CT103: Week 9 Lab Session (14/11/2023)

*Note: This assignment will count towards your final grade. Make sure you submit your solution by following the "**Submission Instructions**" at the end of this document. You have **until midnight tonight to submit your solution on Canvas**.*

Late assignment submissions will receive a penalty.

Please make sure you **write comments** explaining what your code does. Start your C program with a **comment stating your; Name, Student ID and Date**.

Write a C program that does the following:

1. Write a function that calculates the volume of water in a swimming pool. The function should read in the following parameters: length (m), width (m) and height (m). The function should calculate the volume of the pool in m^3, i.e. vol = L x W x H. The function should return the volume as a float. The volume should be printed to the screen in the main function. (**25 marks**)

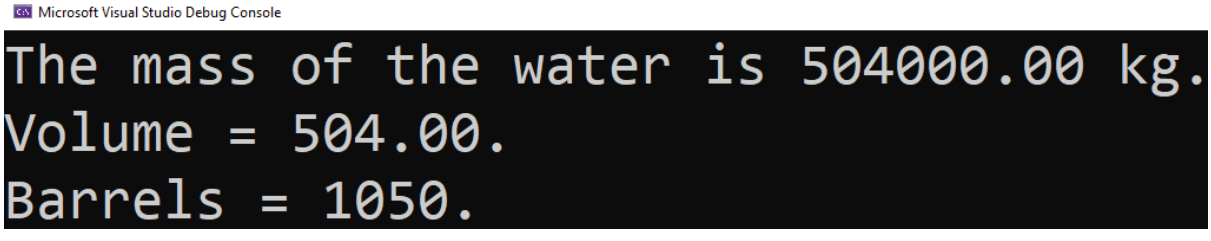
2. Write another function that calculates the mass of the water in the swimming pool. This function should read in the volume of water as a parameter. This function must not return anything. The function must print the total mass of the water to the screen. Note for water: mass = volume * 1000. (**25 marks**)

3. Write a function that calculates how many barrels can be filled with the water in the swimming pool. Assume the barrel has a capacity of 0.48 m^3. Your function should read in the volume of water as a parameter. Your function must return the number of barrels required. Note, you must round up barrels (not down). The number of barrels should be printed to the screen in the main function. (**25 marks**)

4. Test your program by setting the Length, Width and Height of the pool as the last 3 digits of your student ID. E.g. if my ID was 123456789, then L = 7, W = 8 and H = 9. Note, if your student ID contains '0's, use next non-zero numbers. (**25 marks**)

Your program should output something similar to the following screenshot.

This week, you must **upload a single screenshot** with your solution showing your program working for each of the requirements in tasks 1 – 4 above. It should look similar to this screenshot.



Plagiarism Notice:

A definition of plagiarism is passing off the work of another personas one's own.

You are allowed to ask the lab tutors for help, collaborate with your classmates and review online and print resources for high-level problem solving and background research. You are each expected to complete this assignment individually. This means that every line of code and comment in your submission should be written by you alone. Please see the University of Galway Code of Practice for Dealing with Plagiarism for further information on plagiarism: https://www.universityofgalway.ie/media/registrar/policiesmay2023/QA220-Academic-Integrity-Policy-v2.0-Sept-2023.pdf

Plagiarism is a serious academic offence and may lead to a loss of some or all marks and/or disciplinary proceedings if it is detected in any of your submissions. Students who facilitate others to copy their work are also subject to plagiarism sanctions (including loss of marks), so you should not share your assignment solutions with classmates.

Submission Instructions:

Please do the following to submit your solutions to the assignment.

- Copy and paste your code into a word document labelled 'AssignmentX_YOURNAME_ID.doc', e.g. 'Assignment7_JoeBloggs_123456789.doc'.

- Make sure to **include screenshots of your code working** in the .doc file. Use: 'Windows' + 'Shift' + 'S' on your keyboard. On a Mac, you should use the keys: 'shift' + 'command' + '3' or 'shift' + 'command' + '4'.

- Add both: **your .c program and your .doc files** to a folder called 'AssignmentX_YOURNAME_ID_Submission'.

- Zip the folder up and **submit the .zip file on Canvas** under CT103 Assessments. To zip the folder, right click and press 'Send To' then 'Compressed (zipped) folder'. On Mac, right click the folder and press 'Compress'.

- If for some reason you still cannot access Canvas. Send your .zip folder to the lab instructors by email. They will be available for the duration of the lab.