# Zaniah's Computer Science Work

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This is my project prompt:

*The blue circle represents a fountain and the orange part the flower bed. Write a program in Python that will welcome the user and then prompt them for the following three dimensions of the garden:*

*1. Length of one of the sides of the garden*
*2. Radius of the fountain*
*3. Depth of the flower bed*

*It will then calculate and display the following items of information:*

*The total square footage of the garden*
*The square footage of the fountain*
*The square footage of the flower bed*
*The amount of soil (in cubic feet) needed for the flower bed*

*Remember that the area of a square is the length of one of its sides squared (total square footage of the garden plot).*
*Also, the area of a circle is πr2, where r is the radius of the circle.*
*Hint:  The square footage of the flower bed will be the total area of the garden minus the area of the fountain.*
*The volume for the soil (in cubic feet) is the square footage of the flower bed times its depth.*
*Requirements*
*Write your Python program to perform the following:*

- *Welcome the user*
- *Prompt the user for the length of one of the sides of the garden and store that value.*
- *Prompts the user for the radius of the fountain and store that value.*
- *Calculate the total square footage of the flower bed and store that value.*
- *Prompt the user for the depth of the flower bed and store that value.*
- *Calculate and display the amount of soil required for the flower bed.*

*Your program should define and call at least 5 helper functions - one for each of the sub-tasks listed above. In addition, your program should include a main() function that calls the helper functions.*

*The helper functions should include:*
*1. A function, welcome(), for displaying the welcome message.*
*2. A function, garden_area(length), to compute and return the total square footage of the garden (hint: area = length **2)*
*3. A function, fountain_area(fountain_radius), to compute and return the square footage of the fountain (hint: area = math.pi * (r**2))*
*4. A function, bed_area(garden_area, fountain_area), to compute and return the square footage of the flower bed*
*5. A function, soil_volume(area, depth), to compute and return the amount of soil needed in cubic feet*

*Note, functions #2, #3, #4 and #5 above are required to have arguments.*
*Your main() function will include code to:*

*• Ask for the inputs, store them in appropriately named variables and "echo" back to the user what they entered.*

*• Call all of your helper functions with appropriate arguments.*

*• Print all of your outputs.*

*See example output for the proper order of outputs.*
*After you define your helper functions and the main function, don't forget to include a call to it afterwards:*
*main()*
*Use the math module for the value of π. Additionally, round all calculations to 1 decimal place.*
*Include a descriptive comment before each function and each major section of your code.*
*Briefly describe in English (not code) what the function or section does. Be sure to include any assumptions. Write it for another software developer to read, meaning one that already knows Python.*
*Write out the algorithm in pseudocode for this project. Remember, the pseudocode algorithm is NOT a stripped-down version of your Python code. Rather, your program is an expanded version of your pseudocode. Use the "<-" symbol to represent assignment of values to variables.*
*Here is an example for the pseudocode algorithm for the sub-task, calculate total area of garden:*

*sub-task calculate area of garden (given: side length)*
    *area of garden <- side length * side length*
*The main task algorithm may be written as:*

*main task: garden soil calculator*
    *welcome the user*
    *input garden side-length and echo it*
    *calculate area of garden*
    *display area of garden*
    *<steps for the rest of the sub-tasks go here>*
*You should complete the pseudocode and convince yourself that you have it right, BEFORE starting to code. This will help you make fewer mistakes and finish earlier. Believe me!*
*Test your program thoroughly before submitting by running it multiple times with different input values.*
*Examples (user input in bold face blue)*
*Welcome to my Garden Plot Calculator*
*Note, all calculations are in feet*
*Please enter the length of one of the sides of the garden: 10.0*
*You entered 10.0*
*Please enter the radius of the fountain: 2.0*
*You entered 2.0*
*Please enter the depth of the flower bed: 0.45*
*You entered 0.45*
*The total square footage of the garden is 100.0*
*The square footage of the fountain is 12.6*
*The square footage of the flower bed is 87.4*
*The flower bed needs 39.3 cubic feet of soil*
*Welcome to my Garden Plot Calculator*
*Note, all calculations are in feet*
*Please enter the length of one of the sides of the garden: 10.5*
*You entered 10.5*
*Please enter the radius of the fountain: 2.5*

*You entered 2.5*

*Please enter the depth of the flower bed: 0.3*

*You entered 0.3*

*The total square footage of the garden is 110.2*

*The square footage of the fountain is 19.6*

*The square footage of the flower bed is 90.6*

*The flower bed needs 27.2 cubic feet of soil*

*Welcome to my Garden Plot Calculator*

*Note, all calculations are in feet*

*Please enter the length of one of the sides of the garden: 5.9*

*You entered 5.9*

*Please enter the radius of the fountain: 2.9*

*You entered 2.9*

*Please enter the depth of the flower bed: 0.4*

*You entered 0.4*

*The total square footage of the garden is 34.8*

*The square footage of the fountain is 26.4*

*The square footage of the flower bed is 8.4*

*The flower bed needs 3.4 cubic feet of soil*

*>*

this is what i have so far

```
import math #import math module so that I can use math in my program

def welcome():#defined a function named welcome so that I can easily welcome the user to my program
    print("Welcome to my Garden plot calculator!")
    ("Note, all calculations are in feet")

def garden_length(garden) :#defined a function named garden length
    print(float(input("Enter the length of side one of your garden here: ")))
    print("You entered:",garden_length)
    garden_area = (garden_length**2) #finds the area of the garden

    return garden_area #returns the total area of the garden

def fountain_radius(fountain):
    print(float(input("Enter the radius of the fountain here: ")))  #asks the user for the radius of the fountain
    print("You entered:", fountain_radius) #echos the variable back to user
    fountain_area = math.pi * (fountain_radius**2) #finds area of the fountain
    return fountain_area#returns the square footage

def bed_area(depth):
    print(float(input("Enter the depth of the flower bed here: "))) #asks user for depth of flower bed
    print("You entered:",depth) #echos variable back to user
    bed_area=(garden_area-fountain_area) #returns the square footage of bed
    return bed_area#returns square footage
```

```
def soil_volume(soil):
    soil_volume=(bed_area*depth) #calculates the volume
    return soil_volume #returns the volume

def main(garden_area,fountain_area,bed_area,soil_volume):
    print(float("The total square footage of the garden is", garden_area)
    print(float("The square footage of the fountain is", fountain_area)
    print(float("The square footage of the flower bed is", bed_area)
```

Could you tell me if everything looks fine so far and explain how I can get the amount of soil in cubic feet needed for the flower bed please? Thank you