**ASSIGNMENT NO.:** Date:

**PROBLEM STATEMENT:**

Write a program in C++ to add two values using function template. The values can be integer, float or strings. For strings, perform concatenation of them when added.

**ALGORITHM:**

**Algorithm for generic method add() :**

**Generic argument type :** T

**Arguments :** a, b

1. Set c = a + b
2. Return c

[End of method add]

**Algorithm for operator method + on two strings() :**

**Arguments :** a, b

1. Set c = Contents of a
2. Append contents of b to c
3. Return c

**Algorithm for method main() :**

1. Print “Enter two integers : “
2. Input a, b
3. Print a “ + “ b “ : “ add(a, b)
4. Print “Enter two doubles : “
5. Input c, d
6. Print c “ + “ d “ : “ add(c, d)
7. Print “Enter two strings : “
8. Input e, f
9. Print “ ’ ” e “ ‘ + ‘ “ f “ ‘ : “ add(e, f)

**SOURCE CODE:**

#include <iostream>

using namespace std;

template <class T>

T add(T &a, T &b) {

return a + b;

}

string operator+(string &a, string &b) {

string c;

c.append(a);

c.append(b);

return c;

}

int main() {

int a, b;

cout << "Enter two integers : ";

cin >> a >> b;

cout << a << " + " << b << " : " << add<int>(a, b) << endl;

double c, d;

cout << "Enter two floats : ";

cin >> c >> d;

cout << c << " + " << d << " : " << add<double>(c, d) << endl;

string e, f;

cout << "Enter two strings : ";

cin >> e >> f;

cout << "'" << e << "' + '" << f << "' : " << add<string>(e, f) << endl;

}

**INPUT & OUTPUT:**

**Set 1:**

Enter two integers : 4 6

4 + 6 : 10

Enter two floats : 2.88 6.99

2.88 + 6.99 : 9.87

Enter two strings : programmer boy

'programmer' + 'boy' : programmerboy

**Set2:**

Enter two integers : 7 9

7 + 9 : 16

Enter two floats : 9.877 675.77

9.877 + 675.77 : 685.647

Enter two strings : college student

'college' + 'student' : collegestudent

**DISCUSSION:**

* In case of template methods, for each type instance of the method, a new specific method is created, and hence more space is required.
* If a class does not have the ‘+’ operator method implemented for two of its values, then the above ‘add’ method will fail.