

The screenshot shows the Embarcadero Dev-C++ 6.3 IDE. The main window displays a C++ file named 'strong number or not c++.cpp'. The code defines a recursive factorial function and an 'isStrongNumber' function that calculates the sum of the factorials of the digits of a given number. The main function prompts the user to enter a number. A console window on the right shows the program's output for the input '145', confirming it is a strong number. The compiler log at the bottom indicates a successful compilation with no errors or warnings.

```
1 #include <iostream>
2 using namespace std;
3
4 int factorial(int num) {
5     if (num == 0 || num == 1) {
6         return 1;
7     }
8     return num * factorial(num - 1);
9 }
10
11 bool isStrongNumber(int n) {
12     int originalNum = n;
13     int sum = 0;
14
15     while (n > 0) {
16         int digit = n % 10;
17         sum += factorial(digit);
18         n /= 10;
19     }
20
21     return sum == originalNum;
22 }
23
24 int main() {
25     int num;
26     cout << "Enter a number: ";
27     cin >> num;
```

Console Output:

```
Enter a number: 145
145 is a strong number.

-----
Process exited after 3.766 seconds with return value 0
Press any key to continue . . .
```

The screenshot shows the Embarcadero Dev-C++ 6.3 IDE. The main window displays a C++ file named 'happy number or not c++.cpp'. The code defines a 'sumOfSquares' function and an 'isHappy' function that uses a set to detect cycles in the sequence of sums of squares of digits. The main function prompts the user to enter a number. A console window on the right shows the program's output for the input '19', confirming it is a happy number. The compiler log at the bottom indicates a successful compilation with no errors or warnings.

```
1 #include <iostream>
2 #include <unordered_set>
3
4 int sumOfSquares(int n) {
5     int sum = 0;
6     while (n > 0) {
7         int digit = n % 10;
8         sum += digit * digit;
9         n /= 10;
10    }
11    return sum;
12 }
13
14 bool isHappy(int n) {
15     std::unordered_set<int> seen;
16     while (n != 1 && seen.find(n) == seen.end()) {
17         seen.insert(n);
18         n = sumOfSquares(n);
19     }
20     return n == 1;
21 }
22
23 int main() {
24     int num;
25     std::cout << "Enter a number: ";
26     std::cin >> num;
27     if (isHappy(num)) {
```

Console Output:

```
Enter a number: 19
19 is a happy number.

-----
Process exited after 3.742 seconds with return value 0
Press any key to continue . . .
```



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```
1 using namespace std;
2
3 bool isNeon(int n) {
4     int square = n * n;
5     int sum = 0;
6
7     while (square > 0) {
8         sum += square % 10;
9         square /= 10;
10    }
11
12    return sum == n;
13 }
14
15 int main() {
16     int num;
17     cout << "Enter a number: ";
18     cin >> num;
19
20     if (isNeon(num)) {
21         cout << num << " is a neon number." << endl;
22     } else {
23         cout << num << " is not a neon number." << endl;
24     }
25
26    return 0;
27 }
```

Enter a number: 9  
9 is a neon number.

Process exited after 20.12 seconds with return value 0  
Press any key to continue . . .

```
1 #include <iostream>
2 using namespace std;
3
4 bool isBuzz(int n) {
5     return (n % 10 == 7) || (n % 7 == 0);
6 }
7
8 int main() {
9     int num;
10    cout << "Enter a number: ";
11    cin >> num;
12
13    if (isBuzz(num)) {
14        cout << num << " is a buzz number." << endl;
15    } else {
16        cout << num << " is not a buzz number." << endl;
17    }
18
19    return 0;
20 }
```

Enter a number: 14  
14 is a buzz number.

Process exited after 1.842 seconds with return value 0  
Press any key to continue . . .



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