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/*
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Assignment: Homework 4.6, e.g., Lab1C

Homework 4.6
*/

#include <iostream>
#include <string>
using namespace std;

int main()
{
  bool done = false;
  string unit1 = "";
  string unit2 = "";
  double factor1 = 0; // conversion factor from first unit to cm
  double factor2 = 0; // conversion factor from cm to second unit

  while (!done) //unless done continuously display conversion prompt
  {
    bool again = false; // true to repeat the same conversion
    cout << "From unit (in, cm, m, again, quit): " << endl;
    string command;
    cin >> command;
    if (command == "in")            //all conversions from cm to input
    {
      factor1 = 2.54;
      unit1 = command;
    }
    else if (command == "cm")
    {
      factor1 = 1.0;
      unit1 = command;
    }
    else if (command == "m")
    {
      factor1 = 100;
      unit1 = command;
    }
    else if (command == "again")  //wont go into next if that will convert to another unit
    {
      again = true;
    }
    else if (command == "quit")
    {
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      done = true;
    }
    else
    {
      cout << "Sorry, unknown unit." << endl;
    }

    if (factor1 != 0 && !again && !done) //new unit to convert
    {
      cout << "To unit: " << endl;
      cin >> unit2;
      if (unit2 == "in")
      {
        factor2 = 1.0 / 2.54;
      }
      else if (unit2 == "m")
      {
        factor2 = 1.0/100.0;
      }
      else if (unit2 == "cm")
      {
        factor2 = 1.0/1.0;
      }
      else
      {
        cout << "Sorry, unknown unit." << endl;
      }
    }

    if(factor1 != 0 && !done && factor2 != 0) //when not done and you can convert
    {
      // Read value to be converted
      double value;
      cin >> value;
      // Convert and print result
      cout << value << " " << unit1 << " = "
        << value * factor1 * factor2 << " " << unit2 << endl; //print the conversion
    }
  }

  return 0;
}
```