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CS161 – Assignment #2/Quiz #4
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Q1: Write the pseudocode for the algorithm you are going to use to determine which calculation to perform based on the input from the user.

1) Prompt the user to choose a shape (circle/sphere, rectangle/prism, trapezoid/prism, or triangle/prism).
2) Prompt the user to choose to calculate the area, the volume, or both the area and the volume of the chosen shape.
3) Prompt the user to enter the appropriate dimensions for the chosen shape and measurement.
    a. If the user chose "**area of circle/sphere**", prompt user to enter "radius".
    b. If the user chose "**area of rectangle/prism**", prompt user to enter "height" and "width".
    c. If the user chose "**area of trapezoid/prism**", prompt user to enter "base 1", "base 2", and "height".
    d. If the user chose "**area of triangle/prism**", prompt user to enter "base" and "height".
    e. If the user chose "**volume of circle/sphere)**" or "**both area and volume of circle/sphere**", prompt user to enter "radius".
    f. If the user chose "**volume of rectangle (prism)**" or "**both area and volume of rectangle (prism)**", prompt user to enter "height", "width", and "length".
    g. If the user chose "**volume of trapezoid (prism)**" or **"both area and volume of trapezoid (prism)**", prompt user to enter "base 1", "base 2", "height", and "length".
    h. If the user chose "**area of triangle (prism)**" or "**both area and volume of triangle (prism)**", prompt user to enter "base", "height", and length.
4) Calculate the area, the volume, or the area and the volume of the chosen shape:
    a. If the user chose "**area of circle/sphere**": Area = pi * r^2
    b. If the user chose "**area of rectangle/prism**": Area = h * w
    c. If the user chose "**area of trapezoid/prism**": Area = ½ * (b1 + b2) * h
    d. If the user chose "**area of triangle/prism**": Area = ½ * b * h
    e. If the user chose "**volume of circle/sphere)**": Volume = 4/3 * pi * r^3
    f. If the user chose "**volume of rectangle (prism)**": Volume = h * w * l
    g. If the user chose "**volume of trapezoid (prism)**": Volume = (½ * (b1 + b2) * h) * l
    h. If the user chose "**area of triangle (prism)**": Volume = (½ * b * h) * l
    i. If the user chose "**both area and volume of circle/sphere**": Area = pi * r^2 and Volume = 4/3 * pi * r^3
    j. If the user chose "**both area and volume of rectangle (prism)**": Area = h * w and Volume = h * w * l
    k. If the user chose **"both area and volume of trapezoid (prism)**": Area = ½ * (b1 + b2) * h and Volume = (½ * (b1 + b2) * h) * l

    l. If the user chose "**both area and volume of triangle (prism)**": Area = ½ * b * h and Volume = (½ * b * h) * l
5) Display the area, volume, or area and volume of the shape as appropriate.
6) Ask the user if he/she would like to have another shape's area and/or volume calculated. If the user choose to continue, repeat steps 1 – 6. If the user chooses to stop, proceed to step 7.
7) Display a "Thank you for playing" type message and end program.

Q2: What kind of loop are you going to use to ask the user if he/she wants to continue to find the area and/or volume of a shape? Discuss why this loop is preferred over other types of loops

I would use a while loop as it is preferable for looping until some condition is met rather than a for loop that loops through a pre-planned series of steps. A for loop could be made to work, but the while loop is designed for cases exactly like this. Cases where the end condition could occur after any iteration.