

Writing an algorithm

Sample Problem

Write an algorithm to determine if a user's feet and inches is above the US average for his/her gender. The user will enter a single letter, which can be either f, F, m or M, to indicate his/her gender and his height in meters. The algorithm will validate the user's gender and height in meters. If the gender is not either f, F, m or M, the program will display the appropriate error message and terminate. Analogously, if the height provided by the user is less than zero, the program will display an error message and then terminate. On the contrary, the algorithm will compute the user's height in feet and inches and determine whether the user's height is above or equal to the US average for his/her gender.

US Average Height:

Female	5 feet 4 inches
Male	5 feet 9 inches

Equivalences:

1 meter is 3.2808399 feet
1 feet is 12 inches

Algorithm:

1. Prompt the user for his/her gender.
2. Read in the user's gender and store it in variable called ***genderLetter***.
3. If the ***genderLetter*** is not "f" or "F" or "m" or "M"
 Display an error message
 Terminate
else
 if the ***genderLetter*** is F then
 gender = "female"
 else
 gender = "male"
4. Prompt the user for his/her height in meters
5. Read in the user's height and store it in variable called ***heightInMeters***
6. If the ***heightInMeters*** is less than 0 then
 Display an error message
 Terminate
7. Convert ***heightInMeters*** to total inches by multiplying the user's height in meters (***heightInMeters***) by 0.3.2808399:
 totalInches = ***heightInMeters*** * 0.3.2808399
8. Compute the feet by obtaining the integral part of the total inches (***totalInches***):
 feets = (int) ***totalInches***
9. Compute the ***inches*** by multiplying the decimal part of total inches (***totalInches***) by 12 and obtain the integral part of this result:
 inches = (int) ((***totalInches****12)
10. Display the user's height in ***feets*** and ***inches***.
11. If the user is a female and her height in feet and inches is greater than or equal to 5' 4" or the user is a male and his height in feet and inches is greater than or equal to then 5' 9" then
 Display a message indicating that the user's height is above the average height for his/her gender specifying the user's ***gender***.
else
 Display a message indicating that the user's height is less than or equal than the average for his/her gender specifying the user's ***gender***.