultado es: 2.25
Alvicente@hw:~/698685 $ ./div.exe
Por favor introduzca un numero entero: 9
Por favor introduzca otro numero entero: 2
El resultado es: 4.5
```

In C++ there are three data types that can represent floating-point numbers. They are

**float**  
double  
long double

The float data type is considered *single precision*. The double data type is usually twice as big as float, so it is considered *double precision*. As you've probably guessed, the long double is intended to be larger than the double. The exact sizes of these data types is dependent on the computer you are using. The only guarantees are

- A double is at least as big as a float.
- A long double is at least as big as a double.

## 2.7

## Integer Data Types

**CONCEPT:** There are many different types of data. Variables are classified according to their data type, which determines the kind of information that may be stored in them. Integer variables can only hold whole numbers.

**Table 2-6** Integer Data Types, Sizes, and Ranges

Data Type	Size	Range
short	2 bytes	-32,768 to +32,767
unsigned short	2 bytes	0 to +65,535
int	4 bytes	-2,147,483,648 to +2,147,483,647
unsigned int	4 bytes	0 to 4,294,967,295
long	4 bytes	-2,147,483,648 to +2,147,483,647
unsigned long	4 bytes	0 to 4,294,967,295

byte      0000 0000 } 0       $2^8 = 2^4 \cdot 2^4 = 16 \cdot 16 = 256$

2 bytes       $2^{16} = 2^8 \cdot 2^8 = 256 \cdot 256 = 65536$  |

$2^{15} = 32768$

**Table 2-8** Floating-Point Data Types on PCs

Data Type	Key Word	Size	Range	Significant Digits
Single precision	<code>float</code>	4 bytes	Numbers between $\pm 3.4\text{E-}38$ and $\pm 3.4\text{E}38$	7
Double precision	<code>double</code>	8 bytes	Numbers between $\pm 1.7\text{E-}308$ and $\pm 1.7\text{E}308$	16
Long double precision	<code>long double</code>	8 bytes*	Numbers between $\pm 1.7\text{E-}308$ and $\pm 1.7\text{E}308$	16