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1 // Author: M. Mercurio
2 // Date: March 9, 2022
3 // Description: Conversion Program
4
5 #include <iostream> // for cin, cout
6 #include <string>
7 #include <cmath>
8
9 using namespace std;
10
11 int main()
12 {
13     string init_unit, sec_unit; //declaration of the conversion units
14     double conv_val;           //declaration of the number to be converted
15
16     // Welcome message
17     cout<< "-----\n"
18     << "| length Conversion |\n"
19     << "-----\n\n";
20
21     //request conversion unit
22     cout<<"Enter initial conversion unit (mm, cm, m, km): \n"; //user enters units
23     cin>>init_unit;
24
25     if (init_unit != "mm" && init_unit != "cm" && init_unit != "km" )
26     {
27         cerr<<"--> Sorry, unit to convert from is invalid\n"
28         <<"Thank you for using Metric Unit converter Program\n";
29     }
30     else
31     {
32         cout<<"Enter unit to convert to (mm, cm, m, km): \n"; //user enters units
33         cin>>sec_unit;
34
35     }
36     if (sec_unit != "mm" && sec_unit != "cm" && sec_unit != "m" && sec_unit != "km")
37     {
38         cout<<"--> Sorry, unit to convert TO is invalid\n"
39         <<"Thank you for using Metric Unit converter Program\n";
40     }
41     else if (init_unit == "mm" && sec_unit == "cm")
42     {
43         cout<<"Enter numerical value to convert: \n";
44         cin>>conv_val;
45         cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*10<<" "<<sec_unit<<endl //cm=mm*10
46         <<"Thank you for using Metric Unit converter Program\n";
47     }
48     else if (init_unit == "mm" && sec_unit == "m")
49     {
50         cout<<"Enter numerical value to convert: \n";
51         cin>>conv_val;
52         cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*100<<" "<<sec_unit<<endl //m=mm*100
53         <<"Thank you for using Metric Unit converter Program\n";
54     }
55     else if (init_unit == "mm" && sec_unit == "km")
56     {
57         cout<<"Enter numerical value to convert: \n";
58         cin>>conv_val;
59         cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*100000<<" "<<sec_unit<<endl //km=100000*mm
60         <<"Thank you for using Metric Unit converter Program\n";
61     }
62     else if (init_unit == "cm" && sec_unit == "mm")
63     {
64         cout<<"Enter numerical value to convert: \n";
65         cin>>conv_val;
66         cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/10<<" "<<sec_unit<<endl //cm=mm*10
67         <<"Thank you for using Metric Unit converter Program\n";
68     }
69     else if (init_unit == "cm" && sec_unit == "m")
70     {
71         cout<<"Enter numerical value to convert: \n";
72         cin>>conv_val;
```



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67 <<"Thank you for using Metric Unit converter Program\n";
68 }
69 else if (init_unit == "cm" && sec_unit == "m")
70 {
71 cout<<"Enter numerical value to convert: \n";
72 cin>>conv_val;
73 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*10<<" "<<sec_unit<<endl //cm=m*10
74 <<"Thank you for using Metric Unit converter Program\n";
75 }
76 else if (init_unit == "cm" && sec_unit == "mm")
77 {
78 cout<<"Enter numerical value to convert: \n";
79 cin>>conv_val;
80 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/10<<" "<<sec_unit<<endl //cm=mm*10
81 <<"Thank you for using Metric Unit converter Program\n";
82 }
83 else if (init_unit == "cm" && sec_unit == "m")
84 {
85 cout<<"Enter numerical value to convert: \n";
86 cin>>conv_val;
87 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*10<<" "<<sec_unit<<endl //m=cm*10
88 <<"Thank you for using Metric Unit converter Program\n";
89 }
90 else if (init_unit == "cm" && sec_unit == "km")
91 {
92 cout<<"Enter numerical value to convert: \n";
93 cin>>conv_val;
94 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*10000<<" "<<sec_unit<<endl //km=10000*cm
95 <<"Thank you for using Metric Unit converter Program\n";
96 }
97 else if (init_unit == "m" && sec_unit == "mm")
98 {
99 cout<<"Enter numerical value to convert: \n";
100 cin>>conv_val;
101 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/100<<" "<<sec_unit<<endl //m=mm*100
102 <<"Thank you for using Metric Unit converter Program\n";
103 }
104 else if (init_unit == "m" && sec_unit == "cm")
105 {
106 cout<<"Enter numerical value to convert: \n";
107 cin>>conv_val;
108 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/10<<" "<<sec_unit<<endl //m=cm*10
109 <<"Thank you for using Metric Unit converter Program\n";
110 }
111 else if (init_unit == "m" && sec_unit == "km")
112 {
113 cout<<"Enter numerical value to convert: \n";
114 cin>>conv_val;
115 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val*1000<<" "<<sec_unit<<endl //km=1000*m
116 <<"Thank you for using Metric Unit converter Program\n";
117 }
118 else if (init_unit == "km" && sec_unit == "mm")
119 {
120 cout<<"Enter numerical value to convert: \n";
121 cin>>conv_val;
122 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/100000<<" "<<sec_unit<<endl //km=100000*mm
123 <<"Thank you for using Metric Unit converter Program\n";
124 }
125 else if (init_unit == "km" && sec_unit == "cm")
126 {
127 cout<<"Enter numerical value to convert: \n";
128 cin>>conv_val;
129 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/10000<<" "<<sec_unit<<endl //km=10000*cm
130 <<"Thank you for using Metric Unit converter Program\n";
131 }
132 else if (init_unit == "km" && sec_unit == "m")
133 {
134 cout<<"Enter numerical value to convert: \n";
135 cin>>conv_val;
136 cout<<"Result of conversion: "<<conv_val<<" is equivalent to "<<conv_val/1000<<" "<<sec_unit<<endl //km=1000*m
137 <<"Thank you for using Metric Unit converter Program\n";
138 }
139 system("Pause");
140 }

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Output

```
-----  
| length Conversion |  
-----  
  
Enter initial conversion unit (mm, cm, m, km):  
mm  
Enter unit to convert to (mm, cm, m, km):  
cm  
Enter numerical value to convert:  
300  
Result of conversion: 300 is equivalent to 3000 cm  
Enter initial conversion unit (mm, cm, m, km):  
cm  
Enter unit to convert to (mm, cm, m, km):  
m  
Enter numerical value to convert:  
300  
Result of conversion: 300 is equivalent to 3000 m  
Enter initial conversion unit (mm, cm, m, km):  
km  
Enter unit to convert to (mm, cm, m, km):  
m  
Enter numerical value to convert:  
320  
Result of conversion: 320 is equivalent to 0.32 m  
Enter initial conversion unit (mm, cm, m, km):  
km  
Enter unit to convert to (mm, cm, m, km):  
cm  
Enter numerical value to convert:  
342  
Result of conversion: 342 is equivalent to 0.0342 cm  
  
...Program finished with exit code 0  
Press ENTER to exit console.□
```