// 13-Roman\_to\_Integer.cpp //

#include <iostream>

#include <map>

#include <string>

#include <vector>

using namespace std;

class Solution {

public:

int romanToInt(string str) {

int total = 0;

int i = 0;

map<char, int> values = { {'I', 1}, {'V', 5}, {'X', 10}, {'L', 50}, {'C', 100}, {'D', 500}, {'M', 1000} };

while (i < str.size()) {

if ( i + 1 < str.size() && (values[str[i]] < values[str[i + 1]]))

{

total += values[str[i+1]] - values[str[i]];

i += 2;

}

else

{

total += values[str[i]];

i += 1;

}

}

return total;

}

};

int main()

{

Solution sol;

string str("III");

auto out = sol.romanToInt(str);

cout << str + ": " << out << endl; // 3

str = "IV";

out = sol.romanToInt(str);

cout << str + ": " << out << endl; // 4

str = "IX";

out = sol.romanToInt(str);

cout << str + ": " << out << endl; // 9

str = "LVIII";

out = sol.romanToInt(str);

cout << str + ": " << out << endl; // 58

str = "MCMXCIV";

out = sol.romanToInt(str);

cout << str + ": " << out << endl; // 1994

}