

Source File: ~/3304/lab05.(C|CPP|cpp|c++|cc|cxx|cp)
Input: Under control of main function
Output: Under control of main function
Value: 2

This assignment is based on Algorithm Workbench #3, p. 31. Write a function template that receives an integral parameter and returns a string containing the internal binary representation of the integral parameter. Your function must be portable.

A sample main function for testing your implementation is shown in Figure 1 and a sample execution sequence is shown in Figure 2. To use the Makefile as distributed in class, add a target of lab05main to targets1srcfiles.

```
1  #include <iostream>
2  #include <iomanip>
3  #include <climits>
4  #include <string>
5  #include <vector>
6
7  using namespace std;
8
9  template <typename T>
10 string int2binary(T num);
11
12 #include "lab05.cpp"
13
14 int main()
15 {
16     vector<char> c{CHAR_MIN, -1, 0, 1, CHAR_MAX};
17     vector<short> s{SHRT_MIN, -1, 0, 1, SHRT_MAX};
18     vector<int> i{INT_MIN, -1, 0, 1, INT_MAX};
19     vector<long> l{LONG_MIN, -1, 0, 1, LONG_MAX};
20
21     int width = to_string(CHAR_MIN).length();
22     for (auto i : c)
23         cout << setw(width) << static_cast<int>(i) << " = "
24              << int2binary(i) << endl;
25
26     width = to_string(SHRT_MIN).length();
27     for (auto i : s)
28         cout << setw(width) << i << " = " << int2binary(i) << endl;
29
30     width = to_string(INT_MIN).length();
31     for (auto j : i)
32         cout << setw(width) << j << " = " << int2binary(j) << endl;
33
34     width = to_string(LONG_MIN).length();
35     for (auto i : l)
36         cout << setw(width) << i << " = " << int2binary(i) << endl;
37
38     return 0;
39 }
```

Figure 1. /usr/local/3304/src/lab05main.C

