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C ++ programming language

Lectures and Exercises

6th edition

Chapter 3. Working with data

Programming exercises  
  
1. Write a short program that requests growth in inches and converts them into feet and inches. The program must use the underscore to indicate the position where the input will be made. To represent the conversion factor, use the character constant const.

2. Write a short program that requests growth in feet and inches and weight in pounds. (To store this information, use three variables.) The program must produce a body mass index (BMI). To calculate the body mass index, first convert the growth in feet and inches to a height in inches (1 foot = 12 inches). Then convert the growth in inches to height in meters, multiplying by 0.0254. Next, convert the weight in pounds into weight in kilograms, dividing by 2.2. After that, calculate the BMI by dividing the mass in kilograms per square meter in meters. To represent different transformation coefficients, use symbolic constants.

3. Write a program that asks for latitude in degrees, minutes and seconds, and then displays the latitude in decimal format. In one minute 60 arc seconds, about one degree 60 arc minutes; represent these values ​​using symbolic constants. For each input value, a separate variable must be used. The output of the program should look like this:

Enter a latitude in degress, minutes, and seconds:

First, enter the degress: 37

Next, enter the minutes of arc: 19

37 degress, 51 minutes, 19 seconds = 37.8583 degress.

4. Write a program that asks for the number of seconds as an integer value (use the type long or long long if the latter is available and then displays the equivalent value in days, hours, minutes.) To represent the number of hours in a day, the number of minutes in an hour, and the number of seconds in a minute use symbolic constants.The output of the program should look like this:

Enter the number of seconds: 316000000

31600000 seconds = 365 days, 17 hours, 46 minutes, 40 seconds.

5. Write a program that asks for the current population of the Earth and the current population of the United States (or any other country). Save this information in a variable of type long long. As a result, the program should reflect the percentage of the population of the United States or the selected country and the world. The output of the program should look like this:

Enter the world's population: 6898758899

Enter the population of the US: 310783781

The population of the US is 4.50492% of the world population.

You can search the Internet for value.

6. Write a program that asks for the number of miles passed by the car and the number of gallons spent on gasoline, and then reports the value of the number of miles per gallon. Or, if you want, the programs can ask for the distance in kilometers, and the volume of gasoline in liters, and give the result in the form of a quantity of liters per 100 km.

7. Write a program that asks for European-style gasoline consumption (the number of liters per 100 km) and converts it into a style accepted in the US - the number of miles per gallon. Note that in addition to using other units of measurement, the US approach (distance / fuel) is the opposite of the European (fuel / distance) approach. Note that 100 km corresponds to 62.14 miles, and 1 gallon is 3.875 liters. Thus, 19 miles per gallon is approximately equal to 12.4 liters per 100 kilometers, and 27 miles per gallon is approximately 8.7 liters per 100 kilometers.